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Foreword

by Dan Glickman, Secretary

The U.S. Department of Agriculture (USDA), called "The People's Department" by President Abraham Lincoln when it was founded in 1862, touches the lives of every single American. You do not have to be a farmer or a rural resident to be a USDA customer. Everyone with an interest in good nutrition, food safety, and the health of the American landscape has a stake in our programs and activities.

Inside the ***Agriculture Fact Book***, you will learn about the breadth of our mandate–about our stewardship of 192 million acres of national forest land; about our efforts to fight hunger at home and abroad; about our support for land-grant colleges and universities; about our battles against bugs, pests, and diseases that threaten American agriculture and ecosystems. You will learn more about programs that are already household names, like the Food Stamp Program. And, you can also get information about efforts like the Farmland Protection Program and our regulation of biotechnology products.

The book also provides a broad look at American agriculture and includes data on farm income, assets, production, commodities, and more. We also outline the demographic features of rural America. And because USDA has responsibilities for reporting on the consumption as well as the production end of agriculture, we devote an entire chapter to American eating habits.

We have designed this book to be user-friendly, with charts, graphs, and visuals that help better convey key points. The book also includes a helpful glossary and a calendar that explains the planting and harvesting schedules of different crops.

We also know that no one book can provide all the information one might need. So we have included the names, telephone numbers, fax numbers, and e-mail addresses of contacts for additional information. Throughout these pages, you will also find web site addresses where you will be able to tap an even deeper well of USDA information.

Whether you are a farmer, a dietitian, a scientist, a public servant, or just a curious citizen, the ***Agriculture Fact Book*** is an invaluable resource and handy reference guide. You can access a digital version of this publication–as well as a multitude of agricultural information–on USDA's web site at ***http://www.usda.gov.*** I encourage you to use it and to contact us if you need more information.

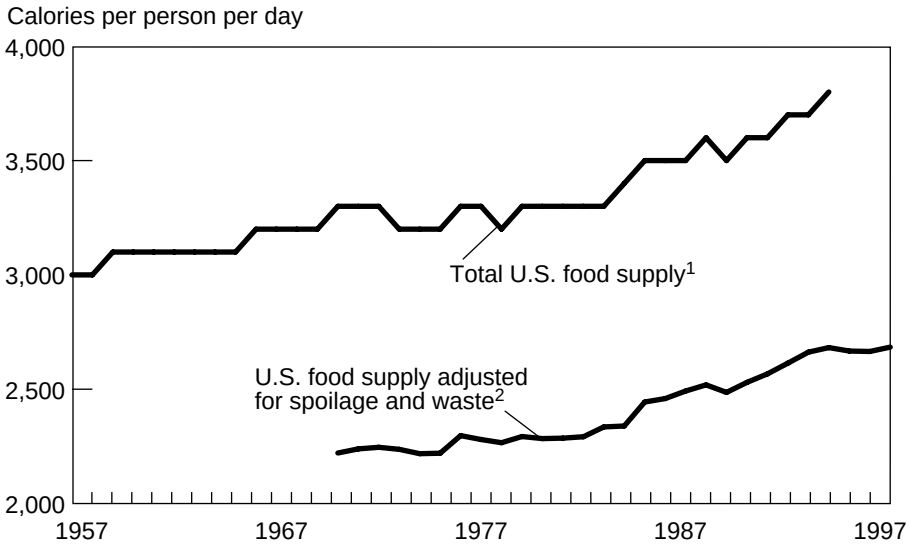
1. U.S. Agriculture—Food Consumption in America

Americans at the beginning of the 21st century are consuming more food and several hundred more calories per person per day than did their counterparts in the late 1950's (when per capita calorie consumption was at the lowest level in this century), or even in the 1970's. The aggregate food supply in 1994 (the latest year for which nutrient data from USDA's Center for Nutrition Policy and Promotion are available) provided 3,800 calories per person per day, 500 calories above the 1983 level and 800 calories above the record low in 1957 and 1958 .

Of that 3,800 calories, USDA's Economic Research Service (ERS) estimates that roughly 1,100 calories were lost to spoilage, plate waste, and cooking and other losses, putting dietary intake of calories in 1994 at just under 2,700 calories per person per day. ERS data suggest that average daily calorie intake increased 14.7

Figure 1-1

Calories from the per capita U.S. food supply, adjusted for spoilage and waste, increased 21 percent between 1970 and 1994



[1]Rounded to the nearest hundred
[2]Not calculated for years before 1970.
Source: USDA's Center for Nutrition Policy and Promotion; USDA's Economic Research Service

percent, or about 340 calories, between 1984 and 1994, and remained stable between 1994 and 1997. Of that 14.7-percent increase, grains (mainly refined grain products) contributed 6.2 percentage points; added fats and oils, 3.4 percentage points; added sugars, 3.4 percentage points; fruits and vegetables, 1.4 percentage points; and meats and dairy products together, 0.3 percentage point.

Some of the observed increase in caloric intake may be associated with the increase in eating out. Data from USDA's food intake surveys show that the food-away-from-home sector provided 34 percent of total food energy consumption in 1995, up from 19 percent in 1977-78. The data also suggest that, when eating out, people either eat more or eat higher calorie foods—or both—and that this tendency appears to be increasing.

A variety of factors are responsible for the changes in U.S. consumption patterns in the last 50 years, including changes in relative prices, increases in real (adjusted for inflation) disposable income, and more food assistance for the poor. New products, particularly more convenient ones, also contribute to shifts in consumption, along with more imports, growth in the away-from-home food market, expanded advertising programs, and increases in nutrient-enrichment standards and food fortification. Sociodemographic trends also driving changes in food choices include smaller households, more two-earner households, more single-parent households, an aging population, and increased ethnic diversity.

ERS estimates per capita food and nutrient supplies based on food disappearance data. These data are used as a proxy to estimate human consumption. The data reported in tables 1-1 through 1-6 are unadjusted for spoilage and waste, so they may overstate what is actually eaten. The data are used more appropriately as indicators of trends in consumption over time.

Meat Consumption at Record High

Now more than ever, America is a Nation of meat eaters. In 1999, total meat consumption (red meat, poultry, and fish) reached 197 pounds (boneless, trimmed-weight equivalent) per person, 64 pounds above average annual consumption in the 1950's (table 1-1). Each American consumed an average of 12 pounds more red meat than in the 1950's, 48 pounds more poultry, and 4 pounds more fish and shellfish. Rising consumer incomes, especially with the increase in two-income households, and meat prices in the 1990's that were often at 50-year lows, when adjusted for inflation, explain much of the increase in meat consumption. In addition, the meat industry has provided scores of new brand-name, value-added products processed for consumers' convenience, as well as a host of products for foodservice operators.

Table 1-1

In the 1990's, Americans consumed an average 57 pounds more meat per year than in the 1950's, and a third fewer eggs

	Annual averages						
Item	*1950-59*	*1960-69*	*1970-79*	*1980-89*	*1990-99*	*1998*	*1999*
	Pounds per capita, boneless-trimmed weight						
Total meats	133.0	161.8	177.1	182.9	190.7	195.3	197.2
Red meats	102.3	123.4	129.4	121.9	113.3	115.6	113.9
Beef	52.8	69.1	80.9	71.8	63.7	64.9	63.5
Pork	41.0	47.9	45.0	47.7	48.0	49.1	49.1
Veal and lamb	8.5	6.4	3.5	2.4	1.6	1.6	1.3
Poultry	19.8	27.7	35.2	46.8	62.6	65.0	68.4
Chicken	16.2	22.5	28.4	36.9	48.5	50.8	54.4
Turkey	3.5	5.1	6.8	9.9	14.1	14.2	14.1
Fish and shellfish	10.9	10.7	12.5	14.2	14.8	14.8	14.8
	Number per capita						
Eggs	373	320	285	257	238	244	249

Note: Totals may not add due to rounding; 1999 projection as of July 1999.
Source: USDA=s Economic Research Service.

Nutritional concern about fat and cholesterol has encouraged the production of leaner animals (beginning in the late 1950's), the closer trimming of outside fat on retail cuts of meat (beginning in 1986), the marketing of a host of lower fat ground and processed meat products, and consumer substitution of poultry for red meats since the late 1970's—significantly lowering the meat, poultry, and fish group's contribution to total fat and saturated fat in the food supply. Despite near record-high per capita consumption of total meat in 1994, the proportion of fat in the U.S. food supply from meat, poultry, and fish declined from 32 percent in the 1950's to 25 percent in 1994. Similarly, the proportion of saturated fat contributed by meat, poultry, and fish fell from 33 percent in the 1950's to 26 percent in 1994.

Between 1950 and 1989, annual consumption of eggs steadily declined nearly 4 eggs per person per year, from 390 eggs to 237. This long-term decline in per capita egg consumption leveled off in the early 1990's. From a record low of 234 eggs per person per year in 1990-91, egg consumption rose to 244 eggs in 1998, and is projected to rise to 249 eggs in 1999. The record high for U.S. per capita consumption was 403 eggs in 1945. Much of the decline in egg consumption since 1950 was due to changing lifestyles (for example, less time for breakfast preparation in the morning as large numbers of women joined the paid labor force) and the perceived ill effects of cholesterol intake associated with egg consumption.

Eating Out Cuts Milk, Boosts Cheese Consumption...

In 1998, Americans drank an average of 35 percent less milk and ate nearly 3 2/3 times as much cheese (excluding cottage, pot, and baker's cheese) as in the 1950's (table 1-2).

Consumption of beverage milk declined from an annual average of 36 gallons per person in the 1950's to 24 gallons in 1998. Consumption of soft drinks, fruit drinks and ades, and flavored teas may be displacing beverage milk in the diet. Big increases in eating away from home, especially at fast-food places, and in consumption of salty snack foods favored soft drink consumption.

The beverage milk trend is toward lower fat milk. Whole milk represented 92 percent of all beverage milk (plain, flavored, and buttermilk) in the 1950's, but its share dropped to 35 percent in 1998.

Average annual consumption of cheese (excluding full-skim American and cottage, pot, and baker's cheeses) increased 269 percent between the 1950's and 1998, from 7.7 pounds per person to 28.4 pounds. Lifestyles that emphasize convenience foods were probably major forces behind the higher consumption. In fact, two-thirds of our cheese now comes in commercially manufactured and

Table 1-2

Americans are drinking less milk, eating more cheese and frozen dairy products

		Per capita annual averages					
Item	*Unit*	*1950-59*	*1960-69*	*1970-79*	*1980-89*	*1990-98*	*1998*
All dairy products[1]	lb	700	619	548	575	577	591
Cheese[2]	lb	7.7	9.5	14.4	21.5	26.7	28.4
Cottage cheese	lb	3.9	4.7	4.9	4.1	2.9	2.7
Frozen dairy products	lb	22.8	27.4	27.8	27.4	29.1	29.1
Ice cream	lb	18.0	18.3	17.7	17.7	16.1	16.1
Lowfat ice cream	lb	2.7	6.3	7.6	7.3	7.5	7.5
Sherbet	lb	1.3	1.5	1.5	1.3	1.3	1.3
Other	lb	1.0	1.5	1.0	1.2	4.3	4.3
Nonfat dry milk	lb	4.9	5.9	4.1	2.4	3.1	3.4
Dry whey	lb	.2	.6	2.1	3.3	3.6	3.4
Condensed and evaporated milks	lb	21.4	15.7	9.4	7.5	7.6	6.6
Cream products	2 pt	18.0	13.3	10.1	12.8	15.6	17.3
Yogurt	2 pt	0.1	0.7	3.2	6.5	8.5	9.3
Beverage milk	gal	36.2	32.5	29.8	26.5	24.7	23.7
Whole	gal	33.3	28.8	21.7	14.3	9.2	8.3
Lower fat	gal	2.9	3.7	8.1	12.2	15.5	15.4

Note: Totals may not add due to rounding.
[1]Milk-equivalent, milkfat basis; includes butter. Individual items are on a product-weight basis.
[2]Natural equivalent of cheese and cheese products; excludes full-skim American, cottage, pot, and baker's cheese.
Source: USDA's Economic Research Service.

prepared foods (including foodservice), such as pizza, tacos, nachos, salad bars, fast-food sandwiches, bagel spreads, sauces for baked potatoes and other vegetables, and packaged snack foods. Advertising and new products—such as reduced-fat cheeses and resealable bags of shredded cheeses, including cheese blends tailored for use in Italian and Mexican recipes—also boosted consumption.

...and Swells Use of Baking and Frying Fats

Americans' mid-1990's push to cut dietary fat is apparent in the recent per capita food supply data, which show a modest decline in the use of added fats and oils since 1993. Annual per capita consumption of added fats and oils declined about 7 percent between 1993 and 1997, from a record-high 70.2 pounds (fat-content basis) per person to 65.6 pounds. (The decline in calories from added fats since 1993 has been more than offset by a rise in calories from grain products and added sugars.) However, average use of added fats and oils in 1997 remained 47 percent above the 1950's (table 1-3). Added fats and oils include those used directly by consumers, such as butter on bread, as well as shortenings and oils used in commercially prepared cookies, pastries, and fried foods. All fat naturally present in foods, such as in milk and meat, are excluded.

Americans in 1997 consumed, on average, three times more salad and cooking oils than they did in the 1950's, and nearly twice as much shortening. Average use of table spreads declined by 25 percent during the same period.

In the 1950's, the fats and oils group (composed of added fats and oils) contributed the most fat to the food supply (41 percent), followed by the meat, poultry, and fish group (32 percent). By 1994, the fats and oils group's contribution to total fat had jumped 11 percentage points to 52 percent, probably due to the much

Table 1-3

Rising salad/cooking oils and shortening use boosted consumption of added fats by 47 percent between 1950-59 and 1997

	Annual averages					
Item	*1950-59*	*1960-69*	*1970-79*	*1980-89*	*1990-97*	*1997*
	Pounds per capita[1]					
Total added fats and oils	44.6	47.9	53.6	61.1	66.6	65.6
Salad and cooking oils[2]	9.8	13.9	20.2	25.0	28.0	29.8
Baking and frying fats	21.3	20.8	20.7	23.8	26.9	25.6
Shortening	10.9	14.6	17.4	20.5	22.7	20.9
Lard and beef tallow[3]	10.4	6.2	3.3	3.4	4.1	4.7
Table spreads	17.0	16.5	15.9	15.3	14.5	12.8
Butter	9.0	6.6	4.7	4.6	4.5	4.2
Margarine	8.0	9.9	11.2	10.7	10.1	8.6

Note: Totals may not add due to rounding.
[1]Total added fats and oils is on a fat-content basis. Individual items are on a product-weight basis.
[2]Includes a small amount of specialty fats used mainly in confectionery products and nondairy creamers.
[3]Direct use; excludes use in margarine or shortening.
Source: USDA's Economic Research Service.

higher consumption of fried foods in foodservice outlets, the huge increase in consumption of high-fat snack foods, and the increased use of salad dressings. Magarine, salad dressings and mayonnaise, cakes and other sweet baked goods, and oils continue to appear in the top 10 foods for fat contribution, according to recent USDA food intake surveys, which indicates the ongoing prevalence of discretionary fats in Americans' diets.

In the last two decades, Americans have been more successful in reducing the fat density in home foods than in away-from-home foods, according to food intake surveys. In 1977-78, both home and away-from-home foods provided slightly more than 41 percent of their calories from fat. By 1987-88, the fat density of home foods had declined to 36.4 percent of total calories from fat, compared with 38.7 for away-from-home foods. Since then, the fat density of home foods declined steadily to 31.5 percent of calories from fat, but fat from away-from-home foods declined only slightly to 37.6 percent of calories.

Fruit and Vegetable Consumption Continues To Rise

Americans in 1997 consumed more than a fifth (22 percent) more fruit and vegetables than did their counterparts in the 1970's (table 1-4).

Restaurant salad bars became popular in the late 1970's. Most supermarket chain stores added salad bars in 1982-84. Fresh-cut fruits and vegetables, prepackaged salads, locally grown items, and exotic produce—as well as hundreds of new varieties and processed products—have been introduced or expanded since the early 1980's. Supermarket produce departments carry over 400 produce items today, up from 250 in the late 1980's and 150 in the mid-1970's. Also, the number of ethnic, gourmet, and natural foodstores, which highlight fresh produce, continues to rise. Because many exotic and specialty fruits and vegetables introduced to mainstream markets in the last decade are not yet included in ERS' database, the actual increase in fruit and vegetable consumption is probably higher than the data indicate. For example, imports of chayote, jicamas, dasheens, and cassava, if included, would add nearly a pound to per capita vegetable consumption in 1998.

Total fruit consumption in 1997 was 19 percent above average annual fruit consumption in the 1970's. Fresh fruit consumption (up 34 percent during the same period) outpaced processed fruit consumption (up 10 percent). Noncitrus fruits accounted for all of the growth in fresh fruit consumption.

Total vegetable consumption in 1997 was 23 percent above average annual vegetable consumption in the 1970's. As in the case of fruit, fresh vegetable use (up 26 percent during the same period) outpaced processed vegetable use (up 21 percent). The introduction of pre-cut and packaged value-added products and increasing health consciousness among consumers boosted average fresh broccoli consumption by a

Table 1-4

Per capita consumption of fruit and vegetables increased 22 percent between 1970-79 and 1997

Item	*Annual averages*			
	1970-79	*1980-89*	*1990-97*	*1997*
	Pounds per capita, fresh-weight equivalent			
Total fruit and vegetables	584.5	622.9	682.4	710.8
Total fruit	246.7	271.2	281.0	294.7
Fresh fruit	99.5	113.2	123.9	133.2
Citrus	27.2	24.2	24.0	26.8
Noncitrus	72.3	89.0	99.9	106.4
Processed fruit	147.2	158.1	157.1	161.5
Frozen fruit, noncitrus	3.3	3.3	3.7	3.5
Dried fruit, noncitrus	9.8	12.0	12.0	10.8
Canned fruit, noncitrus	24.5	21.2	20.3	20.5
Fruit juices	109.0	121.2	120.8	126.1
Total vegetables	337.8	351.7	401.5	416.0
Fresh vegetables	146.9	155.8	174.7	185.6
Potatoes	52.5	48.5	49.1	47.9
Other	94.4	107.3	125.6	137.7
Processing vegetables	190.8	195.9	226.8	230.4
Vegetables for canning	101.0	99.0	110.0	105.9
Tomatoes	62.9	63.5	74.9	72.7
Other	38.2	35.4	35.1	33.2
Vegetables for freezing	52.1	61.1	76.3	81.5
Potatoes	36.1	42.8	54.3	59.0
Other	16.0	18.2	22.0	22.5
Dehydrated vegetables and chips	30.8	29.5	32.5	34.5
Pulses	7.0	6.6	8.0	8.5

Source: USDA's Economic Research Service.

third between 1995 and 1998 and average fresh carrot consumption by more than a fifth. Highly publicized medical research linking compounds in broccoli with strong anti-cancer activity in the body has added a powerful incentive to consumption.

The popularity of pizza and other ethnic foods in the 1990's boosted average consumption of canned tomato products, but consumption of other canned vegetables declined 13 percent between the 1970's and 1997. The popularity of french fries, eaten mainly in fast-food eateries, spawned a 63-percent increase in average consumption of frozen potatoes during the same period; consumption of other frozen vegetables rose 41 percent.

Consumers Eat Enough Grain Foods But Not Whole Grains

Per capita use of flour and cereal products reached 200 pounds in 1997 from an annual average of 155 pounds in the 1950's and 138 pounds in the 1970's, when grain consumption was at a record low (table 1-5). The expansion in supplies reflects ample grain stocks; strong consumer demand for variety breads, other instore bakery items, and grain-based snack foods; and increasing fast-food sales of products made with buns, doughs, and tortillas.

Many consumers' diets now meet the Food Guide Pyramid serving recommendation for grain products. The Pyramid recommends 9 daily servings of grain products for a 2,200-calorie diet. The food supply, adjusted for waste in the home and throughout the marketing system, provided an average of 10 daily servings of grain in 1997.

However, most people's diets fall well short of the recommended several daily servings of whole grain products. In 1992, the latest year for which data are available, whole-wheat flour accounted for less than 2 percent of total wheat flour—or one-tenth of a slice of bread per person per day. The mean daily intake of foods made from whole grains was one serving in USDA's *1996 Continuing Survey of Food Intakes by Individuals*. According to the survey, only 7 percent of Americans ate the recommended three or more servings of whole-grain foods a day.

Since July 1999, companies that produce grain products rich in whole grains and low in fat can advertise that their products may reduce the risk of heart disease and certain cancers. This health claim, approved by the U.S. Food and Drug Administration (FDA), is restricted to foods that contain at least 51 percent whole grains by weight and list a whole grain as the first ingredient. Each serving of the food must provide a minimum of 16 grams of whole grain and have less than 3 grams of fat.

Beginning January 1, 1998, FDA has required that all enriched grain foods—including ready-to-eat breakfast cereals, pasta, bread, rolls, flour, cakes, and cookies—be fortified with folic acid (the synthetic form of folate, a B-vitamin). Folic acid fortification of grain foods should reduce the risk of neural tube birth defects like

Table 1-5

Consumption of grain products has been rising in the last 2 decades

	Annual averages					
Item	*1950-59*	*1960-69*	*1970-79*	*1980-89*	*1990-97*	*1997*
	Pounds per capita					
Total grain products[1]	155.4	144.8	138.2	157.5	191.0	200.1
Wheat flour	125.7	114.0	113.6	122.8	142.5	149.7
Corn products	15.4	15.0	11.0	17.3	22.4	23.1
Rice	5.4	7.2	7.3	11.5	18.2	19.5

[1]Includes oat products, barley products, and rye flour not shown separately.
Source: USDA's Economic Research Service.

spina bifida, and may protect adults from heart disease and reduce the chances of cervical cancer in women. Folate is found naturally in legumes; liver; many vegetables, especially green leafy ones like spinach; citrus fruits and juices; whole-grain products; and eggs.

A study conducted by Tufts University researchers and published in the May 13, 1999, issue of the *New England Journal of Medicine* showed that since FDA's folic acid fortification regulation, the levels of folic acid in the bloodstream of study participants have nearly doubled. In addition, the number of people with insufficient folic acid levels declined from 22 percent to less than 2 percent.

Consumption of Caloric Sweeteners Hits Record High

Americans have become conspicuous consumers of sugar and sweet-tasting foods and beverages. Per capita consumption of caloric sweeteners (dry-weight basis)—mainly sucrose (table sugar made from cane and beets) and corn sweeteners (notably high-fructose corn syrup, or HFCS)—increased 45 pounds, or 41 percent, between 1950-59 and 1997 (table 1-6). In 1997, each American consumed a record average 154 pounds of caloric sweeteners. That amounted to more than two-fifths of a pound—or 53 teaspoonfuls—of added sugars per person per day in 1997. Of that 53 teaspoons, ERS estimates that Americans wasted or otherwise lost 20 teaspoons, putting added sugars intake at about 33 teaspoons per person per day.

USDA recommends that the average person on a 2,000-calorie daily diet include no more than 40 grams of added sugars. That's about 10 teaspoons, or the amount of sugar in a 12-ounce soft drink. Sugar—including sucrose, corn sweeteners, honey, maple syrup, and molasses—is ubiquitous and often hidden. In a sense, sugar is the number one food additive. It turns up in some unlikely places, such as pizza, bread,

Table 1-6

America's sweet tooth increased 41 percent between 1950-59 and 1997

Item	*Annual averages*					
	1950-59	*1960-69*	*1970-79*	*1980-89*	*1990-97*	*1997*
	Pounds per capita, dry weight					
Total caloric sweeteners	109.6	114.4	123.7	126.5	145.3	154.1
Cane and beet sugar	96.7	98.0	96.0	68.4	65.1	66.5
Corn sweeteners	11.0	14.9	26.3	56.8	78.9	86.2
High fructose corn syrup	.0	.0	5.5	37.3	55.5	62.4
Glucose	7.4	10.9	16.6	16.0	19.4	19.9
Dextrose	3.5	4.1	4.3	3.5	3.9	3.8
Other caloric sweeteners	2.0	1.5	1.3	1.3	1.4	1.4

Note: Totals may not add due to rounding.
[1]Edible syrups (sugarcane, sorgo, maple, and refiner's), edible molasses, and honey.
Source: USDA's Economic Research Service.

hot dogs, boxed mixed rice, soup, crackers, spaghetti sauce, lunch meat, canned vegetables, fruit drinks, flavored yogurt, ketchup, salad dressing, mayonnaise, and some peanut butter. Carbonated sodas provided more than a fifth (22 percent) of the refined and added sugars in the 1994 American food supply.

Food Expenditures and Prices

What does it cost Americans to eat what they eat? Total food expenditures, which include imports, fishery products, and food originating on farms, were $788.6 billion in 1999, an increase of 4.9 percent over those in 1998. Average per capita food spending came to $2,891 per capita, 4.0 percent above the 1998 average. Away-from-home meals and snacks captured 48 percent of the U.S. food dollar in 1999, up from 44 percent in 1989 and 39 percent in 1979.

While personal food expenditures rose 4.9 percent, disposable personal income increased 5.6 percent from 1998 to 1999. U.S. consumers in 1999 spent 10.4 percent of their disposable personal income (after taxes) on food. This figure compares with 11.2 percent in 1989, 13.3 percent in 1979, and 13.7 percent in 1969.

In the United States, retail food prices (including meals served in restaurants) rose 31.2 percent over the last 10 years (1989-99). Prices of food eaten away from home increased 29.6 percent, while retail foodstore prices increased 32.2 percent. Prices of goods and services, excluding food, in the Consumer Price Index climbed 35.0 percent over the same 10 years. Transportation was up 26.6 percent; housing, 33.3 percent; medical care, 67.8 percent; and apparel, 10.7 percent.

How Much of the Cost of Food Services and Distribution Goes to Farmers?

The estimated bill for marketing domestic farm foods—which does not include imported foods—was $498 billion in 1999. This amount covered all charges for transporting, processing, and distributing foods that originated on U.S. farms. It represented 80 percent of the $618 billion consumers spent for these foods. The remaining 20 percent, or $121 billion, represents the gross return paid to farmers.

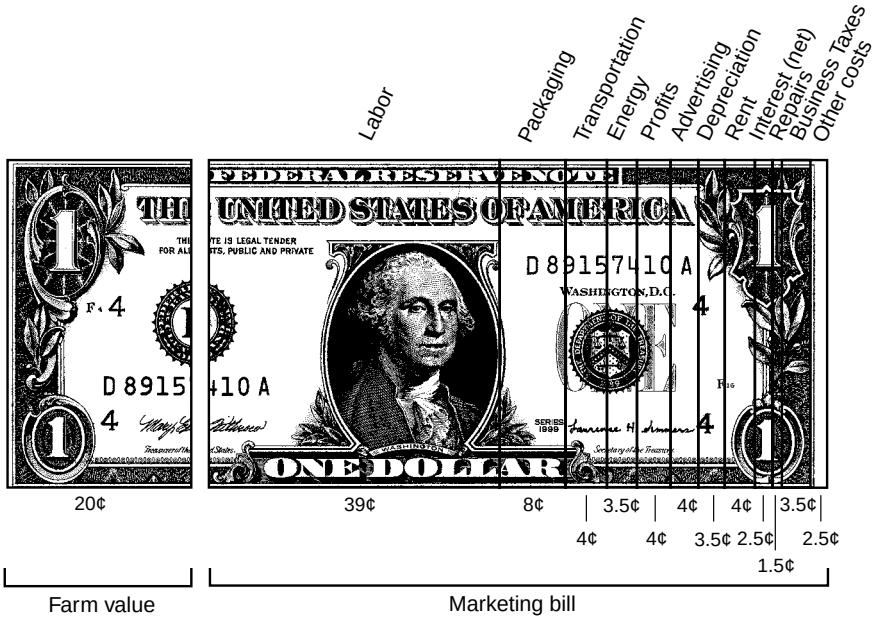
The cost of marketing farm foods has increased considerably over the years, mainly because of rising costs of labor, transportation, food packaging materials, and other inputs used in marketing, and also because of the growing volume of food and the increase in services provided with the food.

In 1989, the cost of marketing farm foods amounted to $316 billion. In the decade after that, the cost of marketing rose about 58 percent. In 1999, the marketing bill rose 7.0 percent. These rising costs have been the principal factor affecting the rise in consumer food expenditures. From 1989 to 1999, consumer expenditures for farm foods rose $199 billion. Roughly 92 percent of this increase resulted from an increase in the marketing bill.

The cost of labor is the biggest part of the total food marketing bill, accounting for nearly half of all marketing costs. Labor used by assemblers, manufacturers, wholesalers, retailers, and eating places cost $240 billion in 1999. This was 4.4 percent higher than in 1998 and 65 percent more than in 1989. The total number of food marketing workers in 1999 was about 14.0 million, about 16 percent more than a decade ago. About 77 percent of the growth in food industry employment occurred in public eating places. A wide variety of other costs comprise the balance of the marketing bill. These costs include packaging, transportation, energy, advertising, business taxes, net interest, depreciation, rent, and repairs. Their relative proportions are illustrated in the accompanying dollar chart.

Figure 1-11.

What a dollar spent for food paid for in 1999



2. American Farms

Farms vary widely in size and other characteristics, ranging from very small retirement and residential farms to establishments with sales in the millions. A new farm typology developed by USDA's Economic Research Service (ERS) categorizes farms into more homogeneous groups than classifications based on sales volume alone.

The typology is based on the occupation of operators and the sales class of farms. In the case of limited-resource farmers, the asset base and total household income—as well as sales—are low. Compared with classification by sales alone, the ERS typology is much more reflective of operators' expectations from farming, stage in the life cycle, and dependence on agriculture.

The typology identifies five groups of small family farms (sales less than $250,000): (1) limited-resource farms, (2) retirement farms, (3) residential/ lifestyle farm, (4) farming occupation/lower sales, and (5) farming occupation/higher sales. To cover the remaining farms, the typology identifies three groups of larger farms: (1) large family farms, (2) very large family farms, and (3) nonfamily farms.

The groups differ in their contribution to agricultural production, their product specialization, farm program participation, and dependence on farm income.

Differences among farm typology groups (e.g., product specialization, program participation) are illustrated in the following charts using 1997 data from the Agricultural Resource Management Study (ARMS). The ARMS is an annual survey conducted by ERS and by USDA's National Agricultural Statistics Service.

Share of Farms, Assets, and Production

Most farms are small, but small farms account for a modest share of production (figure 2-1).

- More than 90 percent of farms are small, and small farms account for about 70 percent of the assets and land involved in farming (figure 2-2).
- Large family farms, very large family farms, and nonfamily farms account for 61 percent of production.

Defining the Farm Typology Groups

- ***Small Family Farms (sales less than $250,000)***
  Limited-resource*. Any small farm with gross sales less than $100,000, total farm assets less than $150,000, and total operator household income less than $20,000. Limited-resource farmers may report farming, a nonfarm occupation, or retirement as their major occupation.*
  Retirement. *Small farms whose operators report they are retired (excludes limited-resource farms operated by retired farmers).*
  Residential/lifestyle. *Small farms whose operators report a major occupation other than farming (excludes limited-resource farms with operators reporting a nonfarm major occupation).*
  Farming occupation/lower sales. *Small farms with sales less than $100,000 whose operators report farming as their major occupation (excludes limited-resource farms whose operators report farming as their major occupation).*
  Farming occupation/higher sales. *Small farms with sales between $100,000 and $249,999 whose operators report farming as their major occupation.*
- ***Other Farms***
  Large family farms. *Farms with sales between $250,000 and $499,999.*
  Very large family farms. *Farms with sales of $500,000 or more.*
  Nonfamily farms. *Farms organized as nonfamily corporations or cooperatives, as well as farms operated by hired managers.*
  ** The $250,000 cutoff for small farms was suggested by the National Commission on Small Farms.*

Specialization and Diversification

Specialization and diversification vary among the farm typology groups.

- Many small family farms specialize in beef cattle, an enterprise that often has low labor requirements compatible with off-farm work and retirement (figure 2-3).
- In contrast, two commodity groups—cash grains and dairy—account for nearly two-thirds of all higher sales small farms and over half of large family farms.
- Many small farms specialize in a single commodity, but higher sales small farms, large family farms, and very large family farms tend to produce multiple commodities (figure 2-4).

Figure 2-1.

Share of total farms and of production

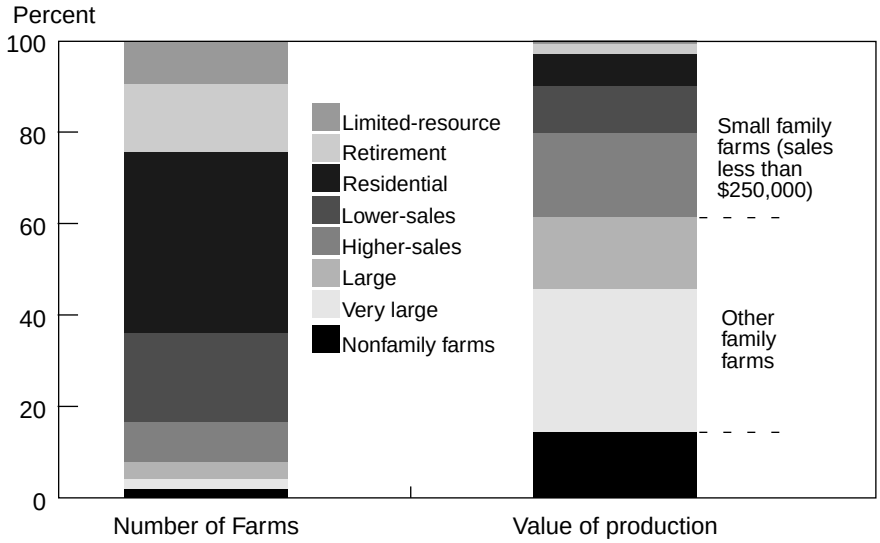
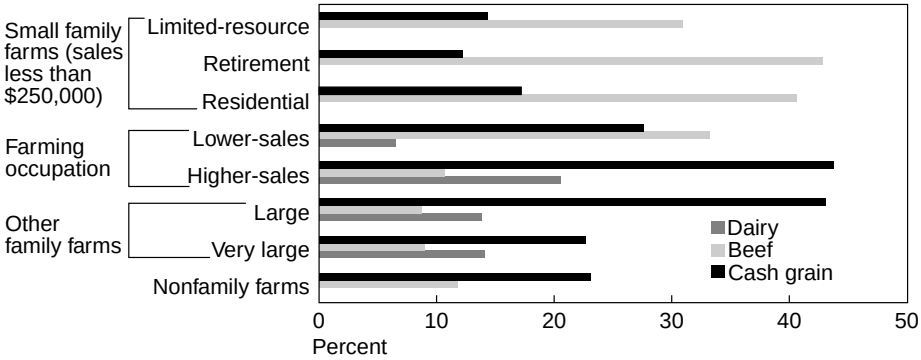


Figure 2-2.

Share of farm assets and acres operated

Figure 2-3.

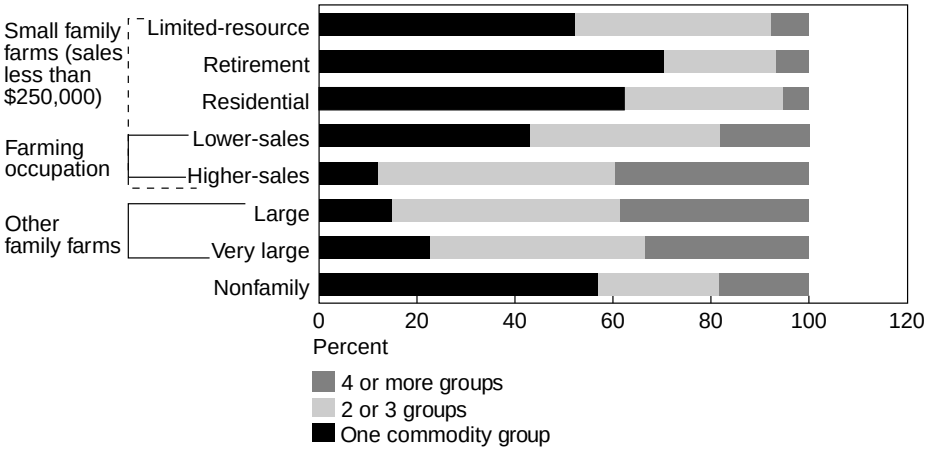
Share of farms specializing in cash grains, beef, and dairy



Commodity accounts for at least half of the farm's value of production. Estimates of dairy farms were suppressed for selected groups, due to insufficient number of observations.

Figure 2-4.

Share of farms, by number of commodities produced



Based on 26 commodity groups

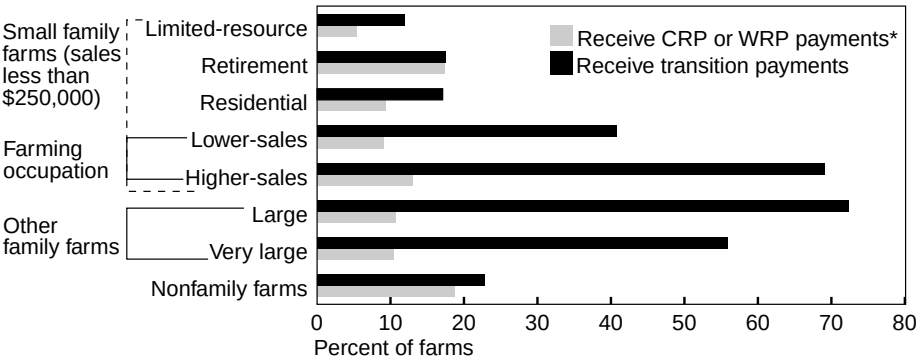
Government Program Participation

All farm typology groups participate in government farm programs to some extent, but the participation rates and share of program payments vary.

- Transition payments are most important to higher-sales small farms and large family farms (figure 2-5).
- The largest portion of government payments goes to higher-sales small farms (figure 2-6).
- Retirement and residential/lifestyle farms account for half of the acreage in the Conservation Reserve Program (CRP) and Wetlands Reserve Program (WRP).

Figure 2-5.

Share of farms receiving transition payments and payments from the CRP or WRP



*Payments to commodity-program participants under 1996 Farm Act.

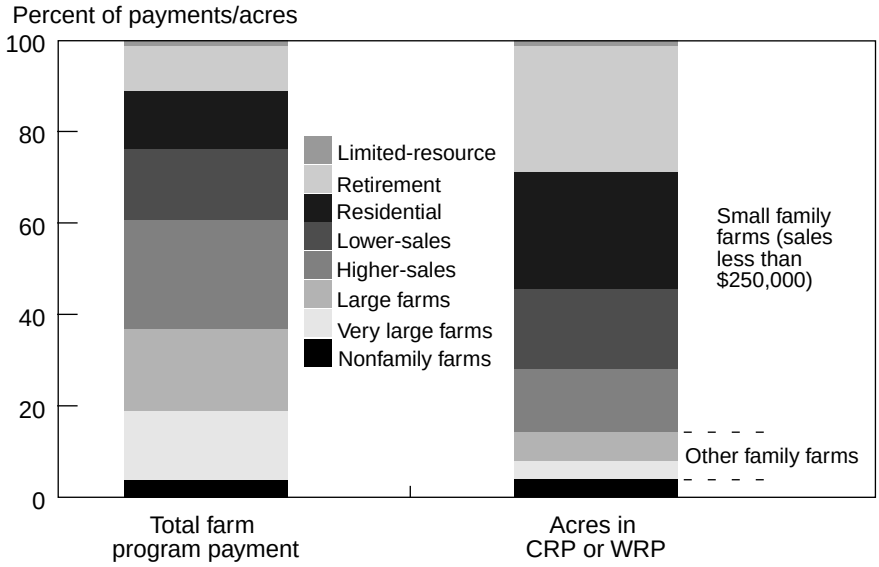
Cost Control

Top-performing farms are defined as the top 25 percent of each typology group, ranked by returns to operators' labor and management.

- Top performers in each group control expenses, resulting in a 30- to 50-percent gross cash margin (the expense ratio subtracted from 100 percent).
- Each group includes farms earning positive returns.

Figure 2-6.

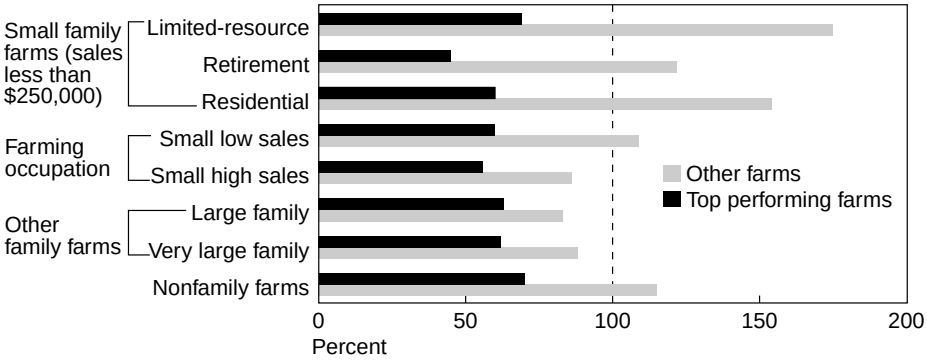
Distribution of total farm program payments and of conservation program acreage



Farm program payments include payments from the Conservation Reserve and Wetlands Reserve programs, transition payments, agricultural disaster payments. Environmental Quality Incentive Program payments, and State and local program payments.

Figure 2-7.

Operating expense ratio for top-performing farms



Income exceeds expenses when the ratio is less than 100 (returns are positive)
The operating expense ratio measures percentage of gross cash income absorbed by cash operating expense.

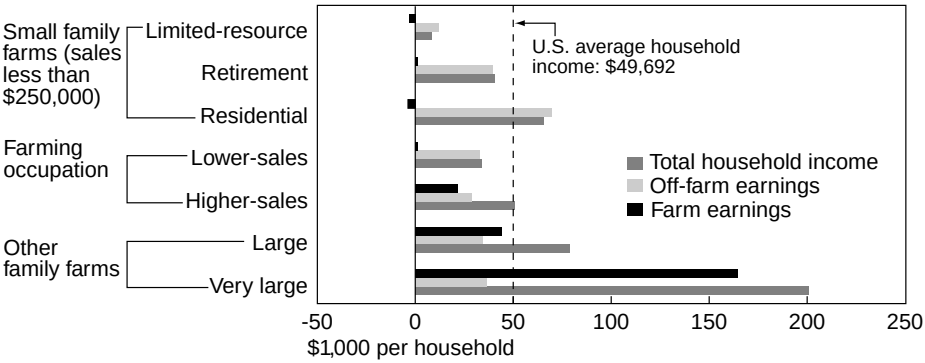
Household Income

Dependence on farm income varies by farm size.

- Households operating very large farms, large farms, and higher-sales small farms receive a substantial share of their income from farming.
- The remaining small farm households derive virtually all income from off-farm sources (fig. 2-8).

Figure 2-8.

Average farm household income, by source



What Is a Small Farm?

Farms and farm families remain powerful symbols in American culture. Despite recent public attention to the difficulties faced by small-scale family farmers, some operations are successfully negotiating current market conditions. Although definitions of success may vary, these farmers have developed or adopted practices that keep their small farms economically viable. Their experiences may suggest strategies for success in small-scale farming that are transferable to other operations.

The U.S. farm sector consists of a highly diverse set of businesses and farm households, and "small" means different things to different people. A variety of small-farm definitions has been used by USDA over the years, including those based on small acreage, low sales volume, and the ability of a farm to support a single family. However, the extent of acreage does not necessarily correlate with sales volume. A berry farm of only a few acres, for example, can generate a very large volume of sales; conversely, cattle operations may have a low volume of sales but encompass many acres of pasture.

Small farms are defined by ERS, based on the typology described above, as operations with sales less than $250,000. While considerably expanding the traditional sales-class definition of small farms, operations with sales under $250,000 are small businesses compared with other businesses in the general economy.

Despite frequently documented constraints facing farmers with operations of this size, small farms continue to be an important component in the U.S. agricultural sector. Distributed across all regions of the country, small farms make up 94 percent of all U.S. farms and constitute one of the biggest single groups of U.S. business owners. Although large farms produce large volumes of agricultural products, small farms still contribute a substantial portion (38 percent) of the value of U.S. farm production and control the majority (73 percent) of farm assets.

Many small-scale farm operations raise cattle, but a sub-group of small farms, particularly higher sales small farms, are more likely to produce cash grains. The majority of the wheat, corn, rice, and other feed grains produced in the United States come from these operations. Small-scale farm operators also hold much of the farmland of the United States and are key participants in certain environmentally based government programs, such as the CRP and WRP.

Farms may meet this small-farm definition (sales under $250,000) for a variety of reasons. For some, the farm may serve primarily as a residence, rather than as a source of income. Some operators may be deliberately scaling down their farm businesses as they retire. For others, the farm may provide a significant portion of household income and/or a significant source of employment. Some remain small because they have limited resources.

Defining Successful Farms

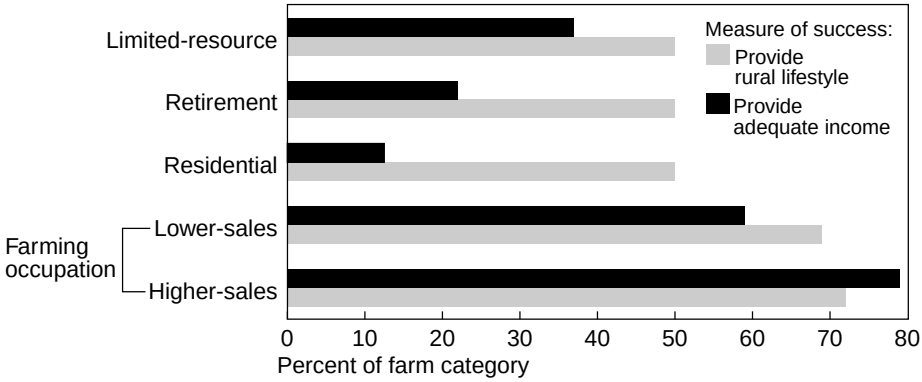
Not all farmers have the same goals for their farm businesses, for themselves, or for their households. One family may concentrate on expanding its farm operation by leveraging the business, while another may consider the lifestyle that a farm offers as adequate compensation for low farm income. Among small-scale farm operators and their households, each typology group contains stories of farm families operating successful farming businesses based on their own definitions of success (figure 2-9).

In USDA's Agricultural Resource Management Study (ARMS), farmers were asked to weigh the importance of selected measures of "success." These measures include:

- operation provides adequate income without having to work off farm;
- operation provides a rural lifestyle;
- operation would be able to survive adverse market or weather conditions;
- gross sales are increasing;
- equity or assets are increasing;
- acres operated is increasing;
- operation can be passed on to the next generation.

Figure 2-9.

Farmers attach different levels of importance to measures of success



Source: Agricultural Resource Management Study.
Economic Research Service, USDA

For those operating limited-resource, retirement, and residential/lifestyle farms, the farm providing a rural lifestyle was more important than the farm providing an adequate income. On farms that are larger and where farming is a primary occupation, importance shifts to the farms' ability to provide adequate income for the family.

Given these various measures and definitions of success, however, most economists would say that successful operations are those that are performing well based on production, managerial, and financial measures. Good performance in this context means that the business has low costs of production and earns an attractive family income. By focusing on an "attractive family income," the concept of good performance can go beyond simply adequate returns to the farm as a business to include the relationship between the farm's success as a business and the well-being of the operator's household.

Even at sales of $250,000 or more, a farm would have to be highly efficient for the business alone to provide adequate income for a family. In fact, average farm household income has been on a par with the average U.S. household for many years, but not without income from off-farm sources. Like most U.S. households, farm households also have multiple sources of income, and even households of larger farms have substantial off-farm income on average. Most small farms have sales much lower than $250,000, so not surprisingly, a larger share of average household income on small farms comes from off-farm sources than is the case for larger farms.

In analyzing farming practices that support successful small farms, ERS focused on the two groups of small-scale farms for which farming is the primary occupation of the operator (higher-sales and lower-sales farms). Since farm earnings make up a larger proportion of total household income for primary-occupation farms than for other small-scale farm types, examining economic measures of success was particularly applicable to them.

Farm-level data collected by USDA through the ARMS allowed identification of top-performing farm businesses in the selected categories using standard measures of income or profitability and cost structure. A ranking or distribution from high to low returns or from low to high costs provided the basis for designating high-performing farms.

The analysis is national in scope, but based on data for only a single year—1996—which might affect characterizations and comparisons of specific areas and/or farm production types for which 1996 was not a representative year.

Characteristics of Successful Farms

Top performers (successful farms) were defined as farms in the top 25 percent of each selected category of small farms, based on either returns to assets or operating expense ratios. Using either standard, top performers in each small-farm category were found in all major commodity groups and in all regions, although top performers from different farm categories tended to be concentrated in production of particular commodities (figure 2-10).

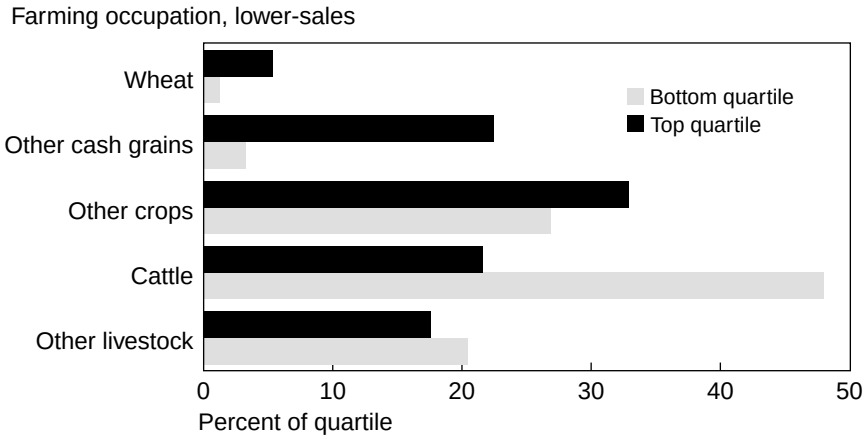
While many small farmers tend to emphasize cattle as their principal commodity, farmers in the top 25 percent of the distribution by returns to assets were clustered in the production of "other cash grains"—corn, soybeans, and grains other than wheat—and "other crops"—vegetables, fruit, other field crops (those not classified separately)—and nursery or greenhouse specialties. In the higher-sales group, farmers most commonly specialized in "other cash grains," not cattle. Top-performing higher-sales farms were found in greater proportion in this specialty than in other specialties, including other crops, cattle, other livestock, and wheat. Because this analysis is for a single year, the recent financial circumstances of farms in the Plains, especially the Northern Plains, may influence whether grain farms continue to dominate the "successful" farm categories.

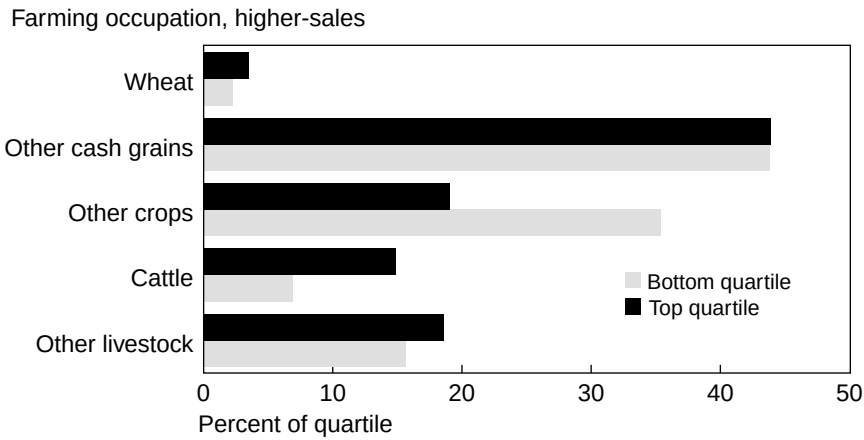
Top-performing small farms are characterized by their successful application of three critical management strategies: using production strategies that control costs, actively marketing their products, and adopting effective financial strategies. Controlling costs—variable, fixed, or economic costs (which provide a return to the unpaid labor, machinery, equipment and other assets used in production)—is a main feature of top-performing farms. Controlling inputs leads to lower costs per unit of output and thus to higher profits per unit of output. Keeping fixed costs (such as mortgage payments or equipment costs) low by renting land or machinery permits flexibility when market conditions vary.

Production strategies differ between operators of top-performing small farms and operators of other small farms in the study groups. In addition to keeping an eye on traditional production costs, producers in the top 25 percent of the lower-sales group reported greater use of forward pricing of inputs, diversification into additional crop or livestock enterprises, as well as renting land—particularly share renting—than did other farmers in that group. Higher-sales farmers had similar characteristics. All these

Figure 2-10.

Crops are leading enterprises for top-performing small farms





Lower-sales = Farms with operator whose primary occupation is farming and with sales under $100,000. Higher-sales = Farms with operator whose primary occupation is farming and with sales of $100,000–$250,000. Quartiles of farms ranked by returns to assets and operating expense ratios. "Other cash grains" include commodities such as corn, oats, and barley.
Source: Agricultural Resource Management Study.
Economic Research Service, USDA

strategies help farmers manage production risk. In both the higher-sales and lower-sales groups, farmers in the top 25 percent are also more likely to allocate some of their labor to off-farm work.

Top performers also actively engage in marketing their products. Active marketing of crop and livestock commodities/products generally gathers additional margins—which increases profits—through better timing of sales to receive higher prices. Top-performing farms in both of the study groups were more likely than other farms in those categories to use marketing strategies like hedging or futures/options contracts, forward contracting of sales through the use of marketing contracts, and spreading sales over the year (figure 2-11). Forward contracting of sales through marketing contracts was not as useful for successful higher-sales farms, probably because they concentrated in corn, soybeans, and grains—crops not typically grown under contract.

Financial strategies enable top performers to respond to changes in the market. Data available for the ERS study reflect relatively low-intensity financial practices such as maintaining cash and credit reserves that help operators both meet unexpected cash-flow difficulties and take advantage of unexpected business opportunities.

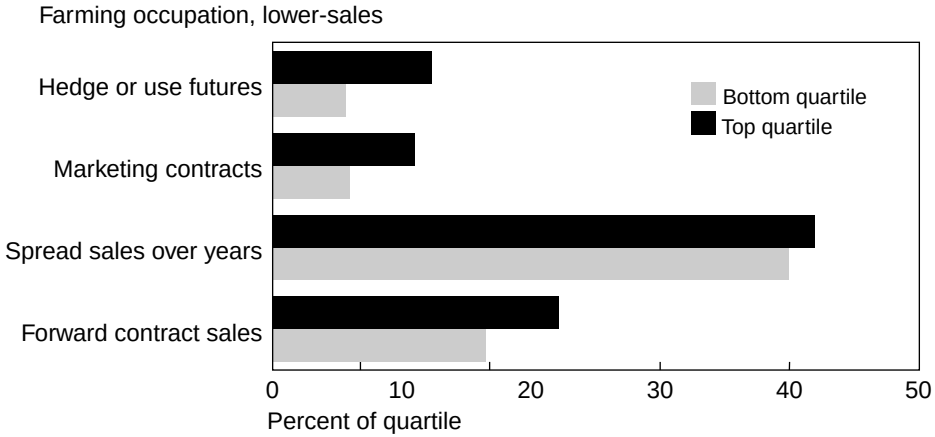
Crop insurance was included as a financial strategy in the study because its purpose is income maintenance and assuring the farm's ability to meet cash-flow obligations. Successful higher-sales farms were more likely than other higher-sales farms to maintain cash or credit reserves and to have purchased the additional buy-up insurance that supplements basic catastrophic policies. In the lower-sales group, top-performing farms showed little difference in financial strategies from other farms in that group, except that they were slightly more likely to use crop insurance—both catastrophic and additional buy-up insurance.

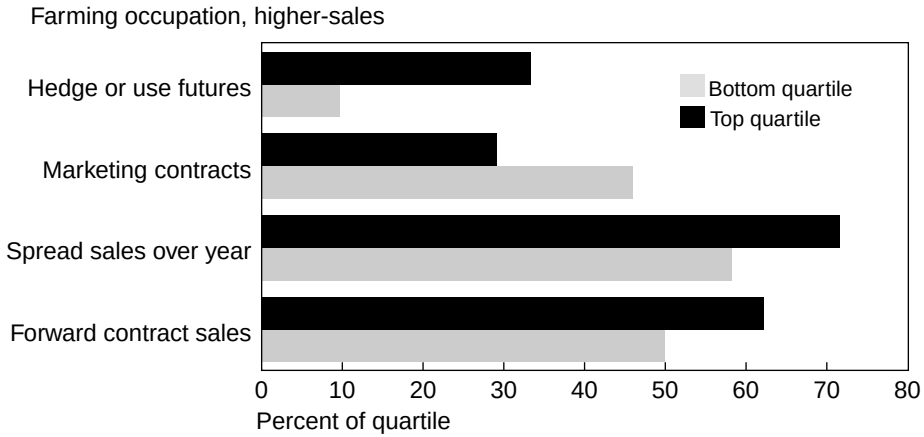
Learning From Successful Farms

The diversity of the small-scale farm sector and the complexity of business, household, and market connections for small-scale farms make it imperative to understand what management practices seem to be behind successful small farms. Tried-and-true management strategies such as controlling costs and increasing efficiency and productivity are still important. But the current economic environment demands more. Successful farming requires management strategies that reach beyond production to planning and control of the marketing and financial aspects of the business. Organization and planning along these lines may require new skills, but they will also provide greater opportunities for farmers.

Figure 2-11.

Top-performing small farms rely more on marketing practices





Farmers may use more than one strategy, Lower-sales = Farms with operator whose primary occupation is farming and with sales under $100,000. Higher-sales = Farms with operator whose primary occupation is farming and with sales of $100,000–$250,000. Quartiles of farms ranked by returns to assets and operating expense ratios. “Other cash grains” include commodities such as corn, oats, and barley.
Source: Agricultural Resource Management Study.
Economic Research Service, USDA

3. Rural America: Highlighting Manufacturing Jobs and Housing

The Administration's budget proposals for fiscal year 2000 included two initiatives with significant implications for rural development: the New Markets initiative and the Livable Communities initiative. The New Markets initiative is aimed at stimulating development in economically distressed areas. The Livable Communities (or Livability) initiative addresses sprawl, congestion, pollution, crime, and other quality-of-life issues that are important for community and economic development.

Both initiatives derive in large part from the long economic expansion of the 1990's, which has produced uneven results, as some places have grown rapidly while others still suffer high unemployment or population decline. Rural America is diverse, containing both types of places: those trying to cope with rapid growth (such as in the West and Rocky Mountains) and those still struggling with economic stagnation or decline (such as in the northern Great Plains and in parts of the Mississippi Delta and Appalachia). Some rural areas on the Southwest border are simultaneously experiencing both problems.

The New Markets Initiative

The U.S. economy has grown so rapidly in recent years that labor shortages are surfacing in many areas, threatening to limit economic growth and increase inflation. The New Markets initiative would provide tax and credit incentives and other forms of business assistance to encourage the private sector to invest more in distressed inner cities, rural areas, and Indian reservations. These are "new markets" in that many firms have overlooked them while expanding elsewhere. They may also be underserved by capital markets because they have underutilized labor and land and are short of capital needed to put those resources to use. Targeting Federal assistance to distressed areas is not new. However, the New Markets' focus on tax incentives, business credit, and technical assistance for distressed areas is relatively new, building on some recently created programs that have grown in recent years.

The Livability Initiative

Also called the Livable Communities initiative, the Livability initiative addresses a wide array of noneconomic issues associated with development and quality of life. Two of these issues are particularly important from a rural development perspective: preservation of natural amenities and mitigation of sprawl-related problems.

The preservation of natural amenities follows from the perspective that natural amenities must be preserved for rural development to be sustained, since much of the growth and development in rural areas in recent years derives from the attraction of rural scenic landscapes, clean air and water, and outdoor recreation. Although many rural areas possess valuable natural amenities, these tend to be greatest in the more remote rural areas and near mountains and water.

In contrast, sprawl mitigation tends to be of greatest concern in rural areas that are close to growing metropolitan areas. Attracted by the combination of metropolitan job opportunities, low land prices, and rural amenities, many people and businesses are choosing to reside adjacent to growing metropolitan areas. While this may be beneficial to the development of many rural areas, the typical sprawling form of development along major transportation arteries radiating from urban centers creates numerous problems for rural communities, including congested roads, crowded schools, and strained water and waste.

People today expect more than just jobs from economic development. They want to live and work in communities with a decent quality of life. Many are attracted to rural areas because of the small-town lifestyle and natural rural landscape and environment, and they object to development that seriously erodes these rural amenities. Many also find it hard to reconcile the long-term economic improvements enjoyed by most Americans with the continued stagnation and poverty in distressed central cities, rural areas, and Indian reservations. This represents not only inequity but also inefficiency, as land and labor resources are being wasted that might otherwise contribute to sustaining national economic growth. The long-term solution is to better integrate these communities into the national economy. The New Markets and Livability initiatives seek to achieve these objectives.

Rural Manufacturing

Rural manufacturing received a big impetus during World War II and has since become an important part of the economy of rural America. After declining in the 1980's, rural manufacturing has rebounded in the 1990's. The increasing use of technology by manufacturers in rural areas, coupled with programs and policies such as the New Markets Initiative, holds out hope that these areas will increase their share of skilled and high-paying manufacturing jobs.

Of great significance for the future of rural industry was the work of New Deal agencies, such as the Tennessee Valley Authority (TVA) and USDA's Rural Electrification Administration (REA), renamed Rural Utilities Service, as well as State road-building commissions, which provided essential elements of infrastructure that would be needed by manufacturers. As TVA and REA were beginning their

work, Mississippi in 1936 became the first State to offer subsidies to attract new industries. In the next several years, many other Southern States followed suit. At first, most migrating industries settled in Southern cities but, because the South was the most rural region in the East, some branch plants of northern-based companies also ended up in small rural towns. That rural industrialization began in the South was the result of its proximity to Eastern cities and its abundance of labor. (Textile mills began to move into the South as early as the 1890's.) Although the rural South experienced great outmigration in the 1930's and beyond, it still had the most densely settled rural areas with potential pools of cheap and available labor.

During World War II, the groundwork for a much more expansive industrial growth was laid in the South, as well as other parts of the country. Factories were moved or newly built away from potential attack on the east and west coasts, military posts sprang up in many rural areas, populations were redistributed, and millions of rural people received training either in the military or in war-related industries. The century-long clustering of industrial activity in the Northeast was beginning to break down. In 1947, the South already had 39,699 manufacturing establishments, an increase of 33 percent over the 1939 total.

Rural Industry Takes Off

By the early 1950's, improvements in agricultural technology and productivity were having a powerful effect on the rural landscape. The number of farms was decreasing rapidly, threatening many small rural communities that depended on agriculture for their economic survival. By the mid-1950's, a broad-based spatial redistribution of American manufacturing was taking place and then, beginning approximately in 1958, industry began to move increasingly into nonurban areas. From 1960 to 1970, manufacturing grew by only 4 percent in metro areas but 22 percent in nonmetro areas with even stronger growth in sparsely populated areas.

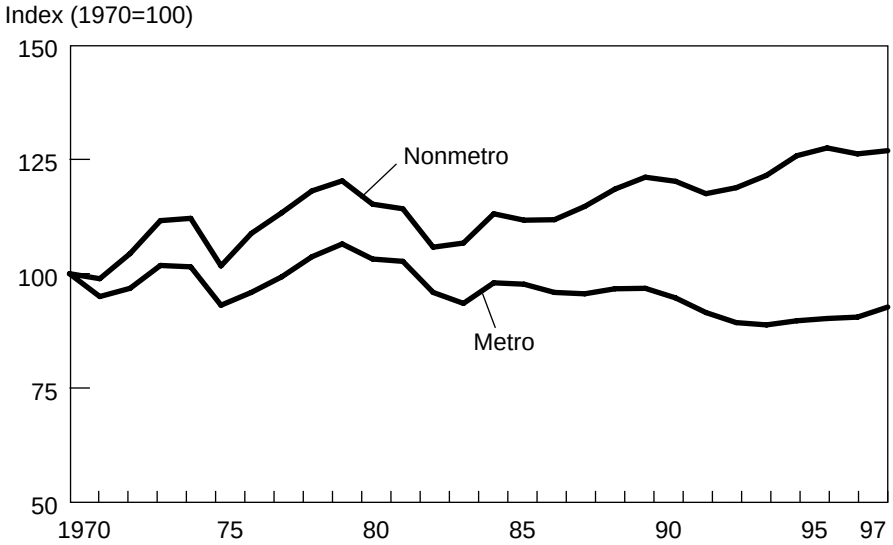
The 1980's and Beyond

By the end of the 1970's, four decades of industrial deconcentration had significantly altered the American economic landscape. In 1947, the "older" (census definition as of 1963) metro areas of the Northeast and Midwest had 62.6 percent of U.S. manufacturing employment, but in 1977, that figure had fallen to 45.5 percent. On the other hand, the share of continuously nonmetro and new metro areas (counties that had grown from nonmetro to metro status) in the South, Midwest, and West rose from 15.4 percent to 22.4 percent. "Older" metro areas in the West and South also increased their percentage share.

Employment in rural manufacturing peaked in 1974 during the recession period of 1973-75. Full recovery was not attained until the end of the decade. In 1979, manufacturing employed 21.4 million nationwide, of which 6 million worked in nonmetro areas. In 1980-82, during the deepest recessionary period since World War II, manufacturing employment had declined to 18.4 million and 4.9 million,

Figure 3-1.

Manufacturing employment, metro and nonmetro counties, 1970-97—After falling in the 1980's, nonmetro manufacturing employment has turned around in the 1990's



Note: Based on 1983 metro-nonmetro definition.
Source: ERS analysis of Bureau of Economic Analysis, Regional Economic Information System data.

respectively. Rural areas recovered more slowly than the rest of the country so that, by the end of 1987, when national manufacturing employment had risen to 19.3 million, the nonmetro workforce had barely increased to 5 million. In other words, nearly half of the losses in manufacturing employment since 1979 had come from nonmetro areas. Remote and sparsely populated rural counties were hardest hit, reversing the encouraging trend of the 1960's. These figures, combined with the fact that nonmetro areas had an unemployment rate 1.5 percentage points above the national average throughout the 1980's, provoked speculation about a decoupling of urban and rural economies.

By the early 1990's, rural manufacturing had recovered to its 1979 level amidst an ongoing pattern of industrial dispersal. Nonmetro populations also began to grow again. In 1992, the older metro areas of the Northeast and Midwest had only 36.2 percent of manufacturing employment, while continuously nonmetro and new metro areas of the Midwest, South, and West had 24.8 percent. Remote and sparsely populated rural areas benefited the most from the recovery. In 1997, the South had the largest number of nonmetro manufacturing jobs (table 3-1). "Metal products, equipment, and instruments" and "Textiles and apparel" accounted for 53.5 percent of the nonmetro manufacturing jobs in the South.

Table 3-1.

Nonmetro manufacturing employment by sector and region, 1996

Item	*Nonmetro region*[1] *Northeast*	*Midwest*	*South*	*West*
	1,000 jobs			
Employment:				
Total[2]	2,980	9,568	12,970	5,101
Manufacturing[2]	450	1,634	2,371	412
	Percent			
Manufacturing's share of total employment	15.1	17.1	18.3	8.1
Manufacturing sector shares:[3]				
Food and tobacco	6.2	13.0	11.7	18.3
Textiles and apparel	9.3	3.4	24.9	2.4
Lumber, furniture, paper, wood products	18.7	12.7	19.1	32.8
Chemicals, petroleum, rubber, plastics	8.8	10.1	10.0	5.8
Metal products, equipment, instruments	42.6	48.6	28.6	25.5
Other manufacturing	14.3	12.2	7.5	15.2
Total	100.0	100.0	100.0	100.0

[1]Census regions.
[2]Source: ERS analysis of Bureau of Economic Analysis, Regional Economic Information System.
[3]Source: ERS analysis of Claritas, Inc., Enhanced Country Business Patterns 1996 data. Sector classifications are groupings of two-digit Standard Industrial Classification (SIC) categories.

Manufacturing now accounts for a larger share of jobs in nonmetro areas than in metro areas (table 3-2). In 1996, USDA's Economic Research Service (ERS) completed the most extensive national survey of rural manufacturing ever. The ERS survey uncovered an apparent trend not picked up in analyses of aggregate employment data. The 3,909 establishments surveyed in metro and nonmetro locations were surprisingly similar in their adoption of new technologies, worker skill requirements, use of government programs and technical assistance. An increasing number of rural manufacturers now rely on various computerized and electronic systems to control virtually all phases of their production, marketing, and distribution. Strictly speaking, these plants are not "high-tech" because they do not employ teams of innovation-driven engineers and research scientists, but they are "new tech" in the way their adoption of technology requires more highly trained and skilled workers than in the past. Rural enterprises are not in the vanguard of technological change, but their use of technology can provide their employees with better lives.

Table 3-2.

Manufacturing-to-population ratio by metro and nonmetro region, 1920-97

	1920	*1970*	*1997*
	Jobs per 100 persons		
Metro counties	11.7	10.6	7.0
Northeast	14.9	12.3	6.7
Midwest	12.7	13.3	9.6
South	6.3	8.2	6.1
West	7.3	7.9	6.3
Nonmetro counties	3.5	8.3	8.3
Northeast	9.4	11.1	7.8
Midwest	3.0	7.6	9.4
South	2.6	8.9	8.9
West	3.8	5.1	4.4

Note: Table shows ratio of manufacturing jobs to total population. The 1993 definition of metro counties was used for each year.
Source: ERS analysis of data from Censuses of Population and Agriculture, 1920, and Bureau of Economic Analysis, Regional Economic Information System.

Rural Housing

Rural and urban areas face broadly similar housing policy issues, with similar budget priorities and many of the same housing programs. In addition, social and economic similarities between urban and rural areas outnumber dissimilarities when it comes to housing policy. Also universal is the challenge of increasing the stock of affordable housing, while promoting greater tenant choice in where to live via portable housing vouchers.

At the beginning of 2000, homeownership was at a record high; over three-fourths of nonmetro and two-thirds of all U.S. households owned their homes. While the rate of homeownership is lowest for low-income and minority populations, it is growing and at a more rapid rate than for other households. In both rural and urban America, low-income and minority households are those most dependent on rental housing, and their share of all renters continues to grow. Thus, most explicit housing assistance expenditures (as opposed to tax expenditures associated with housing tax breaks) are targeted at rental housing, despite the Federal goal of promoting home-ownership. Only USDA operates a major program that promotes home purchase by low- and very low-income households.

Growth in Federally Financed Homes in 2000

One of the more significant areas of growth in rural economic development program activity in 2000 is in USDA's Rural Housing Service's (RHS) programs, and much of this growth involves the programs that benefit low- and very low-income households through subsidized direct loans and rental assistance. All references to funding levels refer to an October 1-September 30 fiscal year.

Section 502 is USDA's main housing loan program, providing over $1 billion in direct loans and over $3 billion in loan guarantees for the purchase of single-family homes (table 3-3). As might be expected, this program is targeted to low-income rural areas. In 1998, direct loans per capita were $9.75 in nonmetro areas and $2.47 in metro areas. Although the program benefits rural areas nationwide, the highest benefits, in per capita dollars, were in low-income areas, such as in the South, and in rapidly growing areas, such as in the West.

The section 502 guaranteed loan program requires less Federal money but finances more homes because loans are made at market interest rates and receive no interest subsidy. In 2000, this program is expected to guarantee $3.2 billion in single-family home loans, up 7 percent from 1999. In 1998, the per capita benefits from this program were also highest in rural areas (nonmetro $24.01, metro $7.71), however the distribution of program benefits shows a different regional pattern, with benefits generally higher in the North than in the South.

The main U.S. Housing and Urban Development (HUD) homeownership program is the Federal Housing Administration (FHA) single-family home mortgage program (financed by the Mutual Mortgage Insurance Fund). FHA projects that new loan guarantees in 2000 will increase 8 percent over 1999, totaling about $122 billion. FHA was particularly active in rapidly growing nonmetro areas, many of them retirement or commuting counties or in the West. Still, nonmetro areas received less than 7 percent of the loan insurance provided by FHA in 1998.

In contrast, the Department of Veterans Affairs (VA) guaranteed home loan program is projected to reduce its disbursements of new loan guarantees by 22 percent, down to $32 billion in 2000. In 1998, about 10 percent of this program's activity was in nonmetro areas. Nonmetro VA loan levels were highest, per capita, in growing areas such as the West and in retirement counties. And like the HUD programs, the VA program particularly benefited the more urbanized nonmetro areas in 1998.

Table 3-3.

Federal funding for selected housing programs, by fiscal year

Program	*1999*	*2000*	*Change*	*Rural area most affected by the program*[1]
USDA/RHS: Single family (sec. 502) Direct loans	0.97	1.16	20	South, West, and poverty counties[2]
Guarantees	2.98	3.20	7	Outside the South[2]
Multifamily (sec. 515)	0.11	0.11	0	Northeast, South, totally rural, adjacent and manufacturing counties
Rental assistance	0.58	0.64	10	West, South, totally rural, farming, and poverty counties
VA: Loan guarantees	43.09	32.12	-22	West, urbanized and retirement counties
HUD: FHA single-family mortgage insurance	133.17	122.34	8	West, retirement, and commuting counties
Section 8 public housing	19.44	19.96	3	Northeast, urbanized, government, and services counties
Home Investment (HOME)	1.60	1.60	0	Northeast, West, and government counties
State/small cities community development block grants	1.27	1.27	0	Small towns and rural areas in farm and poverty States

Note: HUD=U.S. Housing and Urban Development: USDA=U.S. Department of Agriculture; RHS=Rural Housing Service; VA=U.S. Department of Veterans Affairs; FHA=Federal Housing Administration.
[1]County types are defined in the appendix.
[2]Information on loan distribution for the 502 program was obtained directly from RHS.
Source: *Budget of the United States, Fiscal Year 2001*

Multifamily Housing and Rental Assistance

USDA has two mortgage financing programs for rural multifamily rental housing. The section 515 direct loan program is the more significant, providing direct subsidized interest rate loans for the construction, purchase, rehabilitation, or repair of low-income rental housing. In 2000, this program will provide about $114 million in loans, the same as 1999. The housing produced by this program is distributed nationally, although the Northeast, South, and totally rural areas such as colonias and Indian reservations particularly benefited in 1998. The section 538 guaranteed rental housing loan program is expected to guarantee about $100 million of market-rate loans in 2000, 25 percent more than in 1999.

Funding for the RHS's smaller Farm Labor Housing loan and grant programs is higher in 2000. Loans are expected to rise from $20 million to $25 million in 2000, and grants from $13 million to $14 million. A supplemental disaster appropriation adds $5 million to loans and $3 million to grants in 2000. These programs, which help to provide housing for migrant and year-round farmworkers, also benefited from emergency assistance in 2000.

Rural rental assistance payments account for $640 million, or about two-thirds of RHS's total program budget in 2000. Under this program, tenants pay 30 percent of their income for rent, and the rural rental assistance payments make up the difference between the tenant's contribution and the rent. Funding for this program, which rose 10 percent from 1999, allows RHS to renew existing contracts with about $8 million left to support repair and rehabilitation of Farm Labor Housing projects as well as some new construction of Farm Labor Housing units. In 1998, payments from this program were greatest in the West and South, and in totally rural, farming, and poverty counties.

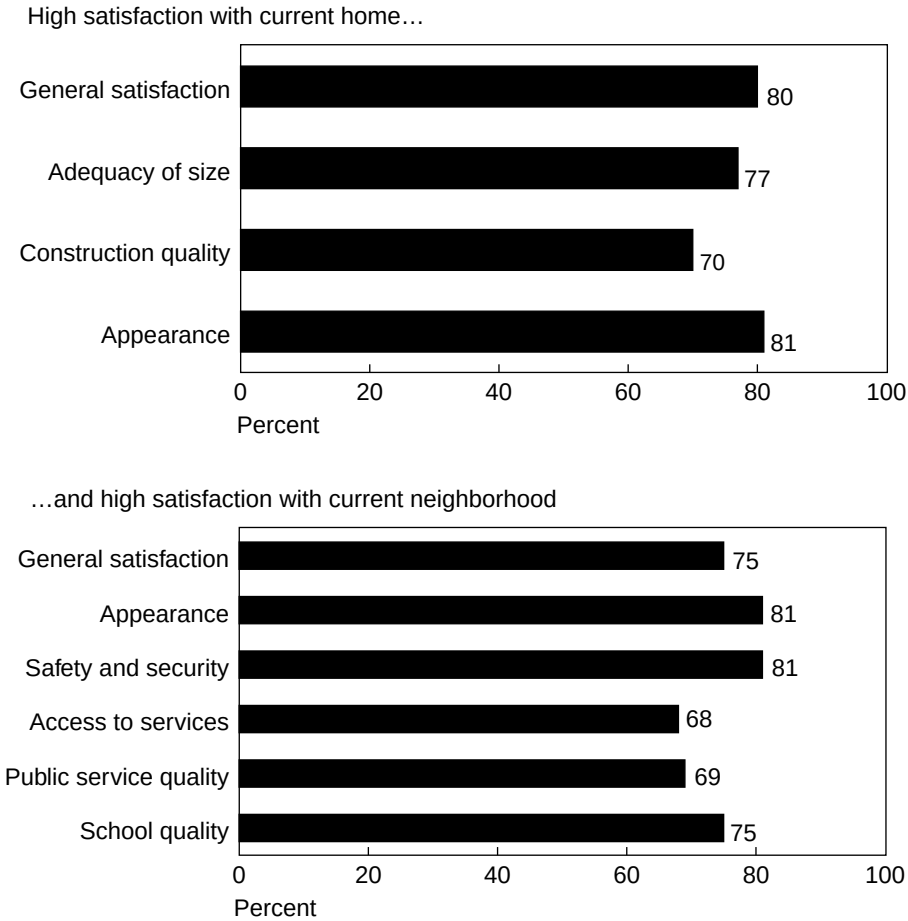
HUD provides considerable rental housing assistance in both urban and rural areas. Most HUD low-income rental assistance comes through its section 8 program, which is expected to provide about $16 billion in 2000. HUD will spend another $3 billion in outlays on its public housing capital fund, $2.55 billion on its operating fund, $610 million for its section 236 rental assistance program, and smaller amounts for other related programs. The total of about $20 billion for subsidized housing is up 3 percent from 1999. Programs for the disabled and elderly have anticipated 2000 outlays of $784 million, up 3 percent. HUD's section 8 low-income housing assistance provides funds nationwide. Nonmetro areas received about 12 percent of the funding in1998, particularly in the Northeast and urbanized nonmetro areas. HUD has various other programs that directly assist housing in rural and urban areas.

USDA's Single-Family Housing Program Has Been Popular With Borrowers

The first comprehensive survey of recent homebuyers using USDA's section 502 Single Family Housing Program (*Meeting the Housing Needs of Rural Residents: Results of the 1998 Survey of USDA's Single Family Direct Loan Housing Program*, RDRR-91) provided fresh insights. To participate in this program, households must have had low or very low incomes, been unable to obtain a home mortgage from another source, and not own an adequate home. Borrowers were typically first-time homeowners, under age 40, and had children. One-third of the household heads were single parents, 13 percent were Black, and 12 percent were Hispanic. One-fourth had previously received government rental assistance. Most were satisfied with their home, neighborhood, and the section 502 program (figure 3-2).

Figure 3-2.

Participant satisfaction among recent single-family home borrowers dealing with USDA's loan program



Note: High general satisfaction is based on scores of 8, 9, or 10 on a scale of 1-10, with 1 the worst and 10 the best. High satisfaction on the other neighborhood characteristics is based on ratings of good or very good on a five-group scale from very poor to very good.
Source: 1998 Survey of USDA's Single-Family Direct Loan Housing Program, ERS.

4. Highlights From Current Agricultural Issues: Risk, Organic Crops, and Biotechnology Crops

Farmers Sharpen Tools To Confront Business Risks

As in any industry, risk is a part of the business of agriculture. Farmers face an ever-changing landscape of weather, prices, yields, government policies, global competition, and other factors that affect their financial returns and overall welfare. With the shift toward less countercyclical government intervention following passage of the 1996 Farm Act came recognition of the need for a more sophisticated understanding of farm risk and risk management. Risk management strategies can help mitigate the effects of swings in supply, demand, and prices, so that farm business returns can be closer to expectations.

Risk management is, in general, finding the combination of activities most preferred by an individual farmer to achieve the desired level of return and an acceptable level of risk. Risk management strategies reduce risk within the farming operation (e.g., diversification or vertical integration), transfer a share of risk outside the farm (e.g., production contracting or hedging), or build the farm's capacity to bear risk (e.g., maintaining cash reserves or evening out cash-flow). Using risk management does not necessarily avoid risk altogether, but instead balances risk and return consistent with a farm operator's capacity to withstand a wide range of outcomes.

Although farms vary widely with respect to enterprise mix, financial situation, and other business and household characteristics, many sources of risk are common to all farmers, ranging from price and yield risk to personal injury or poor health. But even when facing the same risks, farms vary in their ability to weather shocks.

What do farmers themselves say about the risks they face? USDA's 1996 Agricultural Resource Management Study (ARMS), conducted in the spring of 1997 (about a year after passage of the 1996 Farm Act), asked producers how concerned they were that certain types of risk could affect the viability of their farms. Three risk factors of greatest concern to farm operators were uncertainty regarding commodity prices, declines in crop yields or livestock production, and changes in government law and regulation. ARMS data show that producers specializing in wheat, corn, soybeans, tobacco, and cotton were generally more concerned about the threat of low yield and/or low price than any other risk. Producers of other field crops, nursery and greenhouse crops, and poultry expressed greater concern about changes in laws and

regulations than about other risks. Livestock producers also expressed concern about their ability to adopt new technology, perhaps because failure to invest in new production techniques could put them at a cost disadvantage to other producers.

Price and Yield Swings Pose Primary Risk

The possibility of lower-than-expected yield is one of the risks identified in the ARMS as a major concern to farmers, particularly those planting major field crops. Yield variability for a given crop varies by geographic area and depends on factors such as soil type and quality, climate, and use of irrigation. Risks associated with high yield variability and the resulting income variability can be mitigated by programs such as Federal crop insurance, as well as by diversification and other tools to help spread farm-level risk.

Like yield variability, price variability differs among commodities. In 1987-96, crop prices showed relatively more variability than livestock prices, largely because crop supplies are affected by swings in crop yields while livestock supplies have been more stable—although recent variability in the hog market illustrates that some exceptions exist. Crops that exhibited the highest price variability (deviations exceeding 20 percent above or below the mean) include dry edible beans, pears, lettuce, apples, rice, grapefruit, and grain sorghum (figure 4-1). The variability of beef cattle, milk, and turkey prices was less than 10 percent, perhaps reflecting lower production risk and, in the case of milk, the existence of a Federal dairy program.

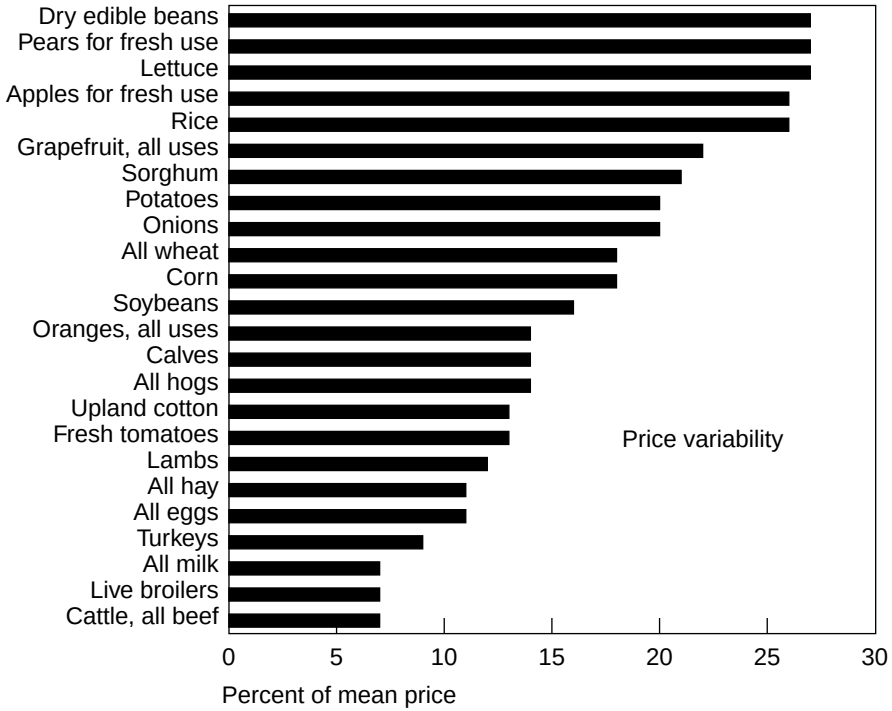
Price variability can change across time depending on year-to-year differences in crop prospects, changes in government program provisions, and shifts in world supply and demand conditions. For example, corn price variability was quite high during the 1920's and 1930's, due largely to the collapse of grain prices after World War I and very low yields in 1934 and 1936 (figure 4-2). Corn prices stabilized during the 1950's and 1960's, a period of high government support, stable yields, and consistent demand. Sizable purchases of corn by Russia early in the 1970's affected variability during that decade, while low U.S. yields in 1983 and 1988 contributed to increased corn price variability in the 1980's. Variability returned to near long-term average levels in 1990-96.

No Single Approach Suits All Farms

Because farmers face different degrees of variability and differ in their attitudes toward risk, there can be no single approach to suit all farms. Overall, farmers appear to be relying increasingly on forward contracting and other risk management tools to reduce their farm-level risks, due in part to the recent trend toward reduced government intervention in farming. Even so, the 1996 ARMS indicates that keeping cash (or liquid assets) on hand for handling emergencies and for taking advantage of good business opportunities was the number-one strategy used by farms of every size, every commodity speciality, and in every region.

Figure 4-1.

Price variability is generally higher for crops than for livestock



Price variability measures deviation above and below the mean price for the period 1987-96.
Economic Research Service, USDA

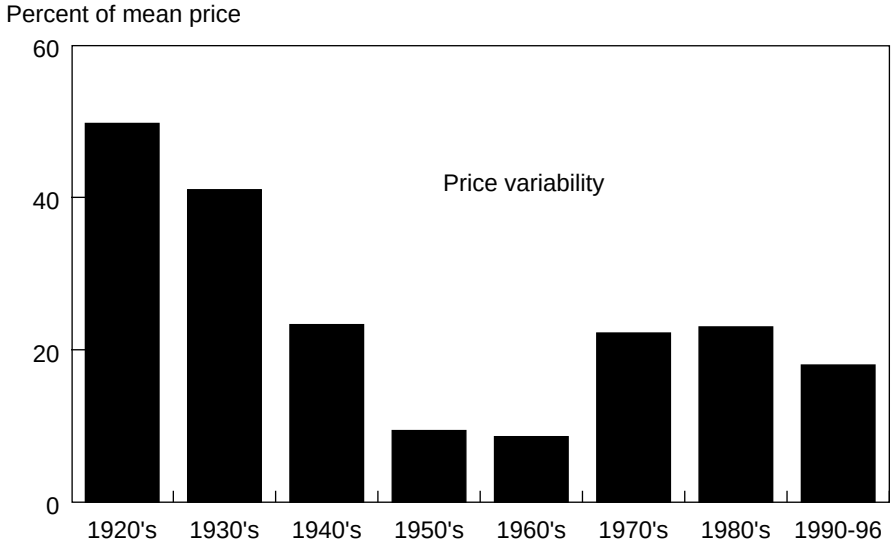
Farm size apparently plays a role in choice of risk management strategy. The ARMS found that operators with annual gross sales of $250,000 or more were more likely than smaller operators to use hedging, forward contracting, and virtually all other types of risk management strategies. In contrast, operators with sales under $50,000 were less likely to use forward contracting or hedging, and fewer reported using enterprise diversification to reduce risk.

The ARMS data also indicated that producers in the Corn Belt and Northern Plains were somewhat more likely to use risk management strategies than those in the Southern Plains, Northeast, and Appalachia. About 40 percent of producers in the Corn Belt and Northern Plains regions used forward contracting in 1996 and about 25 percent used hedging in futures or options.

A period of financial stress may induce an operator to shift risk management strategies. The 1996 ARMS questioned farmers about production, marketing, and financial activities they might undertake if faced with financial difficulty (table 4-1). A large proportion of producers with sales of $50,000 or more indicated they would adjust costs, improve marketing skills, restructure debt, and spend more time on management decisions.

Figure 4-2.

Corn price variability in the 1990's was near the level of the 1970's and 1980's



Price variability measures deviation above and below the mean price for the period 1987-96.
Economic Research Service, USDA

Producers with sales under $50,000 (who generally receive a substantial share of household income from off-farm sources) also responded that they would adjust costs when faced with financial difficulties. But small-farm operators would be relatively more likely than larger operators to sell farm assets or scale back operations. Further, small-scale producers were much less likely to spend more time on management or on improving their marketing skills.

When individual efforts to deal with financial stress fail and large numbers of farms face significant financial loss, the Federal Government has often stepped in with assistance to agriculture in the form of direct payments, loans, and other types of aid. In 1999, for example, the Agricultural Appropriations Act authorized emergency financial assistance to farmers who suffered losses due to natural disasters. Under this legislation, farmers were eligible for payments either for losses to their 1998 crop, or for losses in any 3 or more crop years between 1994-98. Farmers with crop insurance received slightly higher payments than those without, and those receiving emergency benefits were required to buy crop insurance (if available) in 1999 and 2000. In addition, the legislation provides an incentive for purchasing higher levels of crop insurance coverage in 1999 by earmarking an estimated $400 million to subsidize farmers' insurance premiums. The 2000 agricultural appropriations provided crop loss assistance and $400 million to continue through 2000 the incentives for purchasing high levels of crop insurance.

Table 4-1.

What steps would farmers take to manage financial difficulties?

	*Small farms **		*Large farms **		
	Less than $50,000	*$50,000–$249,999*	*$250,000–$499,999*	*$500,000+ or more*	*Total U.S.*
	Percent of farms				
Management/financial strategy:					
Restructure debt	24	48	46	49	30
Sell assets to reduce debt	31	28	31	29	30
Use more custom services	7	18	17	20	10
Scale back farm business	26	23	20	24	25
Diversify into other farm enterprises	12	23	21	21	15
Spend more time on management	19	38	47	45	24
Use advisory services	19	22	28	26	20
Adjust operating costs	34	54	59	57	40
Improve marketing skills	30	47	53	53	35

* Determined by level of annual gross sales.
Source: 1996 Agricultural Resource Management Study, USDA.
Economic Research Service, USDA

A Selection of Strategies for Mitigating Risk

Farmers have many options in managing the types of risks they face. Most producers use a combination of strategies and tools, because they address different elements of risk or the same risk in a different way. Some of the more widely used strategies are:

- *Enterprise diversification*
- *Vertical integration*
- *Production contracts*
- *Marketing contracts*
- *Futures contracts*
- *Futures options contracts*
- *Liquidity*
- *Crop yield insurance*
- *Crop revenue insurance*
- *Household off-farm employment*

Organic Agriculture Gains Ground in the United States

Organic farming became one of the fastest growing segments of U.S. agriculture during the 1990's, and producers, exporters, and retailers are still struggling to meet consumer demand for a wide range of organic products. Certified organic cropland more than doubled in the United States during the 1990's, and two organic livestock sectors—eggs and dairy—grew even faster.

Organic produce, milk, eggs, pasta, frozen dinners, and pharmaceuticals are among the many items that consumers count on finding in natural foods supermarkets and are beginning to expect in mainstream supermarkets as well. The International Trade Centre UNCTAD/WTO (ITC) estimates that combined retail sales of organic food and beverages in major world markets for these goods—primarily the United States, Japan, Denmark, France, Germany, Italy, the Netherlands, Switzerland, and the United Kingdom—amounted to $11 billion in 1997 and $13-13.5 billion in 1998. Organic food sales in 1997 accounted for 1 to 2 percent of total food sales in most of these countries, including the United States, and medium-term growth rate forecasts range from 5 to 10 percent annually for Germany, to 20-30 percent for the United States and 30-40 percent for Denmark, according to the ITC.

U.S. producers are turning to organic farming systems as a potential way to lower input costs, decrease reliance on nonrenewable resources, capture high-value markets and premium prices, and boost farm income. Farmers in 49 States dedicated 1,346,558 acres of farmland to organic production systems and used third-party organic certification services in 1997 (table 4-2). Two-thirds of this farmland was used for growing crops, with Idaho, California, North Dakota, Montana, Minnesota, Wisconsin, Iowa, and Florida as the top producers (figure 4-3). Nearly half the States were raising certified organic livestock. Colorado and Alaska had the largest amount of organic pasture and rangeland.

U.S. governmental efforts to facilitate organic production have focused primarily on developing national certification standards to assure consumers that these commodities meet a consistent standard and to streamline interstate commerce in organically grown agricultural products. It was private organizations, mostly nonprofits, which began developing certification standards in the early 1970's as a way to support organic farming and thwart consumer fraud. Some States began offering organic certification services in the late 1980's for similar reasons. On the Federal level, Congress passed the Organic Foods Production Act of 1990 to establish national standards for organically produced commodities. This legislation requires that all except the smallest organic growers must be certified by a State or private agency accredited under national standards currently being finalized by USDA.

While adoption of organic farming systems showed strong gains between 1992 and 1997 and the adoption rate continues high, the overall adoption level is still small—only two-tenths of 1 percent of all U.S. cropland was certified organic in 1997. Obstacles to adoption include large managerial costs and risks of shifting to a new way of farming, limited awareness of organic farming systems, lack of market-

Table 4-2.

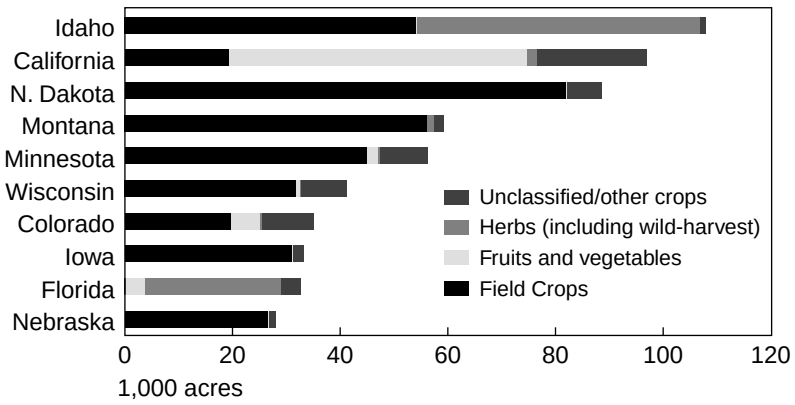
U.S. organic agriculture has expanded

U.S. certified organic	1992	1993	1994	1995	1996	1997	Change 1992-97	Change 1995-97
			1,000 acres				Percent	
Farmland								
Total	935	956	992	918	—	1,347	44	47
Pasture & rangeland	532	491	435	279	—	496	-7	78
Cropland	403	465	557	639	—	850	111	33
			Number				Percent	
Animals								
Beef cows	6,796	9,222	3,300	—	—	4,429	-35	—
Milk cows	2,265	2,846	6,100	—	—	12,897	469	—
Hogs and pigs	1,365	1,499	2,100	—	—	482	-65	—
Sheep and lambs	1,221	1,186	1,600	—	—	705	-42	—
Layer hens	43,981	20,625	47,700	—	—	537,826	1123	—
Broilers	17,382	26,331	110,500	—	—	38,285	120	—
Unclassified/other	—	—	—	—	—	226,105	—	—
			Number				Percent	
Growers (plants & animals)	3,587	3,536	4,060	4,856	—	5,021	40	3

Numbers may not add due to rounding.
Sources: 1992-94, Agricultural Marketing Service, USDA; 1995 (including revisions of 1992-94 farmland), Agrisystems International; 1997, Economic Research Service, USDA.
Economic Research Service, USDA

Figure 4.3

Organic crop acreage by leading States



Certified organic cropland, top 10 States; U.S. total equals 850,177 acres. 1997 data.
Economic Research Service, USDA

ing and technical infrastructure, inability to capture marketing economies, insufficient numbers of processors and distributors, and limited access to capital. State and private certifier fees for inspections, pesticide residue testing, and other services represent an added production expense for organic producers.

Several States in the United States have begun providing financial support for conversion to organic farming systems as a way to capture environmental benefits of these systems. In Iowa, organic crop production has been an approved State conservation practice since 1997 and is eligible for cost-share support from USDA's Environmental Quality Incentive Program. In Minnesota, the Department of Agriculture implemented an Organic Cost Share Program in 1999, which is designed explicitly to reimburse Minnesota producers for up to two-thirds of the cost for organic inspection and certification. Also, several of the State-run certification programs in the United States charge nominal or very low fees to encourage organic production.

In addition to government efforts in developing national certification standards, and in expediting interstate commerce in organic products, USDA has been facilitating and promoting organic exports for several years. A pilot program to offer organic crop insurance is also under development. Several other USDA research programs have focused on organic and sustainable farming systems since the 1990's, and more such programs are beginning to take shape.

Genetically Engineered Crops: Has Adoption Reduced Pesticide Use?

Development of new crop varieties through genetic engineering also offers a broad spectrum of potential benefits to farmers and consumers, including reduced production costs, enhanced yields, and enhanced nutritional or other characteristics that add to value. Among the first developments on the market were changes in the genetic makeup of common field crops that made them tolerant to commonly used glyphosate herbicides, or that incorporated genes of the natural pesticide Bacillus thuringiensis (Bt), so that plants produce a protein toxic to specific insect pests.

These varieties appealed to producers because they promised to simplify pest management and reduce pesticide use, while helping to control costs, enhance effectiveness of pesticides (both herbicides and insecticides), and increase flexibility in field operations. Evidence of that appeal lies in the rapid adoption of genetically engineered (GE) crops, beginning with very little U.S. acreage in 1996 and reaching 41 percent of major crop acreage in 2000, down from 49 percent in 1999.

Data exist on pesticide use by producers who did and did not adopt genetically engineered crops. But characteristics that affect the adoption decision may influence pesticide use decisions as well, making simple comparisons suspect. In addition, the changing mix of pesticides that accompanies adoption complicates the analysis, because characteristics like toxicity and persistence in the environment vary across pesticides used.

Table 4-3.

Soybeans: Farmer reported genetically modified varieties, by State and United States, percent of all soybean planted acres, 2000

State	*Herbicide Resistant Only*	*All GM Varieties*
	Percent	*Percent*
AR	43	43
IL	44	44
IN	63	63
IA	59	59
KS	66	66
MI	50	50
MN	46	46
MS	48	48
MO	62	62
NE	72	72
ND	22	22
OH	48	48
SD	68	68
WI	51	51
Other States[1]	54	54
U.S.	54	54

[1]Other States includes all other States in the soybean estimating program.

Table 4-4.

Corn: Farmer reported genetically modified varieties, by State and United States, percent of all corn planted acres, 2000

State	*Insect Resistant (Bt) Only*	*Herbicide Resistant Only*	*Stacked Gene Varieties*	*All GM Varieties*
	Percent	*Percent*	*Percent*	*Percent*
IL	13	3	1	17
IN	7	4	*	11
IA	23	5	2	30
KS	25	7	1	33
MI	8	4	*	12
MN	28	7	2	37
MO	20	6	2	28
NE	24	8	2	34
OH	6	3	*	9
SD	35	11	2	48
WI	13	4	1	18
Other States[1]	10	6	1	17
U.S.	18	6	1	25

*Data rounds to less than 0.5 percent.
[1]Other States includes all other States in the corn estimating program.

Table 4-5.

Upland Cotton: Farmer reported genetically modified varieties, by State and United States, percent of upland cotton planted acres, 2000

State	*Insect Resistant (Bt) Only*	*Herbicide Resistant Only*	*Stacked Gene Varieties*	*All GM Varieties*
	Percent	*Percent*	*Percent*	*Percent*
AR	33	23	14	70
CA	3	17	4	24
GA	18	32	32	82
LA	37	13	30	80
MS	29	1336	78	
NC	11	29	36	76
TX	7	33	6	46
Other States[1]	17	21	36	74
U.S.	15	26	20	61

[1]Other States includes all other States in the cotton estimating program.

Three statistical methods can offer several perspectives on estimating changes in pesticide use associated with adoption of GE crops:

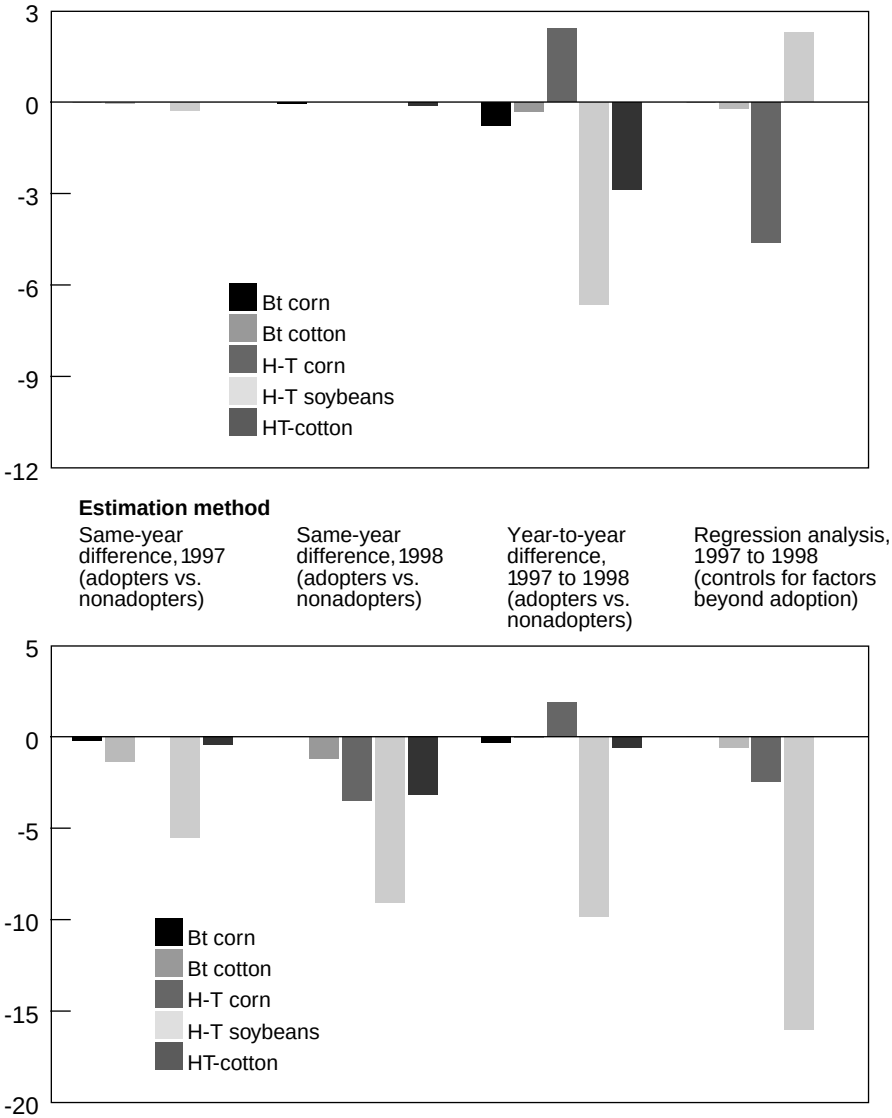
- Same-year differences. Compares mean pesticide use between adopters and nonadopters within 1997 and within 1998 for a given technology, crop, and region, and applies that average to total acres producing each crop in each year.
- Year-to-year differences. Estimates aggregate differences in pesticide use between 1997 and 1998, based on increased adoption of GE crops between those 2 years and average total pesticide use by both adopters and non-adopters.
- Regression analysis. Estimates differences in pesticide use between 1997 and 1998, with an econometric model controlling for factors other than GE crop adoption that may affect pesticide use.

Same-year differences between average pesticide use of adopters and non-adopters revealed that adopters of GE corn, soybeans, and cotton combined used 7.6 million fewer acre-treatments (2.5 percent) of pesticides than nonadopters in 1997. (An acre-treatment is the number of acres treated multiplied by the number of pesticide treatments.) The difference rose to nearly 17 million fewer acre-treatments (4.4 percent) by adopters in 1998 (figure 4-4). In terms of active ingredients applied, however, adopters used only 331,000 pounds fewer than nonadopters (less than 0.1 percent of total pounds applied) in 1997. The difference narrowed to 153,000 fewer pounds in 1998.

Year-to-year differences in total pesticide use between 1997 and 1998, adjusted for change in acres planted but including both adopters and nonadopters, amounted to 9 million fewer pesticide acre-treatments (a 2.9-percent reduction).

Figure 4-4.

Reduction in pesticide use accompanies adoption of genetically engineered crops



These comparisons do not account for year-to-year changes in weather conditions, pest pressures, and other factors that may affect pesticide use, so it is inappropriate to attribute the results solely to adoption of GE crops. Still, the overall downward trend in pesticide application rates on major U.S. crops from 1996 to 1998 appears to confirm the pesticide-reducing effect of GE crops. For example, as adoption of herbicide-tolerant soybean varieties increased from 7 to 45 percent, the average annual rate of glyphosate application increased from 0.17 pounds per acre in 1996 to 0.43 pounds per acre in 1998, while all other herbicides combined dropped from about 1 pound per acre to 0.57 pounds per acre. That translates into a decline of nearly 10 percent in the overall rate of herbicide use on soybeans during the period.

The regression analysis approach controlled for differences between adopters and nonadopters, allowing estimation of changes in pesticide use associated with increases in GE adoption between 1997 and 1998. The analysis estimated that pesticide reductions related to increased GE adoption between 1997 and 1998 were 19.1 million acre-treatments (6.2 percent of total 1997 treatments), excluding Bt corn. These estimates reflect reductions in other insecticides used on cotton, acetamide herbicides used on corn, other synthetic herbicides used on soybeans, and offsetting increases in glyphosate herbicides used on soybeans

Changing the Mix of Pesticides Used Also Matters

Changes in pesticide acre-treatments resulting from the adoption decision range from -6.8 million acre-treatments to -19 million across the three estimation methods. Reductions in pounds of active ingredients vary more widely, from a net drop of just 0.3 million pounds in 1997 (using the same-year method to compare adopters and nonadopters) to a net 8.2-million-pound decrease (using the year-to-year method to compare changes in total pesticide use between 1997 and 1998).

Assessing the impact of the herbicide-tolerance trait (which enables use of glyphosate herbicides) requires more than simply calculating whether more or less pesticide will be used. Adoption of this technology changes the mix of pesticides used in the cropping system, as well as the amounts used. When pesticide mixes are changing, comparing the total number of acre-treatments or pounds of active ingredients of different pesticide compounds is like adding the proverbial apples and oranges. Measuring pesticide use in pounds of active ingredient implicitly assumes that a pound of any two ingredients has equal impact on human health and/or the environment. However, the more than 350 active ingredients in use in pesticides over the last 40 years vary widely in toxicity per unit of weight and in persistence in the environment. Scaling (weighting) pounds of pesticides applied by measures of their "toxicity/persistence" characteristics can provide an indication or index of pesticide impact or potential risk.

Data indicate that adoption of herbicide-tolerant crops leads to substitution of glyphosate herbicides for previously used herbicides. Based on regression results for soybeans, an estimated 5.4 million pounds of glyphosate is substituted for 7.2 million pounds of other synthetic herbicides, such as imazethapyr, pendimethalin, and trifluralin.

Glyphosate has a half-life in the environment of 47 days, compared with 60-90 days for the herbicides it commonly replaces. The herbicides that glyphosate replaces are 3.4 to 16.8 times more toxic, according to a chronic risk indicator based on the Environmental Protection Agency's reference dose for humans. Thus, the substitution enabled by genetic modifications conferring herbicide tolerance on soybeans results in glyphosate replacing other synthetic herbicides that are at least 3 times as toxic and that persist in the environment nearly twice as long as glyphosate.

5. U.S. Department of Agriculture

USDA is the third-largest civilian Department of the U.S. Government, overseeing a variety of agencies, Government corporations, and other entities that employ more than 100,000 people in all 50 States and 60 countries.

The Department has undergone a historic reorganization to improve coordination among its broad range of programs and agencies. This reorganization, which affected headquarters and field structures, was authorized by the Department of Agriculture Reorganization Act of 1994 (Public Law 103-354), signed into law in October 1994.

The reorganization focused the Department's work under the following seven mission areas, which operate over 200 programs. These areas are described in chapters 6-12 of this Agriculture Fact Book:

- Rural Development;
- Farm and Foreign Agricultural Services;
- Food, Nutrition, and Consumer Services;
- Food Safety;
- Natural Resources and Environment;
- Research, Education, and Economics; and
- Marketing and Regulatory Programs.

Some organizations serve the entire U.S. Department of Agriculture, including all mission areas. Among these are the Assistant Secretary for Administration (Departmental Administration), Office of the Chief Economist, Office of Inspector General, Office of the Chief Financial Officer, Office of the Chief Information Officer, Office of the General Counsel, and Office of Communications, all of which report directly to the Secretary of Agriculture. The Office of Congressional and Intergovernmental Affairs serves as liaison between the Department and Members of Congress and their staffs, State and local governments, and Indian tribes and their members.

Departmental Administration

Departmental Administration (DA) provides leadership and guidance in managing USDA's administrative programs and services effectively, efficiently, and fairly. Departmental Administration staff offices provide support to policy officials of the Department and overall direction and coordination for administrative programs and services. In addition, DA manages the buildings that comprise the headquarters complex, and provides direct customer service to Department-level Washington, DC, employees.

Departmental Administration encompasses the following staff offices: Office of Civil Rights; Office of Human Resources Management; Office of Procurement, Property, and Emergency Preparedness; Office of Operations; Office of Small and Disadvantaged Business Utilization; Office of Ethics; Office of Outreach; Conflict Prevention and Resolution Center; Hazardous Material Management Group; Board of Contract Appeals; Office of the Judicial Officer; and Office of Administrative Law Judges. Visit our web site at *http://www.usda.gov/da*

Office of Civil Rights

The Office of Civil Rights (CR) provides overall leadership, coordination, direction, and oversight for civil rights efforts throughout USDA to assure the fair and equitable treatment of all USDA customers and employees. CR's emphasis is on actions to enforce civil rights laws, executive orders, congressional mandates, and other rules, regulations, and policies relating to race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, protected genetic information, and marital, family, and parental status. CR works in collaboration with the USDA mission areas and their agencies in implementing civil rights laws, regulations, and best practices relating to both employment and program delivery.

In 2000, CR focused on improving civil rights accountability within USDA, increasing diversity among the workforce, and increasing the participation of traditionally underserved customers in USDA programs and activities.

Between January 1998 and March 2000, 94 disciplinary actions were taken against employees for discrimination or misconduct related to civil rights. These actions included 14 removals, 40 suspensions, 2 reductions in grade/pay, and 38 letters of reprimand.

The diversity of the USDA workforce is steadily improving. From 1993 to 1999, African American employment increased from 9.4 to 10.8 percent; Hispanic employment, from 4.1 to 4.8 percent; Asian Americans and Pacific Islanders, from 1.7 to 2.0 percent; American Indians, from 2.4 to 2.6 percent; and women, from 41.1 to 41.9 percent of the workforce.

Farm loans to women and minorities have increased significantly in both percentages and dollars. Through more outreach and targeting of funds, the number of USDA, Farm Service Agency (FSA) direct and guaranteed farm loans made to minorities and women in fiscal year (FY) 1999 increased 25 percent from the number made in FY 1998 and 50 percent from the number made in FY 1997. The dollar amount of loans in FY 1999 totaled $296 million, an increase of 59 percent over the FY 1998 total of $187 million and 81 percent over the FY 1997 amount.

In April 1999, USDA entered into a class action settlement with African-American farmers, providing compensation and closure for those who felt they were wronged by USDA in the past. As of August 2000, total payment of approximately $357 million to 7,143 claimants had been provided by the U.S. Department of Justice.

In July 1999, the Director of Civil Rights appointed a USDA Task Force on Sexual Orientation to update the 1994 Task Force Report and to make recommendations to address issues of sexual orientation. The Task Force submitted its report in May 2000, with 20 recommendations, including additional training relating to sexual orientation discrimination and broadening departmental regulations on civil rights to strengthen the Department's ability to prevent and process complaints on sexual orientation discrimination in both employment and program delivery.

CR continued to work with agencies to develop training modules so that all USDA employees and many cooperators, volunteers, and advisory committee members will receive some civil rights and diversity training each year. This is one of many actions USDA is taking to ensure that all USDA customers and employees are treated fairly and equitably and with dignity and respect.

A strong CR program supports USDA's goals. It ensures that customers have full access to all USDA programs and activities, that program and equal employment opportunity complaints are handled fairly and expeditiously, and that the best supervisory and management practices are followed to ensure a diverse, highly productive, and effective staff of USDA employees.

Office of Human Resources Management

The Office of Human Resources Management (OHRM) provides overall direction, leadership, guidance, analysis, and oversight for USDA human resources management programs and initiatives, establishes human resources management policy, represents USDA in governmentwide initiatives, and provides liaison and coordination with the Office of Personnel Management and other central guidance agencies. OHRM programs include employment, recruitment, merit promotion, compensation, classification, position management, employee and executive development, employee assistance, retirement, benefits, workers and unemployment compensation, employee and labor relations, personnel and classified information security, executive resources, safety and health, and organizational development. OHRM also provides day-to-day operational personnel services for the Office of the Secretary and departmental staff offices.

Progress in Administrative Grievances: As of May 15, 2000, substantial progress has been made toward eliminating the administrative grievance backlog which existed at the beginning of FY 1998. At that time, there was an inventory of 197 cases (some of which were nearly 4 years old), and 177 additional cases were received, resulting in a total inventory of 374 cases. A total of 302 cases have been closed, leaving a current inventory of 72 grievances requiring adjudication.

Hispanic Leadership Summit: On Thursday, May 4, 2000, USDA hosted its first-ever Hispanic Leadership Summit with leaders of 15 of the largest Hispanic organizations. Secretary Glickman spoke to a standing-room-only audience, including his Subcabinet, agency administrators, and human resources directors. He laid out the Department's progress to date in building a workforce that looks like America, pledged further improvement, and asked for assistance in this area. During the day's lively discussions, the participants presented many promising ideas to increase hiring of Hispanic college students and executives and to improve representation of Hispanics in the USDA workforce.

Assessment of USDA Workforce Planning: OHRM commissioned the National Academy of Public Administration, Center for Human Resources Management (CHRM), to assist with an evaluation of the USDA workforce planning process. An overall assessment of the current state of workforce planning in USDA mission areas identified issues and opportunities for improvement, strategies to develop a uniform approach for USDA, and ways to improve the current process. Workforce planning assesses employment needs of the future and targets recruitment to meet the specific needs.

USDA Work/Life Fair: OHRM sponsored the first Headquarters USDA Work/Life Fair on April 11, 2000. The purpose of the fair was to provide information to USDA employees in the Washington, DC, metropolitan area on balancing work and life issues. There were a total of 25 vendors representing issues related to children, elder care, telework, mass transportation, aging, health, retirement, and social security.

The Leadership Challenge: On March 30, 2000, over 100 executives and human resources professionals participated in a special, on-site presentation by a senior researcher from the Corporate Leadership Council (CLC). This presentation was the first of four on-site presentations to be conducted by CLC. "The Leadership Challenge" topic covered the best practices of companies like General Electric and Mobil as they identify future leaders, accelerate their development, recruit high-potential executives, and retain high-performance executives. The session highlighted the value of integrating leadership development with long-term organizational strategies.

Welfare to Work (W2W): USDA has made 648 W2W hires since the program began in 1998. This is 173 percent of the total USDA 4-year commitment to hire 375 welfare recipients by the end of FY 2000.

Office of Procurement, Property, and Emergency Preparedness

The Office of Procurement, Property, and Emergency Preparedness (OPPEP) provides leadership and policy guidance concerning procurement, property management, energy conservation, disaster management, and coordination of emergency programs. OPPEP also promotes and establishes USDA policy for alternative fuel vehicles and the purchase of biobased, environmentally preferable, and recycled products.

OPPEP is working to simplify and reduce the cost of procurement, and to improve access to information about procurement and property management policy for businesses and other members of the public. The cost of procurement has been reduced by expanding the use of commercial credit cards (purchase cards) and the Purchase Card Management System to make small purchases. Over 19,000 purchase cards have been issued to qualified holders throughout USDA. OPPEP also introduced a Fleet Card Program so that cardholders may purchase fuel and service for government vehicles. Over 42,000 fleet cards have been issued. OPPEP posts USDA procurement and property management policy and procedures on the Departmental Administration web site (*http://www.usda.gov/da.html*). Businesses interested in selling to USDA can view "Doing Business with USDA" at the web site. OPPEP also posts information about disaster relief at this web site.

Table 5-1.

Number of USDA employees, 1948-2000

Year	Number of USDA employees	Year	Number of USDA employees[1]
1948	60,815	1975	103,779
1949	63,063	1976	109,276
1950	67,560	1977	113,085
1951	66,150	1978	118,563
1952	62,825	1979	122,809
1953	62,492	1980	125,185
1954	63,309	1981	117,440
1955	64,191	1982	111,853
1956	69,423	1983	109,773
1957	74,215	1984	108,598
1958	77,264	1985	106,665
1959	79,998	1986	102,997
1960	81,585	1987	102,579
1961	85,238	1988	106,552
1962	89,168	1989	109,567
1963	94,527	1990	110,754
1964	94,781	1991	110,357
1965	94,548	1992	113,405
1966	98,688	1993	112,458
1967	102,175	1994	109,830
1968	105,628	1995	103,848
1969	101,848	1996	100,710
1970	100,860	1997	98,457
1971	102,698	1998	96,410
1972	104,540	1999	95,491
1973	104,104	2000 (projected)	98,155
1974	101,430		

[1]Full-time equivalent (FTE). For example, two half-time employees would count as one FTE.

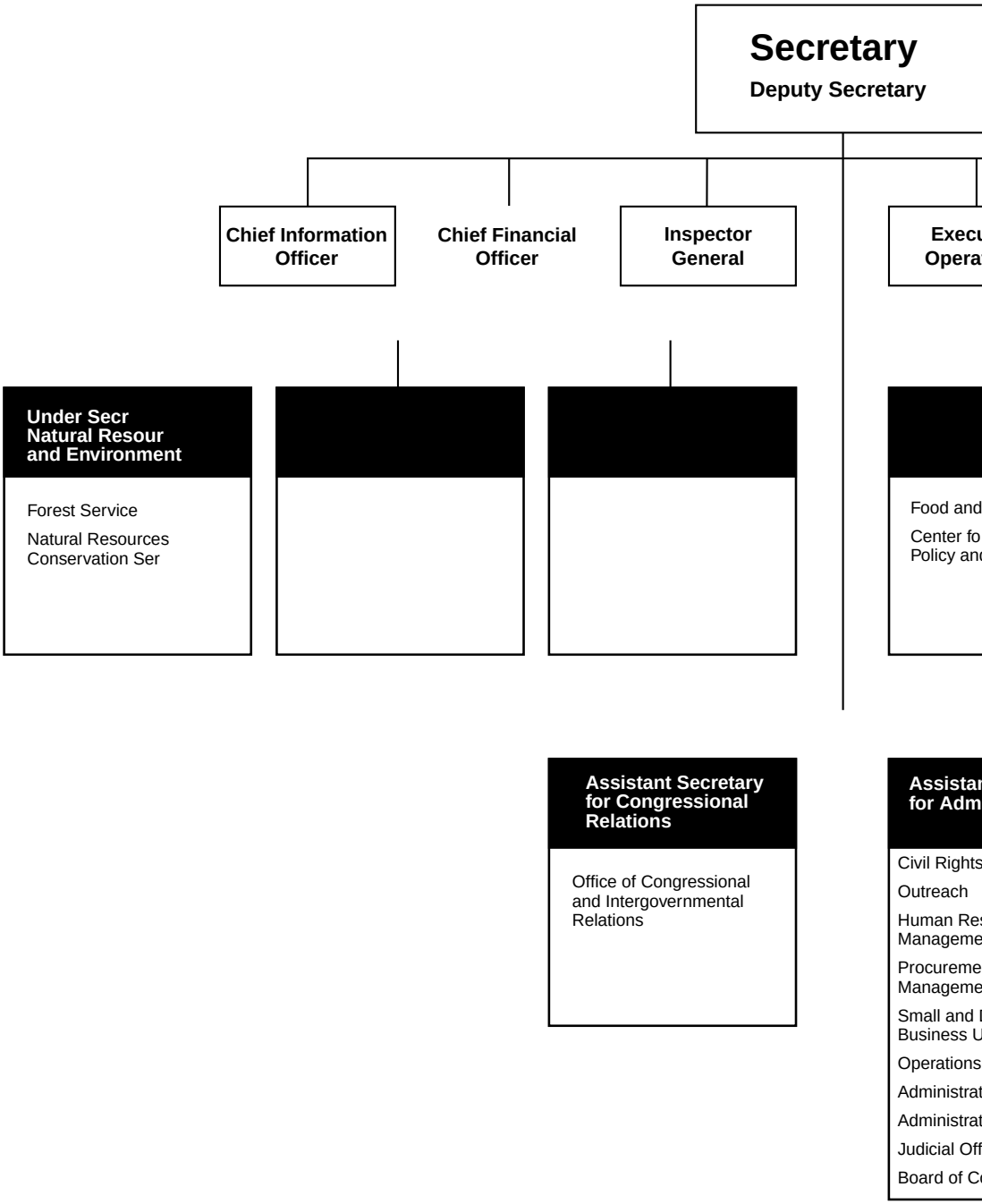
In October 1998, USDA published in the *Federal Register Uniform Procedures for the Acquisition and Transfer of Excess Personal Property*, in accordance with the provisions of Section 923 of the Federal Agriculture Improvement and Reform Act of 1996. Since then, OPPEP transferred excess personal property worth over $3.6 million to 1994 land-grant institutions (tribal), 1890 land-grant institutions, and Hispanic-serving institutions.

Office of Operations

Mail

Smokey Bear receives more mail than any individual in the Department. Each year, USDA receives more than 180 million pieces of mail, and at the Washington, DC, headquarters alone, more than 21 million pieces of mail are handled each year—for an average of about 84,000 pieces of mail processed each workday.

U.S. Department of Agriculture
Headquarters Organization



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General Counsel

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Food Safety and Inspection Service

Agricultural Research Service

Cooperative State Research, Education and Extension Service

Economic Research Service

National Agricultural Statistics Service

Agricultural Marketing Service

Animal and Plant Health Inspection Service

Grain Inspection, Packers and Stockyards Administration

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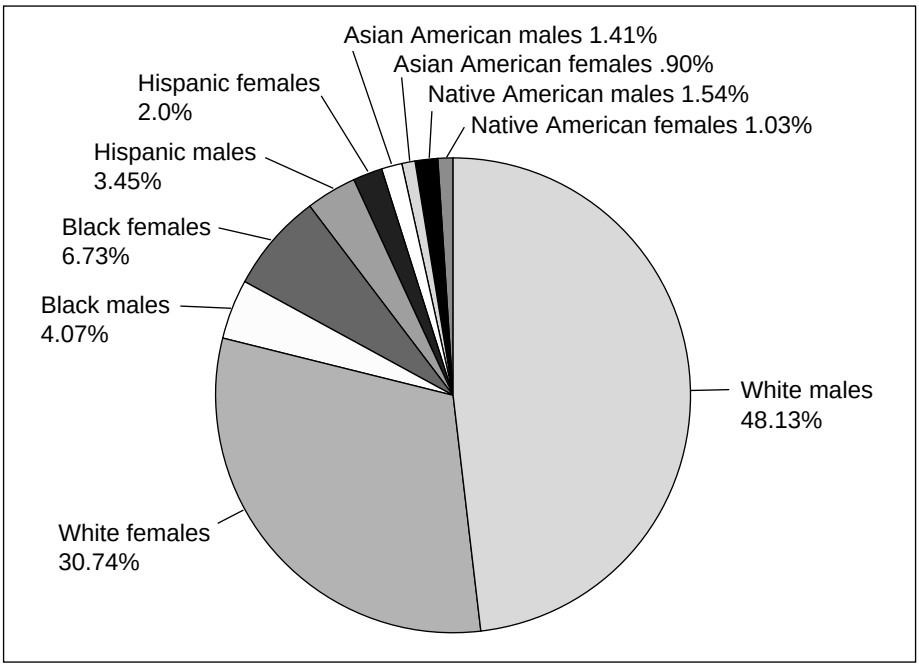
Figure 5-1.

USDA workplace profile by race and gender group, 2000



The headquarters mail operation is an active employer of people with disabilities. Over one-third of its employees are people with disabilities. Working closely with private and public placement organizations, the Office of Operations (OO) has succeeded in bringing these employees into the workforce. In recognition of its success in hiring persons with disabilities, OO has received numerous government and private-sector awards.

The mail center is one of USDA's reinvention laboratories, supporting Vice President Gore's National Partnership for Reinventing Government initiative, in which the Department has taken an active role. One advance is the implementation of computer-assisted mail sorting systems, which will improve efficiency and reduce the number of employees needed for this staff. Also, USDA is taking the lead in developing governmentwide mail management initiatives that are projected to save more than $2 million.

South Building Renovation

The Office of Operations continues to work on the renovation of the South Building which, when complete, will provide modern, safe, and efficient office space for USDA employees in theWashington, DC, metropolitan area.

The over-70-year-old South Building, which is 1.3 million-square feet, is undergoing much-needed renovation. The first phase of the renovation (Wing 3) is nearly complete. Phased moves back into the newly renovated space began in May 2000.

Table 5-2.

Where do USDA employees work?

State	*Number of employees**	*State*	*Number of employees**
Alabama	1,128	Montana	2,574
Alaska	859	Nebraska	1,375
Arkansas	1,880	Nevada	340
Arizona	1,597	New Hampshire	280
California	7,061	New Jersey	486
Colorado	2,559	New Mexico	1,348
Connecticut	153	New York	1,045
District of Columbia	6,558	North Carolina	1,786
Delaware	207	North Dakota	772
Florida	1,657	Ohio	792
Georgia	2,364	Oklahoma	920
Hawaii	420	Oregon	4,464
Idaho	2,503	Pennsylvania	1,483
Illinois	1,491	Rhode Island	34
Indiana	724	South Carolina	867
Iowa	1,833	South Dakota	847
Kansas	994	Tennessee	1,002
Kentucky	1,093	Texas	3,456
Louisiana	2,833	Utah	1,450
Maine	243	Vermont	240
Maryland	2,970	Virginia	1,999
Massachusetts	337	Washington	2,168
Michigan	1,108	West Virginia	670
Minnesota	1,650	Wisconsin	1,435
Mississippi	1,891	Wyoming	690
Missouri	3,958		

Territory	*Number of employees**	*Territory*	*Number of employees**
American Samoa	8	Virgin Islands	22
Commonwealth of Northern Mariana Islands	7	Marshall Islands	1
Guam	28	Puerto Rico	561
Puerto Rico	557	Trust Territories of the Pacific	1
Marshall Islands	1	U.S. Virgin Islands	25

Table 5-2.

Where do USDA employees work? (continued)

Country	*Number of employees**	*Country*	*Number of employees**
Argentina	3	Malaysia	1
Australia	3	Mexico	20
Austria	5	Morocco	1
Bahamas	1	Netherlands	3
Belgium	6	New Zealand	1
Bermuda	1	Nicaragua	3
Brazil	5	Nigeria	1
Bulgaria	1	Pakistan	1
Canada	4	Panama	6
Chile	3	Peru	2
China	5	Philippines	2
Columbia	2	Poland	2
Costa Rica	4	Republic of Korea	3
Dominican Republic	2	Republic of Palau	3
Egypt	2	Russia	6
Federated States of Micronesia	10	Saudi Arabia	1
France	6	Singapore	1
Germany	4	South Africa	3
Guatemala	3	Spain	2
Haiti	1	Sweden	1
Hong Kong	1	Switzerland	5
India	1	Thailand	1
Indonesia	3	Turkey	2
Italy	3	Ukraine	1
Ivory Coast	1	United Kingdom	2
Jamaica	1	Venezuela	3
Japan	8	Vietnam	1
Kenya	2		

*Permanent, full-time employees.

The second phase (Wing 4) of the renovation may start as soon as the end of this calendar year. When finished, this project, coupled with the George Washington Carver Center, will enable USDA agencies in the metropolitan area to move out of more expensive leased space into modern and efficient USDA-managed space.

George Washington Carver Center

The George Washington Carver Center in Beltsville, MD, was completed in 1998. This 350,000-square-foot modern office complex provides space for more than 1,200 USDA employees and contractors. Much of the day-to-day building operation is done by Melwood, a community rehabilitation, nonprofit organization that provides employment opportunities for persons with severe disabilities.

Dedicated on October 6, 1999, by Secretary Dan Glickman, the Center operates as a headquarters facility—an extension of USDA's main headquarters facility located in Washington, DC. The George Washington Carver Center is the first USDA facility named for an African American.

The facility provides a number of on-site amenities for employees and visitors, including a child development center, medical service unit, nursing mothers' room, credit union, fitness center, outdoor exercise trail, shuttle service, Telework Center, and a full-service cafeteria. Future plans for the Center include a George Washington Carver Education/Visitor Center.

The Center has received several awards, including a Citation for Architectural Excellence from the Potomac Valley Chapter of the American Institute of Architects (December 1998); Federal Energy and Water Management Award from the Department of Energy (1998); Excellence in Construction Award from the Associated Builders & Contractors (September 1998); and a NISH Government Award for Outstanding Achievement - Employing Persons with Disabilities (May 1999).

Print on Demand

The Office of Operations' Consolidated Forms and Publications Distribution Center and the Mail and Reproduction Division are currently offering "Print on Demand" services to all user agencies. Print on Demand is state-of-the-art technology and the wave of the future in modern warehousing and forms management programs. Substantial cost savings in printing and storage costs can be accrued by agencies by utilizing this service. Cut sheets, non-carbon and double-sided forms, pamphlets, and many other printed items no longer need to be stored for future use. Instead, these items are scanned or otherwise inputted onto small optical storage discs, and then hard copies are produced as needed and only in the quantity needed to fill a specific order.

To date, the Consolidated Forms and Publications Distribution Center has reduced its cut-sheet inventory items by more than 20 percent and anticipates that Print on Demand technology will enable further reductions by as much as 50 percent.

Computers for Learning

The Office of Operations' Centralized Excess Property Operation is an active participant in Vice President Gore's Computers for Learning Initiative. The Centralized Excess Property Operation collects excess/surplus computer equipment from USDA and 17 other Federal agencies in the Washington metropolitan area. Initially, the equipment is offered for reuse by other agricultural agencies. Computer equipment not needed by agencies is tested and, if possible, repaired.

Through the Computers for Learning Initiative, the Centralized Excess Property Operation is also working with universities and community colleges by providing a Student Internship Program in which students are given on-site training on computer repairing, troubleshooting, and loading of software applications software.

Customer Ordering Web Site

The Landover Service Center has developed a user-friendly, interactive Internet web site which affords customers an opportunity to browse through the inventory items and place their orders directly online for next day processing.

For additional information, visit our web site at *http://www.lsc.usda.gov*, or call 301-436-8450 for more details.

TARGET Center

In October 1991, USDA opened the Technology Accessible Resources Gives Employment Today (TARGET) Center to assist USDA agencies with providing an accessible work environment. Located at USDA Headquarters in Washington, D.C., the TARGET Center provides technology and information services to ensure equal access to electronic technology and automated systems essential to today's jobs. A second facility, the Midwest TARGET Center, opened in St. Louis, MO, in 1996.

The USDA TARGET Center has an accessible conference room and a technology demonstration center. The demonstration center includes eight work stations which are enhanced with a variety of hardware and software designed to provide accessibility for employees who have sight, hearing, speech, mobility and dexterity disabilities. Private sessions in which individuals with disabilities conduct hands-on testing and evaluation of alternative solutions are available.

A resources library is maintained to provide technical and services information for research in designing appropriate solutions to meet accessibility requirements.

The USDA TARGET Center staff is available to assist in identifying and obtaining computer and communications accommodations, and may be reached at 202-720-2600 (Voice/TTY/TDD).

Office of Small and Disadvantaged Business Utilization

The Office of Small and Disadvantaged Business Utilization (OSDBU) provides departmentwide leadership and oversight for implementing the Small Business Preference Programs prescribed under Sections 8 and 15 of the Small Business Act of 1958, as amended. OSDBU serves as USDA's lead agency in providing an integrated focus for the implementation and execution of programs to assist small, small disadvantaged, and women-owned businesses in supporting USDA's missions.

OSDBU develops policies, standards, and programs consistent with Federal guidelines for developing, managing, evaluating, and improving USDA Affirmative Procurement Programs. OSDBU also provides guidance to assist agencies and staff offices in ensuring that outreach efforts involve all underrepresented groups and that the participation of small, small disadvantaged, and women-owned businesses in the Department's contracting and program activities is increased. Additionally, OSDBU provides technical assistance designed to eliminate barriers that prevent or severely restrict small business access and participation in USDA program and contract activities. Through partnerships with USDA program offices, professional associations, and universities, OSDBU promotes the growth and competitiveness of small, small disadvantaged, and women-owned businesses located in rural America through technical assistance on topics such as how to do business with USDA, e-Commerce and how it will affect doing business in the future, and best practices in marketing strategies.

OSDBU's goal is to ensure continuous growth in the rate of small business participation in USDA program and contract activities. To this end, OSDBU has implemented the following programs:

- Bringing Rural America Venture Opportunities (BRAVO). A business development program to assist tribal entities (Indian nations) in establishing small startup information technology companies. Software development will be the initial services provided by USDA.
- The Small Business Education and Development Program (SBEDP). A program to deliver technical assistance and outreach programs that promote the growth and stability of small businesses located in rural America, identify new markets, and provide access to technical assistance and resources to help sustain small business growth and development.
- Small Business Vendor Outreach Sessions(VOS). A monthly program for the small business community to meet with OSDBU coordinators to discuss their capabilities and learn of potential procurement opportunities. If you are interested in registering for a VOS session, visit our web site at *http://www.usda.gov/da/smallbus/vos1.htm*.

If you are interested in business opportunities with the U.S. Department of Agriculture, visit our web site at *http://www.usda.gov/da/smallbus.html* or call 202-720-7117 for more details.

Office of Ethics

The Office of Ethics was created in 1998 to direct and coordinate the ethics programs within the various mission areas of the Department and to service headquarters staff directly. The Office develops departmentwide policies and regulations; provides training to USDA staff on the various rules governing employee conduct, conflicts of interest, and political activity; administers personal financial disclosure reporting by senior staff; and counsels employees on ethics matters. Over the past year, the Office has used Internet technology to provide online training modules for USDA staff all over the world, and USDA was the first Federal agency to offer financial disclosure reporting through a secure, online, web-based system. In addition to USDA staff, employees in other Federal agencies and the public have accessed the Ethics web site located at *http://www.usda.gov/ethics*.

Office of Outreach

The Office of Outreach provides coordination and leadership in program delivery outreach efforts throughout USDA. Outreach efforts are proactive activities to ensure that USDA programs and services are available to all constituents, including those traditionally underserved, and that internal and external partners work together to ensure equal and timely access to USDA programs and services.

The Office of Outreach administers Section 2501 of the Food, Agriculture, Conservation, and Trade Act of 1990, which authorizes the Secretary to assist and encourage socially disadvantaged farmers and ranchers to own and operate farms and ranches, and to participate in agricultural programs. USDA provides outreach and technical assistance through agreements with community-based organizations, 1890 land-grant colleges and universities (including Tuskegee Institute), Indian tribal

community colleges and Alaskan Native cooperative colleges, Hispanic-serving educational institutions, and other post-secondary institutions with experience in providing agricultural education or services to socially disadvantaged family farmers and ranchers.

Conflict Prevention and Resolution Center

The Conflict Prevention and Resolution Center (CPRC) was created in 1998 to provide overall leadership, guidance, and coordination of USDA conflict management activities. CPRC issues departmentwide conflict management policy, regulations, and guidance on the appropriate use of alternative dispute resolution (ADR) for workplace and program disputes, develops and issues standards for mediators and other ADR neutrals, and guides USDA agencies in the development and implementation of their ADR programs. Currently, CPRC is developing conflict management training, establishing a departmentwide roster of neutrals, and establishing procedures for use of ADR in program disputes.

Through partnerships with other Federal agencies, CPRC has provided USDA agencies with valuable resources needed for the development and implementation of their ADR programs. CPRC and USDA's Office of Communications recently produced a 20-minute video that describes mediation, an ADR process which USDA is offering as an informal method of resolving workplace disputes early before they escalate. The video, called "A Better Way," can be viewed on the CPRC web site at *http://www.usda.gov/cprc*, and is intended to familiarize USDA employees with the mediation process and to encourage them to seek mediation early, as a means for resolving workplace conflicts.

Office of the Chief Economist

The Office of the Chief Economist (OCE) advises the Secretary of Agriculture on policies and programs affecting U.S. agriculture and rural areas. This advice includes assessments of USDA program proposals, legislative proposals, and economic developments of importance to agriculture and rural areas. In addition, the Office of the Chief Economist is responsible for several programs, described below, that coordinate activities across USDA agencies.

The World Wide Web address for the Office of the Chief Economist is *http://www.usda.gov/oce/*

World Agricultural Outlook Board

The World Agricultural Outlook Board is USDA's focal point for forecasts and projections of global commodity markets. Each month the Board brings together interagency committees of experts to forecast the supply, use, and prices of major commodities in the United States and abroad. The committees also clear agricultural forecasts published by other USDA agencies. This teamwork ensures that USDA forecasts are objective and consistent.

Because the weather is vital to crop forecasts, specialists from the Board work side by side with weather forecasters from the National Oceanic and Atmospheric

Administration to monitor the weather and assess its effect on crops. Their work provides timely information on potential changes in global production.

The Board also coordinates departmentwide activity on long-term economic projections, remote sensing, and climate. The Department is one of the largest users of remote sensing in the Federal Government. The Board coordinates remote sensing activities at USDA and chairs the Department's Remote Sensing Coordination Committee. The Board also hosts the Department's Chief Meteorologist, who serves as the principle spokesperson on weather and climate issues and chairs a departmental weather and climate coordinating committee.

The World Wide Web address for the World Agricultural Outlook Board is *http://www.usda.gov/oce/waob/index.htm*

Office of Risk Assessment and Cost-Benefit Analysis

The Office of Risk Assessment and Cost-Benefit Analysis is responsible for coordinating, reviewing, and approving all risk assessments and cost-benefit analyses of mitigation measures associated with major regulations of the Department. Major regulations are economically significant (with an impact of at least $100 million each year) and have a primary effect on human health, human safety, or the environment. The office provides direction to USDA agencies on appropriate methods for these analyses and serves as a focal point on matters relating to risk assessment in interagency reviews.

The World Wide Web address for the Office of Risk Assessment and Cost-Benefit Analysis is *http://www.usda.gov/oce/oracba/index.htm*

Agricultural Labor Affairs

The coordinator of agricultural labor affairs is responsible for coordinating USDA's agricultural labor policy. Areas of concern include immigration, the H-2A Temporary Agricultural Worker Program, worker protection standards for pesticide use, farm labor supply, and agricultural employment issues.

The World Wide Web address for this office is *http://www.usda.gov/oce/oce/labor- affairs/affairs.htm*

Sustainable Development

OCE's director of sustainable development works to integrate the principals of sustainable development into the Department's policies and programs, ensuring that economic, social, and environmental considerations are balanced in decisionmaking. The director also directs and coordinates the Department's domestic and international policies and programs in sustainable development, including sustainable agriculture, forestry, and rural communities.

The World Wide Web address for this office is *http://www.usda.gov/oce/osfsd/index.htm*

Global Change Program Office

Global climate change, whether from natural causes or human activity, could have important consequences for farming, forestry, and rural areas. The Global Change Program Office functions as the USDA-wide coordinator of global change program and policy issues facing the Department. The Office coordinates activities with other agencies, interacts with the legislative branch on climate change issues, and represents USDA in international climate change discussions. It also is a source of objective assessment of the economic effects of climate change and proposed mitigation strategies on agriculture and forestry.

The World Wide Web address for this office is
http://www.usda.gov/oce/gcpo/index.htm

Office of Energy Policy and New Uses

The Office of Energy Policy and New Uses assists with development of departmental energy policy and coordination of departmental energy programs and strategies. The Office provides economic analysis on energy policy issues, coordinates USDA energy-related activities within and outside the Department, and studies the feasibility of new uses of agricultural products.

The World Wide Web address for this office is
http://www.usda.gov/oce/oepnu/index.htm

Office of Inspector General

USDA's Office of Inspector General (OIG), the first civilian OIG in the Federal Government, was established in 1962 and became fully operational in 1963. The Inspector General Act of 1978 expanded and provided specific authorities for the activities of the Office of Inspector General which had previously been carried out under the general authorities of the Secretary of Agriculture. OIG conducts and supervises audits and evaluations, as well as investigations and law enforcement efforts relating to USDA's programs and operations. It provides leadership and coordination and recommends policies for activities that will prevent and detect criminal violations and promote economy, efficiency, and effectiveness in USDA programs and operations. Furthermore, OIG keeps the Secretary and Congress fully informed of problems and deficiencies related to administration of USDA programs and operations, and of the actions designed to correct such problems and deficiencies.

During the period April 1, 1999, through March 31, 2000, audit and investigative efforts resulted in more than $205 million in recoveries, collections, fines, restitutions, claims established, administrative penalties, and costs avoided. In addition, management agreed to put nearly $142 million to better use. OIG also identified approximately $101 million in questioned costs that cannot be recovered. Investigative efforts resulted in 449 indictments and 540 convictions.

OIG's work on three initiatives continues to yield notable results. OIG is intensifying an initiative to counteract smuggling of animals, plants, and agricultural products that could endanger the Nation's food supply through the introduction of diseases and plant pests. As of March 31, 2000, OIG had 37 smuggling cases under investigation.

In Operation "Kiddie Care," OIG has been working closely with USDA's Food and Nutrition Service concerning needed regulatory and legislative changes in the Child and Adult Care Food Program (CACFP) recommended in an August 1999 audit report. Twenty-six sponsors receiving over $46.7 million annually in food and administrative funds have been terminated from CACFP. Sixty individuals have been charged with crimes, with 45 found guilty and 37 sentenced. In a Michigan case, the president of a multicenter day care operation was sentenced to 9 years in prison and ordered to pay $13.5 million in restitution, a $10 million fine, and a special assessment of $3,150.

Operation Talon was designed and implemented by OIG to locate and apprehend fugitives, many of them violent offenders, who are current or former food stamp recipients, and was made possible by legislative changes in welfare reform. As of March 31, 2000, this nationwide initiative had resulted in 6,007 arrests of fugitive felons during joint OIG, State, and local law enforcement operations. Of that number, 40 fugitives were wanted for murder or attempted murder, 27 were wanted for child molestation, and 14 were wanted for rape or attempted rape. The recognition of the initiative's outstanding success was recently certified when OIG received the Vice President's prestigious Hammer Award for making Government work better and achieving results Americans care about.

Office of the Chief Information Officer

The Chief Information Officer is the Department's senior information technology official. The Office of the Chief Information Officer (OCIO) supports program delivery in USDA by overseeing the management of the Department's information technology (IT) resources.

In accordance with the Clinger-Cohen Act of 1996 and similar legislation, regulations, and executive orders, OCIO provides long-range-planning guidance, reviews all major technology investments to ensure that they are economical and effective, coordinates interagency Information Resources Management projects, and promotes information exchange and technical interoperability.

OCIO also provides automated data processing (ADP) services to USDA and other Federal agencies through its National Information Technology Center located in Kansas City, MO; and telecommunications services through its Telecommunications Services and Operations in Ft. Collins, CO, and Washington, DC. Direct ADP services are provided to the Office of the Secretary, Office of the General Counsel, Office of Communications, Office of the Chief Financial Officer, and Executive Operations.

OCIO has responsibility for the information technology investments of the Service Center Modernization Initiative (SCMI), which is the cornerstone of the overall reorganization and IT modernization effort of the Department. The ultimate goal of the SCMI is to create an environment of one-stop, quality service for customers of the Farm Service Agency, the Natural Resources Conservation Service, and the Rural Development mission area agencies.

Office of the Chief Financial Officer

The Office of the Chief Financial Officer (OCFO) is responsible for overall financial management activities in USDA and for direct management of 1,750 employees in OCFO at USDA headquarters in Washington, DC, and the National Finance Center (NFC) in New Orleans. OCFO's duties include accounting and reporting responsibilities for program funds totaling about $100 billion and management responsibility for nearly 41 percent of all debt owed to the U.S. Government. A major cross-servicing and operations facility, the NFC processes the payroll for 435,000 individuals of the Federal workforce and administers the Federal Government's $96 billion Thrift Savings Plan, which is the world's largest retirement plan with 2.4 million participants. In addition, OCFO administers and manages the Department's Working Capital Fund.

OCFO maintains an integrated departmental accounting and financial management system that provides complete, reliable, consistent, and timely financial information. OCFO is the chief architect of the departmentwide strategic plan and coordinates its distribution to Congress and other external entities. OCFO also leads the Department's efforts to produce auditable financial statements and comply with congressional mandates related to financial management.

OCFO directs credit reform and debt collection initiatives. In the credit reform area, OCFO is working to ensure that USDA's $103.4 billion loan portfolio, which includes farm operating, housing, utilities, business cooperatives, and other forms of economic assistance to rural residents and organizations, complies with all reporting requirements and other standards that apply to lending programs. In debt collection, recent examples of success include USDA's collection of $136.2 million in delinquent debt through Treasury's Administrative Offset Program and other debt-collection tools during FY 1999. This figure represents a 45-percent increase over the $93.9 million collected in FY 1998 and a 90-percent increase over the $71.5 million collected in FY 1997. In addition, USDA lowered the amount of delinquent debt in its overall loan portfolio from $7.5 billion in delinquencies in FY 1997 to $6.4 billion in FY 1999, a drop of nearly 15 percent.

Office of Congressional and Intergovernmental Relations

Office of Congressional Relations

USDA's Office of Congressional Relations serves as the Department's primary liaison with Members of Congress and their staffs, providing information on the Department's legislative agenda, budget proposals, programs, and policies.

Office of Intergovernmental Affairs

The Office of Intergovernmental Affairs (OIA) works closely with the Nation's Governors and State Commissioners of Agriculture, and other State and local elected officials, on various issues relating to their States. OIA is responsible for disseminating information on programs involving the implementation of USDA policies and procedures applicable to the Department's intergovernmental relations.

OIA participates with the Secretary, Deputy Secretary, and the Assistant Secretary for Congressional Relations in the overall planning, formulation, and direction of the activities of the office relating to intergovernmental affairs. OIA serves as the USDA liaison with the White House and other executive branch agencies and departments with respect to intergovernmental affairs.

American Indian and Alaska Native Programs

The Director of Native American Programs, located in the Office of Intergovernmental Affairs, is USDA's primary contact with tribal governments and their members. The director serves as the principal adviser and representative on all matters related to USDA policy and programs which affect and are available to American Indians and Alaska Natives. The director also chairs USDA's Native American Working Group, which reports to the Secretary and provides advice, support, and other assistance to the director. In 1992, USDA adopted an American Indian and Alaska Native policy which guides USDA's interactions with Indian tribes.

USDA provides a wide range of programs and services in all mission areas to American Indian and Alaska Native communities. In recent years, the Department has reached out to inform American Indians and Alaska Natives about USDA programs and services available to them, to deliver programs more effectively to Indian tribes, and to initiate new programs in response to the needs of Indian tribes. In October 1997, USDA published a *Guide to USDA Programs for American Indians and Alaska Natives* to improve tribal communities' access to USDA programs. The guide is also available on the USDA home page at the following address: *http://www.usda.gov/news/pubs/indians/open.htm*

National Appeals Division

The National Appeals Division was established in 1994 to conduct impartial administrative appeal hearings and reviews of adverse program decisions made by officers, employees, or committees of designated agencies of the Department of Agriculture.

The World Wide Web address for the division is: *http://www.nad.usda.gov*

USDA Community Food Security Initiative

The USDA Community Food Security Initiative is helping communities to build their local food systems in order to decrease hunger, improve nutrition, and help families move from poverty to self-sufficiency. The initiative will build vital links directly between USDA and nonprofit groups, private businesses, and ordinary citizens, as well as with State, local, and tribal governments—all with one goal in mind: helping communities across America end hunger.

The Initiative is targeting seven concrete goals:

1. Catalyzing or enhancing local infrastructures to reduce hunger and food insecurity;
2. Increasing economic and job security by helping low-income people obtain living wage jobs and attain self-sufficiency;
3. Strengthening the Federal nutrition assistance safety net by supporting the full and efficient use of programs such as food stamps; supplemental food for women, infants, and children; school meals; summer feeding; and emergency food assistance.
4. Bolstering supplemental food provided by nonprofit groups by aiding food recovery, gleaning, and food donation programs;
5. Improving community food production and marketing by aiding projects that grow, process, and distribute food locally;
6. Boosting education and awareness by increasing efforts to inform the public about nutrition, food safety, and community food security;
7. Improving research, monitoring, and evaluation efforts to help communities assess and strengthen food security.

The initiative is using four basic methods to achieve those goals:

- Catalyzing the development of new partnerships on the local, State, and Federal levels to help communities reduce hunger and food insecurity;
- Improving the coordination between existing USDA programs—such as nutrition assistance programs, community food grants, ongoing research, farmers' markets, and food recovery projects—and related Federal, State, and community initiatives;
- Expanding technical assistance to States, communities, and nonprofit groups to build long-term local structures to increase food security;
- Educating the public to increase their awareness of the causes of food insecurity and highlight innovative community solutions to hunger.

For More Information

Departmental Administration

Freedom of Info Act Liaison
Evelyn M. Davis
Rm 0612-S
Washington, DC 20250
202-720-7765
FAX 202-690-4728

Civil Rights Freedom of Information
M. Farook Sait
Rm 334-W
Washington, DC 20250
202-720-7569
FAX 202-205-2891

National Appeals Division

Freedom of Info Act Officer
Larry Shrum
Park Office Center
Rm 1113
Alexandria, VA 22302
703-305-1164
FAX 703-305-2825
lshrum@usda.gov

Office of Budget and Program Analysis

Freedom of Info Act Officer
Jacquelyn Chandler
Rm 147-E
Washington, DC 20250
202-720-1516
FAX 202-690-3673
jyc@obpa.usda.gov

Office of the Chief Economist

Public Information Officer
Raymond L. Bridge
Rm 5143-S
Washington, DC 20250-3812
202-720-5447
FAX 202-690-1805
rbridge@oce.usda.gov

Agricultural Labor Affairs
Al French
Rm 112-A
Washington, DC 20250-3810
202-720-4737
FAX 202-690-4915
al.french@usda.gov

World Agricultural Outlook Board Public Information Officer
Raymond L. Bridge
Rm 5143-S
Washington, DC 20250-3812
202-720-5447
FAX 202-690-1805
rbridge@oce.usda.gov

Chief Meteorologist
(Vacant)
Rm 5143-S
Washington, DC 20250-3812
202-720-8651
FAX 202-720-4043

Office of Risk Assessment and Cost-Benefit Analysis
(Vacant)
Rm 5248-S
Washington, D.C. 20250-3811
202-720-8022
FAX 202-720-1815

Global Change Program Office
Jim Hrubovcak
Rm 112-A
Washington, DC 20250-3814
202-720-6699
FAX 202-401-1176
jhrubovcak@oce.usda.gov

Sustainable Development
Adela Backiel
Rm 112-A
Washington, DC 20250-3810
202-720-2456
FAX 202-690-4915
adela.backiel@usda.gov

Office of Energy Policy and New Uses
James Duffield
Rm 112-A
Washington, DC 20250-3815
202-401-0523
FAX 202-401-0533
jduffield@oce.usda.gov

Office of Chief Financial Officer

Freedom of Info Act Officer
Ken Kessler
Rm 4082-S
Washington, DC 20250
202-720-1179
FAX 202-690-2568
kkessler@usda.cfo.gov

Office of Chief Information Officer

Freedom of Info Act Officer
Howard Baker
Rm 404-W
Washington, DC 20250
202-720-8657
FAX 202-205-2831
howard.baker@usda.gov

Office of the General Counsel

Freedom of Info Act Attorney
Kenneth Cohen
Rm 1547-S
Washington, DC 20250
202-720-5565
FAX 202-720-5837

Office of Inspector General

Director, Info Mgmt Div
Sharon Friend
Rm 9-E
Washington, DC 20250-2309
202-720-6915
FAX 202-690-6305
sjfriend@oig.usda.gov

Chief, Policy Dev & Info
Nancy Bartel
Rm 9-E
Washington, DC 20250-2309
202-720-5677
FAX 202-690-6305
nabartel@oig.usda.gov

Freedom of Info Act Officer
Carol Martin
Rm 29-E
Washington, DC 20250-2309
202-720-5677
FAX 202-690-6305
cjmartin@oig.usda.gov

Community Food Security Initiative

Coordinator
Joel Berg
Rm 536-A
Washington, DC 20250
202-720-5746
FAX 202-690-1131
joel.berg@usda.gov

6. USDA Rural Development: Creating Opportunity for Rural Americans

Helping the people of rural America develop sustainable communities and improve their quality of life is the goal of USDA's Rural Development mission area. USDA believes rural people have a right to the same quality of life as is enjoyed by people who live in suburban and urban areas.

USDA Rural Development is working to eliminate substandard housing from rural America by helping rural people buy, build, repair, or rent decent housing. It also creates jobs by providing funding and technical assistance to support the growth and creation of rural businesses and cooperatives. In a typical year, Rural Development programs create or preserve more than 150,000 rural jobs, enable 60,000 to 70,000 rural people to buy homes, and help more than 450,000 low-income rural people rent apartments or other housing.

Other Rural Development programs help rural communities build or improve community facilities, such as schools, health clinics, and fire stations. Rural Development also has programs that help rural communities build or extend utilities, including water, electricity, and telecommunications services. Rural Development is also charged with leadership in national, State, and local strategic planning.

Program assistance is provided in many ways, including direct or guaranteed loans, grants, technical assistance, research and educational materials. To accomplish its mission, USDA Rural Development often works in partnership with State, local, and tribal governments, as well as rural businesses, cooperatives, and nonprofit agencies.

USDA Rural Development programs are delivered through its three agencies: Rural Utilities Service (RUS), Rural Housing Service (RHS), and Rural Business-Cooperative Service (RBS), and branch, the Office of Community Development (OCD). RUS addresses rural America's need for basic utility services such as clean running water, sewers and waste disposal, electricity, and telecommunications. RHS addresses rural America's need for single-family and multi-family housing as well as health facilities, fire and police stations, and other community facilities. RBS provides help to rural areas that need to develop new job opportunities, allowing businesses and cooperatives to remain viable in a changing economy. The Office of Community Development, a branch of Rural Development, is working with these three agencies to improve the economy and living conditions in the Nation's rural Empowerment Zones and Enterprise Communities.

In addition, the Federal Government is seeking to form partnerships with other entities— such as State, local, and tribal governments; private and nonprofit organizations; and member- owned cooperatives—to revitalize rural areas. Rural Development programs are provided across the Nation through 47 State offices and 800 field offices.

How Rural Development Works

The following examples illustrate how USDA Rural Development is working to serve rural citizens and bolster the quality of life in rural communities:

Earth Day, April 22, 2000. In celebration of Earth Day 2000, Secretary of Agriculture Dan Glickman announced 11 new USDA-financed rural clean water initiatives funded under the USDA Rural Development Water and Wastewater Program. The wastewater projects, totaling $72.6 million, will significantly improve water quality across America and protect several designated wild and scenic rivers and other environmentally sensitive bodies of water.

"From the Bering Sea to the Chesapeake Bay and wild and scenic rivers of the South, these projects help protect some of our Nation's most precious water resources," Glickman said. "As we celebrate Earth Day, all Americans should recognize that proper disposal of wastewater is a vital health issue not only for humans, but for the environment and wildlife."

The projects include replacement of deteriorated water and sewer mains in Nome, AK, on the Bering Sea and a new sewage collection system in Shawnee Hills, OH, that will end the discharge of untreated effluent into the Scioto River, used as a water supply by the City of Columbus.

Also included is a $6 million project in Hazle Township, PA, to construct a centralized sewer system that will end the dumping of raw sewage into the Susquehanna River, which is designated a Heritage River system and empties into the Chesapeake Bay.

Other new USDA-financed projects include wastewater improvements in Gadsden, AR; Concordia, LA; St. Peter, MN; the Three Affiliated Tribes Reservation in North Dakota; Jefferson County, NY; Orangeburg County, SC; Green River City, UT; and Huttonsville, WV.

The following overviews describe the three Rural Development agencies and the Office of Community Development, and their main programs.

Rural Business-Cooperative Service

Creation of viable new and improved competitive businesses and sustainable cooperatives in rural America is the top priority of the Rural Business-Cooperative Service (RBS). This agency works through partnerships with public and private community-based organizations to provide financial assistance, business planning, and technical assistance to rural businesses. It also conducts research into rural

The Burris Mill and Feed Company in Franklinton, LA, is an example of a company that has benefitted from ***USDA Rural Development's Business and Industry Guaranteed Loan and Rural Economic Development Loan Programs****.*

Burris Mill and Feed, a custom manufacturer of animal feed that primarily makes fish food, is a small rural business employing 33 people, of which about 65 percent are minorities. The company, which has international sales of 55 to 65 percent, wanted to expand its operations, and it turned to USDA Rural Development for help. In January 1999, the Washington-St. Tammany Electric Cooperative, Inc., was awarded a $450,000 rural economic development loan that was subsequently re-loaned to Burris Mill and Feed to help the company buy machinery and equipment. In addition to the Rural Economic Development Loan, USDA Rural Development also approved a $1.7 million Business and Industry Guaranteed loan to give Burris Mill and Feed more financial assistance. The company received $700,000 for machinery and equipment, and $1 million for the purchase of real estate.

economic issues, including rural cooperatives, and provides educational material to the public.

Business and Industry (B&I) Guaranteed Loans help to finance rural business and industry projects that create employment opportunities and improve the economic and environmental climate in rural communities, including pollution abatement and control. Guaranteed loans are made for projects that foster sustained community benefits and open private credit markets. B&I loan guarantees can be extended to loans made by commercial or other authorized lenders in rural areas (this includes all areas other than cities of more than 50,000 people and their immediately adjacent urban or urbanizing areas).

Under the B&I Guaranteed Loan Program, the **Cooperative Stock Purchase Authority** provides financial assistance for the purchase of startup cooperative stock for family-sized farms where the commodities produced are to be processed by the cooperative.

Direct Business and Industry (B&I) Loans are made to public entities and private parties who cannot obtain credit from other sources. Loans to private parties can be made for improving, developing, or financing business and industry, creating jobs, and improving the economic and environmental climate in rural communities (including pollution abatement). This type of assistance is available in rural areas (this includes all areas other than cities of more than 50,000 people and their immediately adjacent urban or urbanizing areas).

Intermediary Relending Program Loans finance business facilities and community development projects in rural areas, including cities of less than 25,000. Loans to intermediaries are reloaned to support the establishment of new business facilities and community development projects in rural areas.

Rural Economic Development Loans and Grants finance economic development and job creation projects in rural areas based on sound economic plans. This financing is available to any Rural Utilities Service electric or telecommunications borrower to assist in developing rural areas from an economic standpoint, to create new job opportunities, and to help retain existing employment. Loans at zero-interest are made primarily to finance business startup ventures and business expansion projects. Grants are made to these telephone and electric utilities to establish revolving loan programs operated at the local level by the utility.

Rural Business Enterprise Grants help public bodies and nonprofit corporations finance and facilitate the development of small and emerging private business enterprises located in rural areas (this includes all areas other than cities of more than 50,000 people and their immediately adjacent urban or urbanizing areas). Grants may be used to acquire and develop land and to construct buildings, plants, equipment, access streets and roads, parking areas, and utility and service extensions. In addition, funds may be used for refinancing, fees for professional services, technical assistance, startup costs and working capital, financial assistance to a third party, production of television programs targeted to rural residents, and rural distance-learning networks.

Rural Business Opportunity Grants can be made to provide economic planning for rural communities, technical assistance for rural businesses, or training for rural entrepreneurs or economic development officials. Funding must result in economic development of a rural area. This program is available to public bodies, nonprofit corporations, Indian tribes, or cooperatives with members who are primarily rural residents.

Rural Cooperative Development Grants finance the establishment and operation of centers for cooperative development. The program enhances the economy of rural areas by developing new cooperatives and fostering improved operations for existing co-ops.

The **Appropriate Technology Transfer for Rural Areas** program provides information to farmers and other rural users on a variety of sustainable agricultural practices, including crop and livestock operations. It helps agriculture by giving reliable, practical information on production techniques and practices that reduce costs and are friendly to the environment.

The **National Sheep Industry Improvement Center** promotes strategic development activities to strengthen and enhance production and marketing of sheep, goats, and their products in the United States. The Center, which has a board of directors to oversee its activities, make loans and grants.

Cooperative Services helps improve the performance of the Nation's cooperatives and promotes understanding and use of the cooperative form of business. By working together for their mutual benefit in cooperatives, rural residents are often able to reduce costs for production supplies and consumer goods, obtain services that might otherwise be unavailable, and achieve greater returns for their products. Cooperative Services accomplishes its mission by (1) responding to requests for technical assistance from rural residents who want to organize a cooperative or improve operations of an existing cooperative; (2) providing information and educational materials relating to cooperatives; (3) conducting research on cooperative financial,

structural, managerial, policy, member governance, legal, and social issues; and (4) collecting and disseminating statistics to support research and technical assistance work.

Cooperative Solutions for Rural Challenges

- *USDA has a long history of promoting cooperatives—businesses that are owned and controlled by the people who use them. Co-ops help rural people maintain control of local resources and improve their standard of living. In the United States, there are an estimated 40,000 cooperatives that do everything from helping farmers market and process their crops to providing electricity and credit services.*
- *Cooperatives are organized by people who want to: (a) improve their bargaining power, (b) reduce their costs for goods or services, (c) obtain products or services otherwise unavailable to them, (d) expand their marketing opportunities, (e) improve their product service or quality, or (f) increase their income.*
- *For 65 years, USDA has been providing ideas and leadership to the cooperative community through its prize-winning magazine, "Rural Cooperatives," published bimonthly. Each issue carries news, features, and columns that report on issues impacting cooperatives and highlighting successful co-op practices. USDA Rural Development also provides the public with more than 100 publications and videos about cooperatives—ranging from "How to Start a Cooperative" to "Tax Treatment for Cooperatives." To order a free publication and video catalog or to request a magazine subscription order form, call 202-720-8381.*

Rural Housing Service

Decent, safe, sanitary, affordable housing and essential community facilities are indispensable to vibrant rural communities. USDA's Rural Housing Service (RHS) has the responsibility to make these essential elements available to rural Americans. RHS programs help finance new or improved housing for more than 60,000 moderate-, low- or very low-income families each year. These programs also help rural communities finance construction, enlargement, or improvement of fire stations, libraries, hospitals, medical clinics, day care centers, industrial parks, and other essential community facilities.

Single Family Housing Loans provide assistance to very low-, low-, and moderate- low-income households in rural communities, helping them to purchase, construct, repair, or relocate a home. Very low- and low-income borrowers are offered 33- to 38-year direct loans (depending on income) at fixed interest rates with annual subsidy to bring the effective interest rate to as low as 1 percent, depending on the

family's adjusted income. Moderate-income rural residents can be assisted with loan guarantees, which require no downpayment or mortgage insurance, that are offered through private lenders at terms up to 30 years. The loans, both direct and guaranteed, can cover up to 100 percent of market value or acquisition cost, whichever is less. This eliminates the need for a downpayment and provides homeownership opportunities to many more rural Americans.

The innovative **Mutual Self-Help Housing Program** makes homes more affordable by enabling low- and very low-income families to perform 65 percent of the labor to construct their homes. The family's investment or "sweat equity" reduces the total amount of money to be borrowed. Grants are awarded to nonprofit and local government organizations that provide technical assistance. They supervise groups of families in the construction of their homes. The families work on homes together, moving in only when all homes are completed. Usually, the homes are financed through an RHS Single Family Housing direct loan. In 1999, RHS made 83 technical assistance grants and 22 pre-development grants, for about $26 million, to nonprofit organizations in 44 States that helped about 1,350 families build their own homes. A total of $106 million was loaned to these families to help them pay for their new homes.

Home Improvement and Repair Loans and Grants enable very low-income rural homeowners to remove health and safety hazards from their homes and to make homes accessible for people with disabilities. Loans have a maximum interest rate of 1 percent and are available to very low-income homeowners regardless of their age. Grants are available for people age 62 and older who cannot afford to repay a loan. A combination of funds from a loan and grant can be used by eligible elderly residents.

Rural Rental Housing Loans finance construction of rental and cooperative housing for low-income individuals and families with an average annual income of $7,300, including elderly or disabled persons. Loans have a maximum term of 30 years, can equal up to 100 percent of the appraised value or development cost, whichever is less, and can be used to construct new housing or to purchase or rehabilitate existing structures. In addition to the direct lending program, USDA offers loan guarantees to multi-family housing developers to extend the reach of Federal resources to moderate- and low-income working families and elderly individuals.

Housing Preservation Grants are made to nonprofit groups and government agencies to finance rehabilitation of rental units for low-income residents.

Rental Assistance payments subsidize rent costs to ensure that low-income tenants will pay no more than 30 percent of their income for rent.

Community Facilities Loans, Loan Guarantees, and Grants finance the construction, enlargement, extension, or other improvements for community facilities providing essential services in rural areas and towns with a population of 50,000 or less. Funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and nonprofit corporations. Projects commonly financed include child care centers, schools, and libraries. In addition, funding may be used for the purchase of firefighting equipment.

Housing for Farm Workers

Farm workers are among the most poorly housed and lowest paid workers in the United States. RHS provides housing for migrant and farm laborers through several programs. The Farm Labor Housing program, the only national farm labor housing program, provides loans to public or nonprofit agencies or to farmers to enable them to build farm labor housing. In States, such as California, many farm laborers are able to build their own homes through our Mutual Self-Help Housing Program.

Outreach to Native Americans

The Rural Housing Service is reaching out to better inform Native Americans about its programs and is working to overcome institutional barriers to lending on tribal land. In FY 1999, Single Family Housing direct loans and grants worth $11.5 million were made to buy or to repair homes for 250 Native Americans, including $2 million, to build approximately 37 single family houses on tribal lands. An additional $16.3 million guaranteed another 232 housing loans made to Native Americans by private sector lenders. Loans and grants made through the Housing Repair program totaled over $1.5 million and repaired 270 dwellings.

The Community Facilities Program provided more than $5.5 million in direct and guaranteed loans and grants to fund 22 essential community facilities benefitting 20 Native American tribes in 13 States. These projects included infrastructure for a tribal housing project, tribal college classroom buildings, physicians' clinics, child care centers, a museum, fire trucks, a well for water, a food preparation center, and several community centers and general office buildings.

In FY 1999, 3 States used $4 million in **Multi-Family Housing** funds to build 5 rental housing complexes containing 77 apartments on Native American reservations or in communities where most tenants are Native Americans. Another $7.7 million in guaranteed rural rental loans funded 4 complexes with 286 apartments in Arizona and Alaska. Almost $600,000 in **Housing Preservation Grants** was provided to nonprofits or tribes in 8 States for the repair of 112 deteriorating single- or multi-family units that house low-income Native American families.

Expanding the Reach of Federal Resources

Building Partnerships

Partnerships with public bodies, such as towns, counties, and federally recognized Indian tribes, and the private and nonprofit sectors, form the foundation of several RHS programs. For example, USDA's private, nonprofit partners operate USDA-funded multi-family housing complexes, looking after the needs of the tenants and maintaining the properties. Partners deliver USDA Community Facilities, Multi-Family and Single Family Guaranteed Loan programs. They provide funds to leverage our loans and help us serve more people. They provide valuable services, such as loan packaging and homebuyer education and outreach. As Federal human and monetary resources shrink, these partnerships will become even more crucial to

daily operations. Therefore, USDA is actively reaching out to organizations whose goals and missions complement those of the Department. This section describes a number of different types of partnerships found in RHS programs, from homeownership to child care, and multi-family housing managers to leveraging.

Guaranteed Loan Programs

Some of USDA's most important partnerships are created through its loan guarantees. RHS has loan guarantee programs in the Single Family, Multi-Family Housing, and Community Facilities programs. This type of loan guarantee is a collaboration with local lenders by which the lender funds the loan and RHS issues a guarantee for up to 90 percent of the amount of the loan. With the assurance of RHS to protect them in case of default, banks are more confident and willing to extend eligibility to a wider range of customers. For example, a prospective homeowner unable to afford a downpayment could still buy a home because he or she could borrow the full amount using a lender backed by a USDA guarantee.

President's National Partners in Homeownership

In 1996, the Rural Housing Service joined President Clinton's National Partners in Homeownership, as part of the Presidential initiative to provide the American dream of homeownership to as many Americans as possible by the year 2000. In the third quarter of 1999, 8.7 million more families owned homes than when President Clinton took office in 1993.

This homeownership initiative sets up a partnership between government and the private sector to address homeownership issues at the local level. The partners work to enhance the relationship between Federal, State, and local government and the private sector and to expand homeownership opportunities. This has been a great success with the homeownership rate currently at the highest rate in recorded history. RHS has helped realize President Clinton's homeownership goals ahead of schedule. As of May 2000, more than 75 percent of rural households currently own their homes.

The Rural Home Loan Partnership

The Rural Home Loan Partnership (RHLP), begun in 1996 under the President's National Partners for Homeownership initiative, makes private credit more accessible for eligible low-income borrowers. The founding partners included RHS, Rural Local Initiatives Support Corporation (Rural LISC), and the Federal Home Loan Bank System. However, RHLP has expanded each year since its inception due to its success. In 1999, the partnership at the national level grew to include Neighborhood Reinvestment, Rural Alliance, the Office of Thrift Supervision, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency.

The partnership delivers a new single-family mortgage product which enables families earning 80 percent of area median income or below to achieve homeownership. RHS provides a subsidized mortgage to cover part of the cost of a house, while a local bank finances the remainder. Private, nonprofit community development corporations identify and counsel eligible borrowers. RHS's partnership with

community development corporations helps direct resources to needy areas, provides technical assistance, and builds partnerships for other Rural Development initiatives.

Since RHLP began in 1996, it has provided more than $50 million to help 1,100 families in 36 States attain the American dream of homeownership. As of May 2000, there are 177 local partnerships in 45 States and two territories, projected to finance 1,348 new homeowners in 2000.

Community Development Financial Institution Partnership

The Community Development Financial Institution Partnership was created in 1998 between RHS and various community development financial institutions (CDFI's) throughout the country. The purpose of the partnership is to provide homeownership opportunities to low-income applicants by combining the resources of RHS and CDFI's.

CDFI's are specialized private institutions that serve populations whom traditional financial institutions are not serving. They provide a wide range of financial products and services to underserved communities. Some of these services include mortgage financing for first-time homebuyers and basic financial services needed by low-income households. RHS and the CDFI's have a common goal of working to build stronger communities through creating healthy local economies, restoring communities, generating local tax revenues, and empowering residents by increasing homeownership. In most cases, other partners are included in the partnerships to provide homeownership counseling and sometimes additional sources of leveraged funds.

In FY 2000, the Rural Housing Service set aside more than $63 million for RHLP and CDFI initiatives, which will leverage about $40 million in private financing and other funds, for a total program level in excess of $100 million.

Rural Utilities Service

USDA Rural Utilities Service (RUS) programs, including Rural Telephone Bank (RTB) programs administered by RUS, touch the lives of tens of millions of rural people daily. Through project financing and technical assistance, RUS builds infrastructure to provide rural businesses and households with modern telecommunications, electricity, and water. Today, this also means bringing the "information superhighway" to rural America.

RUS is a partner with rural business and economic development efforts, providing infrastructure that is the foundation for competitiveness. It is a technical and financial resource in a time of change for rural utilities.

Rural Telecommunications Loans and Loan Guarantees build modern rural communications systems that provide rural areas with "on ramps" to the information superhighway by making financing available for telecommunications facilities. Loans made to rural telephone cooperatives and companies help bring reliable and affordable telecommunications services to more than 15 million rural Americans.

Welfare to Work at the USDA Centralized Service Center

- *In July 1997, in response to President Clinton's Federal Welfare to Work initiative, the Centralized Service Center (CSC) in St. Louis, MO, hired its first Welfare to Work employee. Since then, the CSC has hired 22 more employees under this program, and 20 are still employed by USDA – a 90-percent success rate. Several factors contribute to the success of this program.*
- *The CSC works in partnership with Hope House, a transitional service agency. Hope House refers candidates for the initiative, providing day care, skill training, and even housing for them. At USDA, trainees complete an orientation session that helps them understand how the working world operates. Each trainee is assigned a mentor who assists and advises him or her on work-related problems, as well as personal ones.*
- *Currently, all Welfare to Work employees at CSC are initially hired as Customer Service Representatives in the CSC Customer Service Telephone Center. Working in the Telephone Center helps the trainees because they receive indepth training on all areas of CSC operations. Additionally, they can take advantage of the flexible scheduling available in the Telephone Center and rely on a special supervisory team to give them individual support and training. Once trainees have made the transition into a working environment, they have the opportunity to apply for other positions.*
- *Here is an example of the success of the CSC's Welfare to Work program. When one employee started as a trainee, she found it difficult to handle her work schedule and meet the demands of her family. Her CSC mentor and supervisor gave her the support, encouragement, and flexible schedule she needed to succeed, and gave her advice regarding several important personal decisions. Now, this employee has a permanent position in the Telephone Center and is attending junior college. She plans to earn her associate degree in computer science by the end of the year 2000.*

Rural Electric Loans and Loan Guarantees provide reliable, safe, and affordable electricity to rural America by financing power distribution, generation, and transmission systems. Loans are made to nonprofit and cooperative associations, public bodies, and other utilities which serve more than 25 million rural Americans.

Distance Learning and Telemedicine Loans and Grants bring distance learning and telemedicine to rural America. Education and adequate medical care are crucial to the survival of rural communities, but are becoming increasingly difficult to provide. This program employs innovative ways to use telecommunications infrastructure to extend the reach of educational and medical expertise into communities

without those resources. The loan program has been expanded to broaden the use of rural telecommunications infrastructure.

Water and Waste Disposal Loans and Grants develop water and waste disposal systems (including solid waste disposal and storm drainage) in rural areas and towns with populations of less than 10,000. The funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and nonprofit corporations. RUS also guarantees water and waste disposal loans made by banks and other eligible lenders.

The **Water 2000 Initiative** is an ambitious undertaking to extend safe, dependable drinking water to rural communities. At least 2.2 million rural people live with critical quality and accessibility problems with their drinking water, including an estimated 730,000 people who have no running water in their homes. Since it started in 1994, Water 2000 has already improved drinking water quality or provided a public water supply for the first time to some 2.5 million people in more than 1,300 rural communities nationwide.

Office of Community Development

USDA Rural Development's Office of Community Development administers the Empowerment initiative, a Presidential initiative designed to provide economically depressed rural areas and communities with real opportunities for growth and revitalization. Its mission: to create self-sustaining, long-term economic development in areas of pervasive poverty, unemployment, and general distress, and to demonstrate how distressed communities can achieve self-sufficiency through innovative and comprehensive strategic plans developed and implemented by alliances among private, public, and nonprofit entities.

In the first selection round, announced in December 1994, 3 rural Empowerment Zones (EZ) and 30 rural Enterprise Communities (EC) were designated by President Clinton and Vice President Gore. Each EZ is receiving $40 million and each EC $3 million in a Federal grant. This one-time, 10-year grant is in addition to funding benefits and tax incentives. In the second round, announced in December 1998, Clinton and Gore designated an additional 5 rural Empowerment Zones and 20 rural Enterprise Communities. Each of these EZ's has so far received $2 million and each EC received $500,000 in two initial Federal grants. Additional funding benefits and tax incentives are also available to Round II communities. Further, designated communities qualify for earmarks of program funds from Rural Development agencies.

Community Empowerment

There are no written guidelines or formulas to give to communities regarding community empowerment. Community empowerment is a flexible, evolving process that is different for each community. It includes a number of tangible and intangible benefits that will enable a community to achieve its goals. The basic elements of community empowerment include:

- Learning to use its own initiative to secure resources from many sources (Federal, State, local, corporate, foundations, etc.) to implement its strategic plan, and
- Using citizen participation on the board and in program administration to improve, through experience, the community's ability to manage its programs and monitor the programs of its sub-grantees.

Round I Empowerment Zones

Kentucky Highlands—KY
Mid-Delta—MS
Rio Grande Valley—TX

Round I Enterprise Communities

Chambers County—AL
Greene & Sumter Counties Rural—AL
East Central Arkansas—AR
Mississippi County—AR
Arizona Border Region—AZ
Imperial County—CA
City of Watsonville—CA
Jackson County, Florida—FL
Crisp/Dooly—GA
Central Savannah River Area—GA
Northeast Louisiana Delta—LA
Macon Ridge—LA
Lake County—MI
City of East Prairie,—MO
North Delta Mississippi—MS
Halifax/Edgecombe/Wilson—NC
Robeson County—NC
La Jicarita—NM
Greater Portsmouth—OH
Southeast Oklahoma—OK
Josephine County—OR
City of Lock Haven Federal—PA
Williamsburg-Lake City—SC
Beadle/Spink/South Dakota—SD
Fayette County/Haywood County—TN
Scott/McCreary Area—TN
Accomack-Northampton, Virginia—VA
Lower Yakima County Rural—WA
Central Appalachia —WV
McDowell County—WV

Round II Empowerment Zones

Desert Communities—CA
Southwest Georgia United—GA
Southernmost Illinois Delta—IL
Lake Aggasiz—ND
Oglala Sioux Tribe—SD

Round II Enterprise Communities

Metlakatla Indian—AK
Four Corners—AZ
Central California—CA
Empowerment Alliance of Southwest Florida—FL
Molokai—HI
Town of Austin—IN
Wichita County—KS
Bowling Green—KY
City of Lewiston—ME
Clare County—MI
Fort Peck Assiniboine and Sioux Tribe—MT
City of Deming—NM
Tri County Nations—OK
Fay-Penn—PA
Allendale ALIVE—SC
Clinch-Powell—TN
Middle Rio Grande—TX
Tri-County Rural—WA
Northwoods Niijii—WI

Champion Communities

More than 200 rural communities organized and completed the valuable strategic planning process as part of their application for the initiative. To assure that their important work produced continuing benefits to these communities, USDA has offered them special designations as "Champion Communities" and provided continuing assistance to them. As of May 2000, 99 communities have accepted this challenge and have signed agreements with USDA.

National Centers of Excellence: College and University Partnership Project

Local capacity building to help communities sustain their economies is being enhanced through a 1-year partnership between six rural colleges and USDA. The six colleges and universities assist EZ/EC communities with strategic plan implementation through training programs and other sources of expertise.

National Centers of Excellence: Tribal College Partnership

A related initiative helps tribal communities develop empowerment programs through the technical assistance of four tribal colleges. With assistance from USDA, the four colleges are developing programs of training and community service to address the critical needs of the communities they serve. The initiative responds to President Clinton's Executive Order 13021, which asked Federal departments and agencies to integrate American Indian tribal colleges into their programs.

Rural Economic Area Partnership (REAP) Zones

Rural areas in the Northern Great Plains face unique challenges due to their isolation, low-density populations, and changing economic base. Rather than high poverty, these areas are challenged by declining populations slowing economic activity, and growing difficulty in providing public services. To counter these troubling trends, two REAP zones were established in multi-county areas of **North Dakota**.

Rural areas in the southern tier of **New York** face unique challenges due to their isolation, low-density populations, and changing economic base. Rather than high poverty, these areas are challenged by declining populations, job loss, slowing economic activity, and growing difficulty in providing public services. To counter these troubling trends, two REAP Zones were established in multi-county areas of New York.

Southwest Border Regional Partnership

In response to Vice President Gore's challenge that EZ/EC adopt regional approaches to planning and problem-solving, Empowerment Zones, Enterprise Communities, and Champion Communities from the Southwest border region formed the Southwest Border Region Partnership.

A challenge that the Vice President issued in April 1997 at the White House Empowerment Conference in Detroit was a primary catalyst in the creation of the Southwest Border Task Force. During this conference, the Vice President asked Empowerment Zones and Enterprise Communities to combine their efforts and adopt a regional approach to revitalize their communities. The Southwest Border Partnership, a regional organization composed of EZ's, EC's, and Champion

Communities from Texas to California, was created in response. This partnership, along with efforts undertaken by a number of other groups, inspired Executive Order 13122 which created the President's Interagency Task Force on the Economic Development of the Southwest Border on May 25, 1999.

The task force reports to the Vice President and is chaired by Dan Glickman, Secretary of Agriculture, with Lawrence Summers, Secretary of the Treasury, and Alexis Herman, Secretary of Labor, serving as co-chairs. Its primary mission is to promote increased coordination between Federal agencies and better leverage existing programs and initiatives to create the conditions necessary for sustainable economic development in the Southwest Border Region—one of the most economically distressed areas of the country.

On May 25, 2000, the first anniversary of the task force's creation, the task force submitted its first annual report which contains approximately 14 new initiatives and 48 recommendations aimed at filling existing gaps in current Federal programs targeted at the border and opening new avenues through which to encourage sustainable development in the region.

Delta Regional Initiative

The Mississippi Delta also has a similar regional initiative to eliminate poverty and economic distress in the counties of the lower Mississippi Delta. Seven Delta States were involved in a Lower Mississippi Delta Development Commission study of poverty that began in 1989. The Delta Regional Initiative joins the Southern EZ/EC forum, The Lower Mississippi Delta Development Center (formerly Commission), The Foundation for the Mid-South, and The Enterprise Cooperation of the Delta in a partnership agreement to develop a long-range strategic plan and implement the recommendations from the Lower Mississippi Delta Development Commission's Report—"The Delta Initiative." The Delta Regional Initiative includes both urban and rural EZ and EC from 219 counties in 7 States.

Over the past 7 years, USDA Rural Development has provided nearly $3.5 billion in financial assistance to the Delta region. The USDA investments announced in May 2000 include $30.3 million for clean drinking water and safe wastewater disposal systems, $14.5 million for rural businesses, $470,000 for community facilities, and $228,000 for self-help housing developments, where low-income people become homeowners by providing most of the labor needed to build their homes. Specific projects include:

- A $3 million business loan for the Bethel Grain Company in Franklin County, IL, to make building modifications and purchase equipment needed to manufacture value-added corn products, including those used in cereals and corn meal for export markets. This loan will help the company create or save 63 jobs in a high-unemployment part of the State and will help boost corn prices for corn growers in the area.
- A $1.56 million loan and grant combination to help expand a water treatment plant in Lauderdale County, TN, which will provide a safe, dependable drinking water supply for 3,600 residents.

- A $420,000 business loan to the Arkansas Rural Water Association to construct a training facility in Lonoke, AR, where water technicians from small, rural water districts can be trained.
- A $31,000 grant to make repairs and improvements at a rural day care center in Caldwell County, KY, which provides service to a community of 1,500 people.
- A $50,000 business grant to Alcorn State University in Mississippi to add a refrigeration system at a farm and craft market in Natchez, benefitting vegetable growers and crafts people in a five-county area.

Selected Accomplishments by Rural Empowerment Zones and Enterprise Communities (EZ/EC) as of April 2000

New businesses attracted to Rural Empowerment Zones and Enterprise Communities	255
Businesses served through Intermediary Relending Programs/Revolving Loans/Micro Loans	448
Businesses served through business development and job training initiatives	1,576
Businesses started through incubators and entrepreneurial initiatives	167
Clients placed in jobs through career planning and job placement programs	2,133
Clients served through business development and job training initiatives	12,021
Jobs created or saved	12,041
New loan funds established for business development and job training	36
Loans provided for business development and job training	638
New electric, gas, and water/drainage hookups	513
New or improved water/drainage system	47
New/upgraded computers provided	746
Number of new staff members hired to work in EZ/EC Communities	158
Number of staff trained in EZ/EC Communities	1,693
Number of new houses constructed and houses rehabilitated	1,979
Number of new health care professionals hired and health care providers trained	89

For More Information:

Rural Development

Acting Director, Legislative & Public Affairs
Gladys Rodriguez
Rm 5039-S
Washington, DC 20250
202-720-1019
FAX 202-690- 4083
gladys.rodriguez@usda.gov

Deputy Public Affairs Director
Dan Campbell
Rm 5040-S
Washington, DC 20250
202-720-6483
FAX 202-690-4083
dan.campbell@usda.gov

Deputy Legislative Director
Brenda Morton
Rm 2123-S
Washington, DC 20250
202-720-2367
FAX 202-690-0311
bmorton@rurdev.usda.gov

Freedom of Info Act Officer
Dorothy Hinden
Rm 0361-S
Washington, DC 20250
202-690-0031
FAX 202-692-0034
dhinden@rdmail.rural.usda.gov

7. Farm and Foreign Agricultural Services

Farm Service Agency

Mission

The Farm Service Agency (FSA) mission is to ensure the well-being of American agriculture and the American public through efficient and equitable administration of agricultural commodity, farm loan, conservation, environmental, emergency assistance, and domestic and international food assistance programs.

Vision Statement

FSA is a customer-driven agency with a diverse and multi-talented workforce, empowered and accountable to deliver programs and services efficiently, and dedicated to promoting an economically viable and environmentally sound American agriculture.

What Is FSA?

FSA was established under an USDA reorganization in 1994, incorporating programs from several agencies, including the Agricultural Stabilization and Conservation Service, the Federal Crop Insurance Corporation (now a separate Risk Management Agency), and the Farmers Home Administration. Though its name has changed over the years, the agency's relationship with farmers dates back to the 1930's.

Congress set up a unique system under which Federal farm programs are locally administered. Farmers who are eligible to participate in these programs elect a three- to five-person county committee that reviews county office operations and makes many of the decisions on how to administer the programs. This grassroots approach gives farmers a much-needed say in how Federal actions affect their communities and their individual operations. After more than 60 years, it remains a cornerstone of FSA's efforts to preserve and promote American agriculture.

1996 Farm Bill

The Federal Agriculutre Improvement and Reform Act of 1996 (the 1996 Act) significantly changed U.S. agricultural policy by removing the link between income support payments and farm prices. Farmers who participated in the wheat, feed grains, cotton, and rice programs in any one of the previous 5 years could enter into 7-year production flexibility contracts and receive a series of fixed annual "transition payments." These payments are independent of farm prices and specific crop production, in contrast to the past, when deficiency payments were based on farm prices and the production of specific crops.

The Federal Government no longer requires land to be idled, nor does it deny payments if farmers switch from their historical crops. The contract, however, requires participating producers to comply with existing conservation plans for the farm, wetland provisions, and planting flexibility limits, such as restrictions on planting fruits and vegetables, and to keep the land in agricultural uses.

The 1996 Act provided for a one-time signup in 1996 for producers to enter into production flexibility contracts. There will be no additional signups except for certain lands coming out of the Conservation Reserve Program. Farmers who entered into a contract are also eligible for market transition loans and loan deficiency payments. Recently, Congress made all farms eligible for loan deficiency payments for the 2000 crop year.

Marketing Assistance Loan Programs

FSA administers commodity loan programs for barley, corn, honey, grain sorghum, mohair, oats, oilseeds, peanuts, rice, sugar, tobacco, wheat, and upland and extra-long-staple cotton.

The agency provides the operating personnel for the Commodity Credit Corporation (CCC), which provides assistance with respect to products of certain agricultural commodities through loans and purchases. This provides farmers with interim financing and helps maintain balanced and adequate supplies of farm commodities and their orderly distribution throughout the year and during times of surplus and scarcity.

Instead of immediately selling the crop after harvest, a farmer who grows an eligible crop can store the produce and, normally, take out a “nonrecourse” loan for its value, pledging the crop itself as collateral. “Nonrecourse” means that the producer can discharge debts in full by forfeiting or delivering the commodity to the Federal Government.

The nonrecourse loan, where available, allows farmers to pay their bills and other loan payments when they become due, without having to sell crops at a time of year when prices tend to be at their lowest. Later, when market conditions are more favorable, farmers can sell their crops and repay the loan with the proceeds. Or, if the prevailing price of the crop remains below the loan level set by CCC, farmers can keep loan proceeds and forfeit the crop to CCC instead. The repayment rate may also be adjusted, in some instances, by USDA to minimize forfeitures and the costs of storing commodities and to allow commodities produced in the United States to be marketed freely and competitively, both domestically and internationally. When repayment rates are set below the loan level during periods of low prices, producers realize a marketing loan gain. Loan deficiency payments may also be offered in lieu of marketing assistance loans when repayment rates are below the loan level.

CCC loan rates will be designed to keep crops competitive in the marketplace. A producer must have entered into a production flexibility contract to be eligible for nonrecourse marketing assistance loans for wheat, feed grains, rice, and upland cotton. Any production of a contract commodity by a producer who has entered into a production flexibility contract is eligible for loans.

Nonrecourse loans are also generally available for extra-long-staple cotton, honey, mohair, oilseeds, peanuts, tobacco, raw cane sugar, and refined beet sugar, regardless of whether or not the producer has entered into a production flexibility contract. Price support for the marketing quota crops—tobacco and peanuts—is made available through producer loan associations. By law, these programs must operate at no net cost to the U.S. Treasury other than costs associated with all price support programs, and no-net-cost and various assessments are applied to accomplish the result.

Commodity Purchase Programs

Humanitarian assistance under the President's Wheat Initiative reached record levels in 2000, removing 5 million metric tons of wheat, valued at $600.2 million, from the domestic market and sending it to feed hungry people in needy countries.

During Fiscal Year (FY)1999, FSA furnished about 8.5 million metric tons (MT) of U.S. commodities under food aid programs, more than five times the previous year's 1.6 million MT, and the largest tonnage in at least 25 years.

Forfeitures under nonrecourse commodity loan programs are not the only means by which CCC acquires inventory. Under the dairy price support program, CCC buys surplus butter, cheese, and nonfat dry milk from processors at announced prices to support the price of milk. These purchases help maintain market prices at the legislated support level.

CCC can store purchased food in over 10,000 commercial warehouses across the Nation approved for this purpose. However, commodity inventories are not simply kept in storage. FSA employees work to return stored commodities to private trade channels. At the agency's Kansas City Commodity Office in Kansas City, MO, FSA merchandisers regularly sell and swap CCC inventories using commercial telecommunications trading networks.

Beyond the marketplace, CCC commodities fill the need for hunger relief both in the United States and in foreign countries. FSA employees work closely with USDA's Food and Nutrition Service to purchase and deliver foods for the National School Lunch Program and many other domestic feeding programs. CCC also administers the Food for Peace Program and other humanitarian activities utilizing the resources of private voluntary organizations in order to use these farm products to fight hunger worldwide.

Disaster Assistance Available From FSA

The year 1999 saw natural disasters from coast to coast. USDA's Farm Service Agency helped farmers who grow crops that are not eligible for crop insurance to recover from disasters by providing $50 million through the Non-insured Assistance Program (NAP).

The noninsured crop disaster assistance program (NAP) provides producers of eligible crops with protection comparable to the catastrophic risk protection plan of crop insurance (see USDA's Risk Management Agency). NAP helps reduce production risks faced by producers of crops for which Federal crop insurance is not available. It also reduces financial losses that occur when natural disasters cause a catastrophic loss of production or prevented planting of an eligible crop.

Eligible crops include certain commercial crops or other agricultural commodities (except livestock):

- for which catastrophic risk protection under section 508(b) of the Federal Crop Insurance Act is not available; and
- that are produced for food or fiber.

Crops specifically included by statute include floricultural, ornamental nursery, and Christmas tree crops, turfgrass sod, seed crops, aquaculture (including ornamental fish), and industrial crops.

When damage to a crop or commodity occurs as a result of a natural disaster, producers requesting NAP assistance must meet certain requirements.

Emergency Loans

From the historic East Coast drought to raging fires in the West, Mother Nature was particularly harsh in 1999. Responding to this crisis, FSA increased emergency lending by 222 percent, making $303 million available to 3,970 farmers, the highest level since fiscal year 1985.

FSA provides emergency loans to help cover production and physical losses in counties declared disaster areas by the President, or designated as such by the Secretary of Agriculture or the FSA Administrator (physical loss loans only). Emergency loans also are available in counties contiguous to such disaster areas. These loans are made to qualifying established family farm operators. Loans for crop, livestock, and non-real-estate losses are normally repaid in 1 to 7 years, and in special circumstances, up to 20 years. Loans for physical losses to real estate and buildings are normally repaid in 30 years, and in special circumstances, up to 40 years.

Other Assistance

The continued plunge in commodity prices caused a tremendous increase in Loan Deficiency Payments (LDP), a previously little used provision of the 1996 Farm Bill. FSA delivered $3,835,816,000 in LDP payments to U.S. farmers, a 20-fold increase over 1997.

U.S. farmers also received more than $5.6 billion under the Production Flexibility Contract program.

Hog prices in 1999 continued to remain at low levels not seen since the Great Depression. USDA responded to this situation and used section 32 funds for the first time in four decades, paying hog farmers over $123 million under the Small Hog Operators Payment Program.

U.S. dairy farmers benefitted from nearly $200 million paid through the Dairy Market Loss Assistance Program, following the steepest decline in wholesale prices in history.

In 1999, record-low commodity prices and a seemingly endless string of natural disasters made it one of the toughest years ever for America's farmers and ranchers. A record $21.5 billion in direct payments, the highest in history, was provided in assistance to America's farmers and ranchers in calendar year (CY)1999, including over $5 billion in market loss assistance payments, over $600 million in livestock and

dairy assistance, and over $1.4 billion in Conservation Reserve Program payments. Almost $2 billion in Crop Loss Disaster Assistance Program payments were issued, the largest crop loss disaster program ever administered by USDA. The previous high was $16.7 billion in 1987.

USDA implemented several programs to assist farmers and ranchers. One of these, the Flood Compensation Program, disbursed $42 million to producers whose agricultural land was subject to long-term flooding and was therefore unable to be used for crop production or grazing. This assistance was provided to producers in five States, and especially to producers in North and South Dakota. Flooding in these areas began as early as 1993 and continued through 1999. This financial relief helped support the family farmer in this time of great hardship in the agricultural community.

Another such disaster relief program, the Livestock Indemnity Program, helps livestock producers who suffered losses from recent natural disasters. It provides a partial reimbursement to eligible producers for livestock losses. The $200 million funding was authorized by the Agriculture Rural Development, Food and Drug Administration and Related Agencies Appropriations Act, 2000, and compensated roughly 168,000 livestock producers for losses that occurred in 1999 because natural disasters destroyed their livestock.

FSA and CCC have several programs that are activated and funded by congressional action during certain types of disasters. Among these are the Tree Assistance Program, which provides payments to eligible tree and vineyard growers who incurred losses due to natural disasters, including losses caused by freeze, excessive rainfall, floods, drought, tornado, and earthquakes.

Congress also authorized the expenditure of $225 million to help dairy producers who suffered economic losses in calendar year (CY) 1999.

Emergency Conservation Program

The Emergency Conservation Program provides emergency cost-share funding for farmers to rehabilitate farmland damaged by natural disasters that create new conservation problems which, if not treated, would:

- impair or endanger the land,
- materially affect the productive capacity of the land,
- represent unusual damage which is not the type likely to recur frequently in the same area,
- be so costly to repair that Federal assistance is or will be required to return the land to productive agricultural use.

The assistance may be used for: removing debris from farmland; grading, shaping, and releveling farmland; restoring livestock fences; and restoring irrigation structures.

FSA issued $93 million in Emergency Conservation Program assistance to 42 States in CY 1999 to help farmers and ranchers rehabilitate farmland damaged by the year's droughts, floods, hurricanes, and other natural disasters.

Farm Loans

The downturn in the farm economy created cash-flow problems for many producers in 1999. FSA was there, processing over $3.8 billion in credit to 37,500 family farmers, an increase of 77 percent over last year and a 15-year high. In fact, FSA loaned more money in the first 6 months of fiscal year 1999 than all of fiscal year 1998.

FSA offers direct and guaranteed farm ownership and operating loan programs to farmers who are temporarily unable to obtain private, commercial credit and who meet other regulatory criteria. Often, these are beginning farmers who cannot qualify for conventional loans because they have insufficient net worth. The Agency also helps established farmers who have suffered financial setbacks from natural disasters, or whose resources are too limited to maintain profitable farming operations.

Under the guaranteed farm loan program, the Agency guarantees loans made by conventional agricultural lenders for up to 95 percent of principal, depending on the circumstances. The lender may sell the loan to a third party; however, the lender is always responsible for servicing the loan. All loans must meet certain qualifying criteria to be eligible for guarantees, and FSA has the right to monitor the lender's servicing activities. Farmers interested in guaranteed loans must apply to a conventional lender, who then arranges for the guarantee.

For those unable to qualify for a guaranteed loan, FSA also lends directly. Direct loans are made and serviced by FSA officials who also provide borrowers with supervision and credit counseling. Funding authorities for direct loans are limited, and applicants may have to wait until funds become available. To qualify for a direct farm ownership or operating loan, the applicant must be able to show sufficient repayment ability, pledge enough collateral to fully secure the loan, and meet other regulatory criteria.

In 1999, FSA dealt with an unprecedented demand for farm loans and farm guarantees from farmers and ranchers unable to obtain vital credit elsewhere. FSA provided over 37,000 loans and loan guarantees, totaling $3.9 billion–an increase of 77 percent over the previous year, and a 15-year high. Along with that, emergency lending increased to $329 million (3,970 farmers), the highest level since 1985. FSA provided 21,900 direct loans, ($1.4 billion) and 15,690 guaranteed loans ($2.5 billion).

The Farm Service Agency staff processed 21,900 direct loans totaling $1.28 billion, and 15,680 guaranteed loans totaling $2.5 billion.

USDA's FSA processed over 8,436 loans totaling $688.7 million to beginning farmers, an increase of 38 percent from fiscal year 1998. FSA provides both direct and guaranteed loans to beginning farmers and ranchers, helping bridge the gap to commercial credit sources.

The current farm crisis also highlighted the need for a strong farm and home plan. FSA staff put special emphasis on assisting qualified applicants in developing sound farm management practices, analyzing problems, and planning the best use of available resources essential for success in farming or ranching.

Between 1995 and 1999, FSA increased its lending to Native Americans by 175 percent, making 544 direct loans last year (up from 308 in 1995), totaling over $29 million (up from $11 million in 1995), a 265-percent increase in direct lending. FSA

increased overall lending to the socially disadvantaged by 44 percent, from $186,704,000 in 1998 to $269,284,000 in 1999.

Conservation Programs

In the vital conservation arena, CCC continued its progress in saving our natural resources. During 1999, CCC accepted 253,000 acres in the Conservation Reserve Program (CRP) continuous sign-up (wherein producers can sign up at any time for certain high-priority conservation practices, such as filter strips and riparian buffers.)

Also enrolled were 5 million acres in the regular (competitive) CRP, the Federal Government's single largest environmental improvement program.

CRP protects our most fragile farmland by encouraging farmers to stop growing crops on highly erodible and other environmentally sensitive acreage. In return for planting a protective cover of grass or trees on vulnerable property, the owner receives a rental payment each year of a multiyear contract. Cost-share payments are also available to help establish permanent areas of grass, legumes, trees, windbreaks, or plants that improve water quality and give shelter and food to wildlife.

Another conservation program, the Conservation Reserve Enhancement Program, is part of the CRP. This program shields millions of acres of American topsoil from erosion by encouraging the planting of protective vegetation. By reducing wind erosion as well as runoff and sedimentation, it also protects air and groundwater quality and helps improve countless lakes, rivers, ponds, streams, and other bodies of water.

State governments have the opportunity to participate in this groundbreaking environmental improvement effort. CCC provides incentives to agricultural producers to participate, while State governments contribute specialized local knowledge, technical help, and financial assistance. The result is an environmental enhancement effort tailored to the specific environmental needs of each State.

In 1999, North Carolina and Delaware signed agreements with FSA under the Conservation Reserve Enhancement Program, which provides for the protection of nationally significant estuaries and rivers. This Federal and State partnership restores riparian areas to reduce sediment and nutrients from entering our Nation's waters. Thus far, 11 States have signed agreements with USDA.

FSA works with USDA's Natural Resources Conservation Service and other agencies to deliver other conservation programs, including the Environmental Quality Incentives Program (EQIP). EQIP helps farmers and ranchers improve their property to protect the environment and conserve soil and water resources. Participants can take advantage of education in new conservation management practices, technical support, cost-share assistance, and incentive payments.

Where To Get More Information on FSA Programs

Further information and applications for the programs described in this chapter are available at local FSA offices. These are usually listed in telephone directories under "U.S. Department of Agriculture, Farm Service Agency." FSA State offices supervise the Agency's local offices and are usually located in the State capital or near the State land-grant university.

For further information on FSA programs, contact:

Success Stories

Mike and Jodie Madison from Seymour, WI, have always had a passion for farming, and FSA played a big part in making their dream to purchase their own farm come true. Since the Madisons did not have sufficient cash-flow or collateral, they were unable to meet the required commercial standards to obtain a conventional loan from local lending institutions. They sought and secured a beginning farmer loan from FSA. Mike, 28, and Jodie, 25, feel that investing money wisely is important and won't move ahead on any project unless it is something they can afford to do. All funds received from FSA go toward farm improvements. The Madisons feel FSA helped fulfill their dreams of owning and operating Mike's parents' farm by providing funds at terms that would have been difficult to get from a conventional lender.

A program for at-risk high school students, jointly funded by FSA and Alcorn State University, recently concluded in Mississippi. FSA provided $40,000 in funding which reached 125 students in North Bolivar, MS. Many residents of the town and county, an historic all-Black community, grow sweet potatoes, peppers, and peanuts; and the program was developed to interest students in agricultural careers other than farming. Using cooperative studies, career awareness seminars, study tours, mentoring, and hands-on experience, the program exposed the students to a comprehensive survey of agricultural and business experiences.

Helping Feed the Hungry

California FSA sponsored a major small farm conference in partnership with the University of California. The conference focused on urban-rural interface and the State's small-scale and family farms. It brought together farmers and teachers, agency professionals, scientists and policymakers, food professionals, environmentalists, and community activists. More than 40 workshops covered sustainable farming practices, farmers markets, specialty products, alternative marketing, successful farm-to-city models, agriculture and food policy, and agriculture and food education.

California FSA launched a high-profile ag-for-kids program in an effort to reach the increasingly urban population in California. FSA launched this program to improve the understanding of the importance and value of agriculture. FSA developed an expanding Internet site with information related to the State's agriculture. Within FSA, the site consistently has the top readership of all field sites.

The USDA Field Gleaning and Food Recovery Team received the Vice President's Hammer Award. FSA, other Federal agencies, and nonprofit organizations pioneered an innovative and cost-effective way to recover food from orchards and fields owned by FSA producers. The partnership has helped recover over 4 million pounds of food, enough food to fill 200 Boeing 767 cargo holds, and and has helped give millions of meals to hungry Americans.

Tailoring Programs for Specific Needs

A large number of Hmong, Cambodian, and Latino immigrants—many with agricultural backgrounds—have settled in Massachusetts. The New Entry Sustainable Farming Project helps these "new entrants" employ their agricultural talents. The project involves FSA, Tufts University, Massachusetts Department of Food and Agriculture, Extension Service, land-grant universities, farmers, small farm organizations, farm cooperatives, marketing, community and business groups. The project provides access and instruction to many groups, from recently arrived immigrants to socially disadvantaged groups seeking a life in farming. Focusing on a "mentor farmer" approach, the program partners with existing farm operations to initiate or expand small-scale production and apprenticeship training.

Using "micro-loans" provided by FSA and other organizations, program leaders work with organizations and individuals to identify participants, secure farmland, develop marketing and enterprise linkages, and provide education, training, and technical assistance.

Nuestras Raices, Holyoke, MA: Spanish for "Our Roots," Nuestras Raices has been providing community gardens for very low-income Latino immigrant residents, who rely on them for vegetables in the summer/fall months. It was discovered that many of these Latinos had farming backgrounds and wanted to begin farming in their area. The first step was to find suitable sites that could be available.

Nuesta Raices hired a graduate student to survey around Holyoke to identify land that the new-entry farmers could use. He determined the availability of the land, rental costs, and its suitability. This information will provide an important database for many future farm development opportunities. Nuestras Raices is a valuable resource, providing important information to program planners, while providing fertile ground for these aspiring farmers.

Massachusetts Cambodian Aquaculture Cooperative: Responding to the need for a local specialty fish source, the Cambodian Mutual Assistance Association launched an aquaculture cooperative in Lowell, where 100 pounds of tilapia are raised every 2 months. The fish are grown in tanks housed in an early 19th century mill building. Begun with seed money provided through the USDA 2501 fund, this cooperative will be an important local source for these specialty fish, which until now had to be purchased from outside the New England area.

The FSA Small Farmer Outreach Training and Technical Assistance Program graduated 85 Puerto Rican limited-resource farmers. The program, begun in 1997 in partnership with the University of Puerto Rico at Mayaguez, was designed to assist underserved limited-resource farmers by teaching management and financial skills, and by improving access to FSA and USDA programs and services. The graduates will continue to receive regular farm visits and technical assistance. The program is in the second year of a 5-year program, pending available funding.

FSA–Public Affairs
1400 Independence Avenue, S.W.
Washington, DC 20250-0506
Telephone: 202-720-5237
The FSA home page can be found at *http://www.fsa.usda.gov*

For information on commodity sales and purchases, contact:
FSA Kansas City Commodity Office
P.O. Box 419205
Kansas City, MO 64141-6205
Telephone: 816-926-6301

FSA's aerial photographs of U.S. farmlands are used extensively by Government and private organizations and the public. Order forms and an index are available from FSA local offices. For more information on photographic services, including high-altitude photography, contact:
FSA Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, UT 84119-2020
Telephone: 801-975-3500

Foreign Agricultural Service

The Agency and Its Mission

USDA's Foreign Agricultural Service (FAS) represents the diverse interests of the U.S. food and agricultural sector abroad. FAS serves U.S. farmers and other agricultural interests by working to expand markets for U.S. agricultural products, including fish and forest products, overseas and promoting world food security.

The agency collects, analyzes, and distributes information about global supply and demand, trade trends, and emerging market opportunities. FAS seeks improved market access for U.S. products and implements programs designed to build new markets and to maintain the competitive position of U.S. products in the global marketplace.

FAS also carries out food aid programs; operates a variety of congressionally mandated import and export programs; and manages international technical assistance, research, and economic development activities. FAS helps USDA and other Federal agencies, U.S. universities, and others enhance the global competitiveness of U.S. agriculture by mobilizing expertise for agriculturally led economic growth to increase income and food availability in the developing world. FAS also coordinates and articulates USDA views on a number of agricultural policy and program issues in international organizations to promote and enhance the interests of USDA and the U.S. agricultural community.

Formed in 1953 by executive reorganization, FAS is one of the smaller USDA agencies, with about 950 employees. FAS operates worldwide with staff in 59 posts

covering more than 130 countries. Washington-based marketing specialists, trade policy analysts, economists, and others work closely with the overseas staff.

Roughly 70 percent of the annual FAS budget is used to build markets overseas for U.S. farm products. This includes the funding for all of FAS' trade and attaché offices overseas, and its work with U.S. commodity associations on cooperative promotion projects. The remaining funds cover other trade functions, including gathering and distributing market information, trade policy efforts, international training and research of mutual benefit, and representation of U.S. agricultural interests in multilateral organizations. To get a complete picture of the services offered and information available for exporters, visit the home page at *http://www.fas.usda.gov*

Overseas Representation

FAS' foreign service officers wear many hats, serving as diplomats, negotiators, analysts, and marketing representatives for U.S. agricultural producers, processors, and exporters. The officers provide information used to plan and develop strategies for improving market access, promoting world food security, protecting U.S. interests under trade agreements, and developing programs and policies to make U.S. farm products more competitive. They work with other USDA and Federal agencies, international organizations, State and local governments, and the U.S. private sector. For example, in FY 1999, FAS offices overseas submitted more than 3,800 reports from 88 countries, covering 29 different agricultural commodities of interest to the United States. They also advise U.S. ambassadors on agricultural matters and represent U.S. agriculture before the government, trade groups, and public of their host countries.

U.S. Agricultural Trade

U.S. agricultural exports closed out the decade at $49 billion in fiscal 1999, down 9 percent from 1998 and a full 18 percent below the 1996 record.

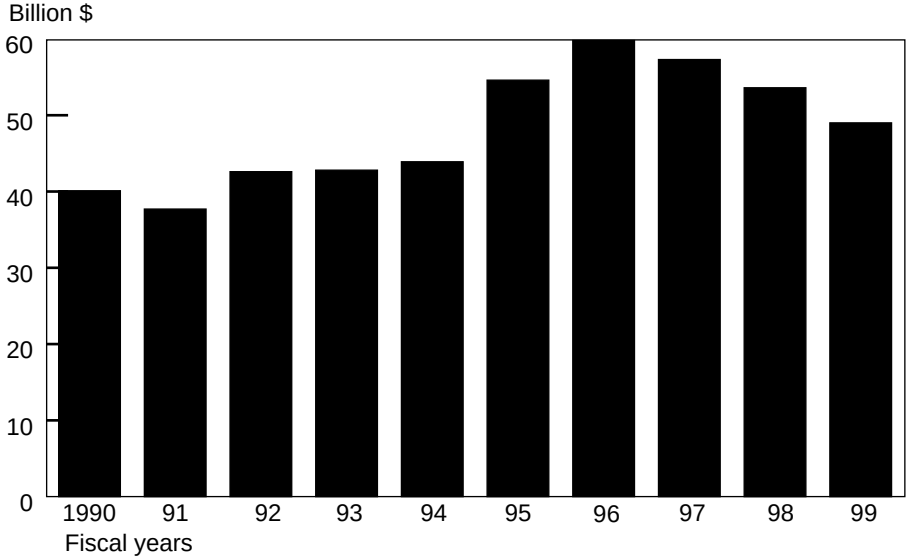
Pressures from large supplies and subsequent low prices maintained their grip on farm commodity markets, although most countries affected by the global financial crisis were on the path to recovery.

U.S. solid wood products and seafood products fared generally better than agricultural products in 1999. Wood product sales were down only about 1 percent from the previous year, while seafood netted a 19-percent increase in export value.

U.S. agricultural imports continued to grow in fiscal 1999, edging up to a new record of $37.5 billion. Despite the combination of lower exports and rising imports, agriculture posted its 40th straight annual trade surplus–albeit the lowest surplus since 1987–at $11.5 billion. The highest was $27.2 billion in 1996

Figure 7-1

Nineties close with U.S. agricultural exports at 5-year low, but well above decade's start



Bulk Agricultural Exports Off 11 Percent in FY 1999

Bulk commodities took a plunge in fiscal 1999, as sagging demand and large global production brought some of the lowest prices in decades. While total export volume for major bulk commodities rose 15 percent, to 114 million tons, weak prices more than offset added tonnage. Corn was an exception: a 38-percent increase in tonnage lifted coarse grains to a 12-percent value gain. The major factor was reduced competition from China and Argentina. Aid donations helped prop up wheat export volume, but export value still dropped 4 percent. Soybean exports plummeted 23 percent, reflecting large global supplies, weak demand, and rock-bottom prices. Cotton fared worse, with sharply reduced volume from the small U.S. crop and low prices. Total U.S. bulk commodity exports were $10 billion below fiscal 1996's $28.8 billion.

Table 7-1.

U.S. bulk commodity exports, FY 1998-99

	FY 1998	*FY 1999*	*1998-99 change*
Commodity	*—$ million—*		*Percent*
Coarse grains	4,991	5,607	+12
Soybeans	6,137	4,748	-23
Wheat	3,805	3,664	-4
Tobacco	1,448	1,376	-5
Cotton	2,543	1,323	-48
Rice	1,138	1,015	-11
Pulses	319	270	-15
Peanuts	203	188	-7
Other	359	376	+5
Total	**20,942**	**18,566**	**-11**

Note: Fiscal years are October-September (i.e., fiscal 1999 ran Oct. 1, 1998-Sept. 30, 1999).

Exports of Intermediate Agricultural Products Down 12 Percent

U.S. exports of intermediate agricultural products dropped 12 percent in fiscal 1999 to the lowest level since 1994. Most product categories were down, with sharp declines for soy meal, soy oil, hides, and animal fats. Large South American supplies, intense competition, and lackluster world demand were the major factors affecting soybean product prices and volumes. Animal hide exports suffered from sluggish Asian demand paired with a slowdown from Europe. Wheat flour exports surged 52 percent, mainly from U.S. donations to Bangladesh, Yemen, and other destinations, and $10 million in sales to Israel. Among the top four U.S. markets, intermediate product sales fell 25 percent to the European Union (EU), 4 percent to Canada, 10 percent to Mexico, and 11 percent to Japan. The record high remains at $12.2 billion in exports, set in 1997.

Table 7-2.

U.S. intermediate agricultural product exports, FY 1998-99

	FY 1998	*FY 1999*	*1998-99 change*
Commodity	*—$ million—*		*Percent*
Feeds & fodder	1,675	1,552	-7
Hides & skins	1,337	1,102	-18
Soybean meal	*1,944	1,065	-45
Veg. oils (excl. soy oil)	*1,027	919	-11
Planting seeds	807	810	0
Sugar, sweeteners, & beverage bases	716	689	-4
Live animals	655	621	-5
Soybean oil	*882	608	-31
Animal fats	629	529	-16
Wheat flour	115	175	+52
Other	2,308	2,558	+11
Total	**12,096**	**10,628**	**-12**

*Denotes a record-high export value.

Consumer Food Exports Not Yet Back on Track

U.S. exports of food, beverages and other consumer-oriented agricultural products eased for a second year, following 12 record-setting years. The modest 4-percent drop left consumer food sales at $1 billion below 1997's all-time high–but still $8-$9 billion higher than when the decade began. The collapse in Russian buying accounted for the 26-percent falloff in poultry meat exports. On the plus side, juices and breakfast cereals set new records, with juices benefitting from strong Asian, European, and North American Free Trade Agreement sales. For consumer foods overall, records were set for exports to Canada and Mexico, and to some smaller markets, including China. Fiscal year 1999 marked the first time that consumer foods topped bulk commodities in export value. Consumer foods accounted for 40 percent of total U.S. agricultural exports, up from 24 percent in 1990.

Most Major Markets Caught in Downtrend

Most U.S. export markets were in a tailspin that contributed to the 1999 downturn. U.S. agricultural exports to Japan fell for the third straight year, while both Canada and Mexico backed off from 1998 records and several years of growth. Weak prices and sales of bulk and semi-processed commodities were mainly responsible, as consumer food sales set new highs in Canada and Mexico. Financial crisis pushed Russia out of the top 10, with a 58-percent dive despite U.S. food aid. China and Hong Kong led a drop in U.S. exports to Asia's Pacific Rim, but South Korea and Taiwan were notable exceptions. A recovering Korean economy helped turn 1998's 32-percent U.S. export plunge into a 9-percent rebound for fiscal 1999.

Table 7-3.

U.S. consumer food exports, FY 1998-99

	FY 1998	*FY 1999*	*1998-99 change*
Commodity	*—$ million—*		*Percent*
Meat, poultry, dairy			
Red meats	4,405	4,369	-1
Poultry meat	2,347	1,743	-26
Dairy products	*931	887	-5
Eggs & products	*225	184	-18
Fruits & vegetables			
Proc. fruit/veg.	*2,086	2,084	0
Fresh fruit	1,853	1,843	-1
Fresh vegetables	1,114	1,101	-1
Fruit/veg. juices	684	*769	+12
Snack foods	*1,326	1,296	-2
Tree nuts	1,218	1,077	-12
Wine & beer	*785	743	-5
Pet foods	734	689	-6
Breakfast cereals & pancake mix	365	*371	+2
Nursery products & cut flowers	*250	249	0
Other	2,282	*2,406	+5
Total	**20,605**	**19,810**	**-4**

*Denotes a record-high export value.

Table 7-4.

U.S. agricultural exports by major markets, 1998-99

	FY 1998	*FY 1999*	*1998-99 change*
Market	*—$ million—*		*Percent*
Japan	9,444	8,916	-6
Canada	*7,006	6,937	-1
European Union	8,318	6,820	-18
Mexico	*5,951	5,661	-5
South Korea	2,244	2,449	+9
Taiwan	1,964	2,044	+4
Hong Kong	1,557	1,259	-19
China	1,505	979	-35
Egypt	939	946	+1
Philippines	740	730	-1
Rest of world	13,974	12,263	-12
Total	**53,642**	**49,004**	**-9**

Data include bulk, intermediate, and consumer-oriented agricultural exports.
*Denotes a record-high export value.

Wood Product Sales Remain in a Slump

Fiscal year 1999 marked a second year of weakness for exports of solid wood products. Robust domestic demand kept U.S. prices up, while housing starts in Japan remained slow. Export value dipped below $6 billion to the lowest in the 1990's. This was off 20 percent from 1997's $7.5 billion record high. Canada overtook Japan as our top market. Sales to Japan slumped another 4 percent, adding up to a 50-percent drop since 1996 (an unusually strong year in that market). Exports to Canada continued to grow, gaining 5 percent to a record $1.6 billion, with strong demand for U.S. hardwoods. Sales to the European Union were off 11 percent, but sales were up 10 percent to Mexico and 38 percent to South Korea.

Table 7-5.

U.S. wood product exports, FY 1998-99

	FY 1998	*FY 1999*	*1998-99 change*
Commodity	*—$ million—*		*Percent*
Logs & chips	1,711	1,716	0
Lumber			
Hardwood	1,240	1,322	+7
Softwood/treated	768	786	+2
Panel products	1,026	918	-11
Other	1,264	1,226	-3
Total	**6,009**	**5,968**	**-1**

Seafood Exports Show Solid Gains

After a 3-year decline, foreign sales of U.S. fishery products increased a solid 19 percent to $2.6 billion in fiscal 1999, recovering nearly half the value lost since 1995. Although all major product categories registered increases, a recovery in salmon had the largest impact. Exports of U.S. whole/eviscerated salmon climbed 43 percent, mainly due to a larger Alaskan harvest. Japan, the dominant market for salmon, also accounted for most of the $102-million increase in U.S. fish egg exports. For crabs and crabmeat, record sales to China (up 316 percent to $20 million) and Canada were key factors. Fiscal year 1992 was the decade's high point for this commodity, when U.S. seafood product exports totaled $3.3 billion.

International Trade Agreements

FAS works closely with other government agencies, including the Office of the U.S. Trade Representative (USTR), to protect the trade interests of U.S. producers and processors. FAS monitors the agricultural provisions of existing agreements such as the World Trade Organization (WTO) Uruguay Round Trade Agreement, and the North American Free Trade Agreement (NAFTA), and works to develop the U.S. position on agriculture in negotiations on new agreements.

Table 7-6.

U.S. seafood product exports, FY 1998-99

	FY 1998	*FY 1999*	*1998-99 change*
Commodity	*—$ million—*		*Percent*
Salmon			
Whole/eviscerated	246	353	+43
Canned	140	145	+4
Roe & urchin (fish eggs)	270	372	+37
Surimi (fish paste)	270	288	+7
Crab/crabmeat	120	151	+26
Other	1,125	1,272	+13
Total	**2,172**	**2,581**	**+19**

FAS works to help identify violations and address them at the appropriate level. Besides working with the USTR, FAS works closely with USDA agencies such as the Animal and Plant Health Inspection Service and the Food Safety and Inspection Service to field a team with the technical and policy experience needed to resolve problems. This team supports U.S. export interests in the day-to-day activities of multilateral organizations such as the *CODEX Alimentarius* Commission in the Food and Agriculture Organization and the WTO Committees on Agriculture, and Sanitary and Phytosanitary Standards. These groups help develop international standards that affect trade in agricultural products and monitor compliance with existing trade agreements.

FAS represents American agriculture in our relations with foreign countries. In recent years, for example, FAS has ensured that the Philippines honors its WTO commitments to import pork and poultry, that Korea opens its market for oranges, and that most countries not block imports of U.S. wheat. We resolved these and many other bilateral trade issues without initiating a formal WTO legal process, using bilateral consultations and regular meetings of the WTO committees. FAS has also used the WTO dispute settlement process to successfully challenge several foreign unfair trade practices, including the European Union's hormone ban, Japan's varietal testing requirements, and Canada's dairy export subsidies. FAS also represents U.S. agriculture in negotiating with countries seeking membership in the WTO. The United States and Taiwan signed a market access agreement that has Taiwan lifting its import bans and allowing access for U.S. pork, poultry, and variety meats. Upon Taiwan's accession to the WTO, Taiwan will cut tariffs and open tariff-rate quotas on a range of agricultural products. In November 1999, the United States and China signed a comprehensive bilateral trade agreement in Beijing under which China committed to opening its agricultural import market and eliminating export subsidies upon its accession to the WTO.

On June 30, 2000, the United States presented its negotiating proposal in Geneva, Switzerland, for the next round of World Trade Organization agricultural talks. The U.S. proposal is ambitious and comprehensive. It moves all WTO

members beyond the Uruguay Round to accelerate world agricultural reform and create a level playing field for farmers and ranchers worldwide. It establishes a blueprint for eliminating export subsidies; lowering tariffs and expanding tariff-rate quotas; disciplining state trading enterprises, and facilitating trade in the products of new technologies.

Food Assistance Programs

Within USDA, the Foreign Agricultural Service is the leader in developing and executing a number of food assistance activities under Title I of Public Law 83-480 (P.L. 480), the Food for Progress Act of 1985, and Section 416(b) of the Agricultural Act of 1949 (Section 416(b)). These programs help developing nations make the transition from concessional financing and donations to cash purchases. The U.S. Agency for International Development (USAID) is responsible for administering Titles II and III of P.L. 480.

P.L. 480 Title I—The objectives of the P.L. 480 Title I concessional credit program include providing food assistance to developing countries and promoting the development of future markets in these countries. The program promotes market development by encouraging importers in the recipient country to become familiar with U.S. trade practices and to establish long-term trade relationships. Title I funds also support the **Food for Progress (FFP)** program, which is a grant program designed to assist countries working to make the transition to more market-oriented economies. Attention is given to shifting countries from Title I/FFP grant funding to regular Title I long-term concessional credit terms.

Several Title I programs were initiated to address particular needs such as supporting recovery efforts for Central America following the devastation of Hurricane Mitch and providing commodities to Russia to ensure adequate food and feed supplies following the financial crisis.

In fiscal year 1999, Title I and Title I-funded Food for Progress (FFP) agreements were signed for 2.2 million metric tons of commodities valued at about $656.1 million. Of this, about 1.4 million metric tons of commodities valued at about $507.6 million were programmed to Russia as part of the food assistance package announced by the Secretary of Agriculture on November 6, 1998. Ocean freight financing, including grants for ocean transportation, totaling $94.0 million were also provided to ship these commodities to Russia under the food assistance package.

In addition to FFP activities carried out with P.L. 480 Title I funds, the funds and facilities of the CCC may also be used to support FFP programming. In all FFP, cooperating sponsors (governments and private voluntary organizations (POV's)) may monetize the commodities received under an agreement with CCC to generate local currencies to fund development projects. In fiscal year 1999, USDA continued FFP programming in countries beyond the republics of the former Soviet Union, including countries in Africa, Latin America, and Asia. PVO's received about 164,000 tons of commodities with a value of about $71 million to use in, or sell to use the proceeds to support, planned activities in 21 countries. Additional program efforts also resulted in broadening the geographical base for the PVO participation in the Food for Progress program to include, for example, a greater participation in Africa consistent with the President's Africa Initiative.

Under the **Title II** emergency and private assistance donations program, administered by USAID, $28 million can be provided as overseas administrative support. For fiscal year 1999, Title II activities, valued at almost $950 million, moved a total of about 1.9 million metric tons and assisted more than 45 million beneficiaries in 57 countries and two regions (the Sahel and South Balkans). Funding for Title II increased slightly over the fiscal year 1998 levels, with spending on emergency programming ($513 million) continuing to exceed that of development (non-emergency) programming ($435 million).

USAID-administered **Title III** donation activities totaled $21.7 million in fiscal year 1999 and moved over 116,000 metric tons of commodities to three countries: Ethiopia and Mozambique in Africa, and Haiti in Latin America/Caribbean.

The **Section 416(b)** program allows for the donation of surplus commodities, made available through CCC stocks, to assist needy people overseas. In fiscal year 1999, approximately 5.5 million metric tons valued at about $794 million were programmed under Section 416(b), including more than 5.0 million metric tons of wheat and wheat products under the President's special food aid initiative. CCC purchased these commodities under section 5(d) of the CCC Charter Act, its surplus removal authority. Of the 5.5 million metric tons programmed in fiscal year 1999, about 1.6 million were donated to the United Nations World Food Programme (WFP) to be used in WFP emergency operations, protracted relief and recovery operations, and development projects. Beneficiaries included refugees, the internally displaced, and the hungry in areas such as Ethiopia, Kosovo, and North Korea. The balance of about 3.9 million metric tons was programmed through government-to-government agreements and agreements with PVO's.

Commercial Export Credit Guarantee Programs

The primary objective of the export credit guarantee programs is to improve the competitive position of U.S. agricultural commodities in international markets by facilitating exports to middle-income countries that do not have access to adequate commercial credit. These CCC programs encourage U.S. lenders (typically commercial banks) to extend credit to overseas customers. These guarantee programs encourage the involvement of foreign private-sector banks and private-sector importers in commercial trade transactions with the United States.

The GSM-102 program guarantees repayment of short-term credit (90 days to 3 years) extended by U.S. financial institutions in connection with exports of U.S. agricultural products. For fiscal year 1999, GSM-102 allocations of about $5.1 billion were announced for exports to 24 countries and 11 regional groupings, including the Andean, Baltic, Central American, Central Europe, East Africa, East Caribbean, Southeast Asia, Southeast Europe, Southern Africa, West African, and West Caribbean regions. Under this availability, GSM-102 registrations totaled about $3.0 billion for exports to 13 countries and 8 regions.

The GSM-103 program is designed to help developing nations make the transition from concessional financing to cash purchases. Guarantees issued under the GSM-103 program can cover financing periods of more than 3 and up to 10 years. For fiscal year 1999, $377 million in intermediate credit guarantees was made available for exports to 12 countries and two regions—Central America and Southern

Africa. Under this availability, GSM-103 registrations totaled $44.2 million of U.S. agricultural exports to five countries and one region.

The Supplier Credit Guarantee Program (SCGP) provides export credit guarantees for sales financed by foreign importers rather than financial institutions. Under the program, CCC guarantees a portion of payments due from importers under short-term financing (up to 180 days) that exporters have extended directly to importers for the purchase of U.S. agricultural commodities and products. In fiscal year 1999, allocations under the SCGP totaled $361 million in coverage for sales to 12 countries and 8 regions, including the Andean, Baltic, Central America, Central Europe, East Africa, East Caribbean, Southeast Asia, and Southeast Europe regions. Under the announced fiscal year 1999 availability, registrations totaled $46.02 million.

The Facilities Guarantee Program is designed to provide payment guarantees in connection with projects that it determines will benefit exports of U.S. agricultural commodities and emerging markets. In supporting these facilities, USDA intends to enhance sales of U.S. agricultural commodities and products to emerging markets where the demand for them may be constricted due to inadequate storage, processing, or handling capabilities.

Export Bonus Programs

The Export Enhancement Program (EEP) permits USDA to provide bonuses to make U.S. commodities more competitive in the world marketplace and to offset the adverse effects of unfair trade practices or subsidies. Fiscal year 1999 bonuses of about $1.4 million were awarded to facilitate the export of 2,446 metric tons of frozen poultry.

The Dairy Export Incentive Program (DEIP) helps exporters sell certain U.S. dairy products at prices lower than the exporter's cost of acquiring them. The major objective of the program is to increase exports of U.S. dairy products. This is done by developing export markets for dairy products where U.S. products are not competitive because of the presence of subsidized products from other countries. The DEIP operates on a bid bonus system similar to EEP, with cash bonus payments. The major markets targeted under the DEIP in fiscal year 1999 included Asia and Latin America, with $145 million in bonuses awarded, to facilitate the export of about 136,000 metric tons of dairy products.

Market Access Program

The Market Access Program (MAP) is designed to encourage the development, maintenance, and expansion of foreign markets for U.S. agricultural commodities. The MAP is a cost-share program, with all MAP funds for promotion of branded products allocated to cooperatives and small U.S. companies to help them expand their sales in the international marketplace. USDA reaches out to small companies, with a special emphasis on minority and disadvantaged groups. For example, five American Indian tribes were represented at FOODEX '99 in Tokyo, Japan. As a result of its participation in this trade show, one company confirmed sales of nearly $200,000 of fresh seafood products.

Foreign Market Development Program

The Foreign Market Development Program, also known as the "Cooperator Program," fosters a trade promotion partnership between USDA and U.S. agricultural producers and processors, represented by nonprofit commodity or trade associations called cooperators. Projects generally fall into one of four categories: market research, trade servicing, technical assistance, and consumer promotions for the retail market. The Cooperator Program has helped support growth in U.S. agricultural exports by enlisting private sector involvement and resources in coordinated efforts to promote U.S. products to foreign importers and consumers around the world.

International Cooperation

The Foreign Agricultural Service coordinates, supports, and delivers a diversified program of international agricultural cooperation and development. These programs enhance the competitiveness of U.S. agriculture, preserve natural resource ecosystems, and help partner countries pursue sustainable economic development worldwide by mobilizing the resources of USDA and its affiliates throughout the U.S. agricultural community.

Food Security

USDA released the *U.S. Action Plan on Food Security* in March 1999. This plan, which FAS coordinated, is the United States' official response to the 1996 World Food Summit, where 186 nations committed to reducing global undernutrition by half by 2015. Based on a partnership between government and civil society, the plan provides a road map for U.S. policy to overcome hunger, undernutrition, and food insecurity, both in the United States and abroad.

Scientific Collaboration

Short-term exchange visits between U.S. and foreign scientists, as well as longer term collaboration on research projects, allow participants to use science to help solve critical problems affecting food, agriculture, and the environment in both the United States and in collaborating countries. The activities reduce threats to U.S. agriculture and forestry, develop new technologies, establish systems to enhance trade, and provide access to genetic diversity essential to maintaining crops that are competitive in the world marketplace. They promote the safe and appropriate development and application of new technologies for food safety, improve the nutritive value and resistance of crops and livestock, develop new and improved agricultural products, and foster environmental sustainability. Other mutually beneficial priority food and agriculture issues addressed this year ranged from reducing barriers to marketing and trade to preventing introduction of new pests, to developing practices that meet the needs of limited-resource and small farmers.

An important 1999 activity focused on China, where FAS helped facilitate a number of collaborative activities, including a water resources forum. These activities gave special attention to agricultural policies and water resource and land use management practices that can foster more sustainable development in both the United States and China.

Technical Assistance

Various technical assistance programs exist to increase income and food consumption in developing nations, help mitigate famine and disasters, and help maintain or enhance the natural resource base. The programs are sponsored by such international donor institutions as the U.S. Agency for International Development (USAID), the World Bank, regional development banks, specialized agencies of the United Nations, and private organizations. Technical assistance is provided in areas such as food processing and distribution, plant and animal protection and quarantine, soil and water conservation, and forest management.

FAS' technical assistance contributed to hurricane recovery efforts in the Caribbean and Central America. When hurricanes hit with devastating effect in the fall of 1998, USDA took immediate action to save lives and offer recovery assistance. FAS then coordinated long-term recovery assistance among nine USDA agencies to promote better environmental practices, food security, and food safety in the affected region. Using resources provided by section 416(b) donations program and USAID, USDA funded a small grants program for low-income farmers recovering from Hurricane Georges in the Dominican Republic.

Training

Career-related training for foreign agriculturists provides long-term benefits to economic development, magnifying potential because those who learn teach others. Working collaboratively with USDA agencies, U.S. universities, and private-sector companies and organizations, FAS designs and implements study tours, academic programs, and short-term courses and training in a variety of areas such as agribusiness, extension education, natural resource management, policy and economics, and human resource development. FAS' Cochran Fellowship Program helps expose senior- and mid-level specialists and administrators from developing, middle-income, and emerging market countries to U.S. expertise, goods, and services, to promote broad-based development that is mutually beneficial to continued scientific, professional, and trade relationships.

One example of FAS' training efforts is a regional workshop on biosafety and plant genetic engineering the agency co-sponsored with the Egyptian Ministry of Agriculture. Designed to provide a forum for Middle East and Northern Africa policymakers to learn about biotechnology and biosafety issues, the workshop educated key officials, researchers, producers, consumers, and local media about the development and regulation of genetically modified organisms. USDA officials worked with 37 counterparts from 17 Sub-Saharan African countries to discuss the importance of the next round of WTO negotiations and Africa's role in implementing food safety and other sanitary or phytosanitary international standards.

Risk Management Agency

The mission of the Risk Management Agency (RMA) is to provide and support cost-effective means of managing risk for agricultural producers in order to improve the economic stability of agriculture. Crop insurance is USDA's primary means of helping farmers survive a major crop loss. In 1999, nearly $30.9 billion in protection was provided on 196 million acres through more than 1.8 million policies; this level of protection is almost 2-1/2 times the $13.6 billion protection on the 100 million acres insured in 1994.

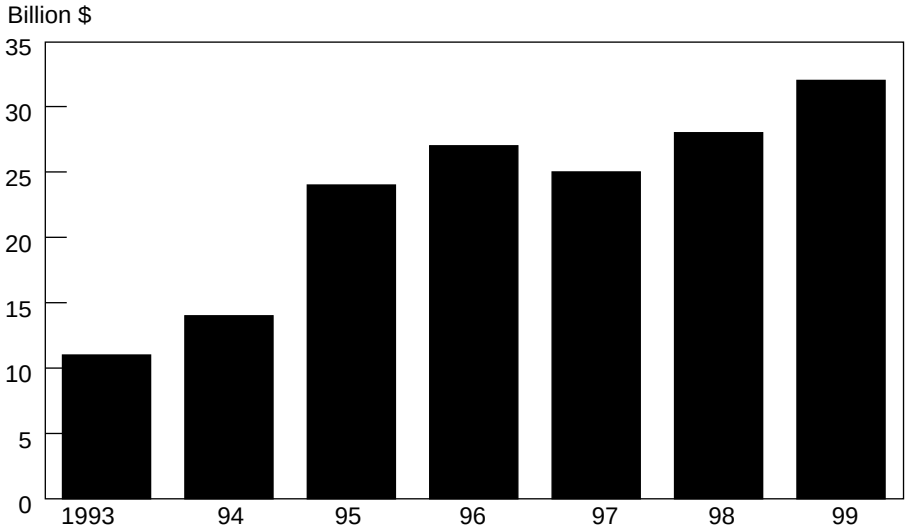
Crop insurance helps farmers recover from crop losses, secure operating loans, and aggressively market a portion of their crop. In 1998, about two-thirds of the acreage planted to major U. S. crops was insured. To help ensure that producers carried an adequate level of protection, USDA offered farmers an estimated 30 percent premium discount on their insured 1999 crops. The discount increased the number of insurance policies sold by 5 percent, and insured acreage was up 9 percent. Liability for buy-up policies also increased as producers used the discount to increase coverage levels. An estimated 25 percent discount for the 2000 crop year is expected to help maintain a high level of participation. Crop insurance is sold and serviced by 17 insurance companies in conjunction with a network of 15,000 agents.

Crop insurance is widely available for major commodities such as corn, wheat, and cotton. Coverage is also available on a growing number of fruit, nut, and vegetable crops. Nationally, over 100 crops are insurable (counting all insurable varieties

Figure 7-2

Crop insurance triples

Crop insurance liability, American total, 1993-99



would greatly increase the number of crops insured), although not everywhere they are grown. Crop information is available at *http://www.rma.usda.gov/policies/*

To help ensure greater farmer access to this beneficial risk management tool, the Federal Crop Insurance Corporation (FCIC) Board of Directors (FCIC's policymaking panel with private-sector and public representation) expanded 35 crop programs into an additional 283 counties for the 1999 crop year. This expansion added to the national total of 28,437 county crop programs. Further, RMA continues to develop new pilot programs, such as insurance for avocado, cabbage, cherry, pecan, processing chili pepper, forage seed, hay, rangeland, and raspberry/blackberry crops. By increasing the number and types of insurance plans, the program will help producers to better manage their production risks.

Insurance Plans Available

Multiple-Peril Crop Insurance

Multiple-Peril Crop Insurance (MPCI) policies insure producers against losses due to unavoidable causes such as drought, excessive moisture, hail, wind, frost, insects, and disease. Indemnities are paid on the difference between what was produced and the yield guarantee. Yield guarantees are selected by the producer and generally range from 50 to 75 percent, but up to 85 percent of a producer's actual production history for some areas and crops. The prices used to pay losses are between 55 and 100 percent of the commodity price established annually by RMA.

More Products and Choices

1993: *One Choice—Multiple-Peril Crop Insurance*

Today:

- *Catastrophic coverage*
- *Buy-up coverage*
- *Limited buy-up*
- *Revenue insurance plans*
  - *Crop Revenue Coverage*
  - *Revenue Assurance*
  - *Group Risk Income Plan*
  - *Income Protecton*
  - *Adjusted Gross Revenue pilot*
  - *Specialty crop revenue*
- *Group Risk Plan*
- *Dairy Options Pilot Program*
- *Prevented planting coverage*
- *New covered crops*
  - *Over 70 crops, representing large bulk of American production*
- *Expansions of existing crops into new areas*
- *New nursery program*

Group Risk Plan

The Group Risk Plan (GRP) policies use a county index as the basis for determining a loss. When the county yield for the insured crop, as determined by USDA's National Agricultural Statistics Service (NASS), falls below the trigger level chosen by the farmer, an indemnity is paid. Yield levels are available for up to 90 percent of the expected county yield. GRP protection involves less paperwork and costs less than the farm-level coverage described above. However, individual crop losses may not be covered if the county yield does not suffer a similar level of loss.

Revenue Insurance Plans

Revenue Insurance policies include three plans: Crop Revenue Coverage, Income Protection, and Revenue Assurance. Revenue policies are different from standard MPCI policies in that they provide farmers with a measure of price risk protection in addition to covering yield loss. Two of the policies, Crop Revenue Coverage and Revenue Assurance, were developed by private-sector insurance companies. Income Protection was developed by RMA. These policies guarantee a level of revenue that is determined differently by each of the policies. Indemnities are paid when any combination of yield and price results in revenue that is less than the revenue guarantee.

Adjusted Gross Revenue Plan

In its first year of testing in 1999, the Adjusted Gross Revenue (AGR) pilot insurance plan, a nontraditional whole farm risk management tool, provides an insurance safety net for multiple agricultural commodities in one insurance product. The plan uses a producer's historic Schedule F tax form information to calculate a level of guaranteed revenue for the insurance period. Qualifying producers can choose the 65, 75, or 80 percent coverage level, and all levels have a 75-percent payment rate.

...And Still More Choices

- ***New pilot programs 1999***
  - *Adjusted gross Rev. (AGR)*
  - *Avocado APH*
  - *Cabbage*
  - *Cherries*
  - *Crambe*
  - *Cultivated Wild Rice*
  - *IP Barley*
  - *Mustard*
  - *Rand-land GRP*
  - *Winter Squash*
  - *85% coverage*
- ***Approved for 2000***
  - *Cultivated clams*
  - *Coverage Enhancement option (CEO) on apples, canola, potatoes, grapes, rice, citrus fruit, others,*
  - *Chile peppers*
  - *Cucumbers (processing)*
  - *Florida fruit trees (citrus canker)*
  - *Onion stage removal*
  - *Pumpkins*
  - *Strawberries*
  - *Several major expansions of existing programs*
- *Livestock, pending legislation*

Dairy Options Pilot Program

RMA currently operates the innovative Dairy Options Pilot Program (DOPP) to help dairy producers protect their income against the risk of falling milk prices. During each round of DOPP, producers in selected pilot counties receive training in the use of futures and options as price risk management tools. Within program guidelines, they may then purchase dairy put options (right to sell) through futures brokers registered with U.S. exchanges. When prices fall, the value of put options increase, thereby protecting the value of at least a portion of the producer's dairy production. USDA assists participating farmers by funding 80 percent of the cost of the options and by paying $30 per contract toward the commission charged by the broker.

Outreach

RMA is intensifying its efforts to reach beginning, small, traditionally underserved, and limited-resource farmers. Some highlights of these efforts include:

- Training and providing technical assistance in risk management with community-based organizations, 1890 land-grant institutions and 1994 tribal colleges, through partnerships and funding of 17 cooperative agreements.
- Funding development of risk management curriculums to meet the needs of American Indian agricultural businesses. Instructional material will be delivered through 29 tribal colleges.
- Improving the risk management skills of Hmong and Hispanic farmers in California by funding risk management training.
- Creating new policies—such as those for sweet potatoes and rangeland—to meet the needs of minority farmers. Many new vegetable and fruit policies will be tested in pilot programs in the next few years.
- Partnering with the national FFA foundation to produce risk management videos and teaching materials.
- Providing computers with current nursery program software to the Florida Korean Nurserymen Association and local FSA county office. The software will simplify the inventory reporting requirements under the nursery policy.

Risk Management Education

Current farm policy increases the risk borne by producers. To help them acquire the risk management skills needed to compete and win in the global marketplace, RMA is leading a risk management education initiative. This initiative leverages government funds for education with the resources of public and private-sector partners to find improved risk management strategies, develop educational curricula and materials, and train producers in effective use of risk management tools.

RMA facilitates local training with the help of extension specialists and private-sector partners. The initiative is a cooperative effort between RMA; USDA's Cooperative State Research, Education, and Extension Service and National Office of Outreach; and the Commodity Futures Trading Commission.

RMA is also helping to make information on risk management more accessible to farmers and educators by funding the National Ag Risk Education Library, a powerful Internet resource developed by the Center for Farm Financial Management at the University of Minnesota: *http://www.agrisk.umn.edu/*

International Outreach

Increasingly, other countries are examining crop insurance as an alternative to farm subsidies. Since the beginning of 1998, RMA staff have met with representatives from over 20 foreign governments and private organizations to explain the U.S. program.

Following a request by the Republic of South Africa and under the sponsorship of the U.S.-South Africa Binational Commission, RMA and its private insurance partners will introduce the concept of crop insurance as a safety net for majority population farmers in the Republic of South Africa. "Train the Trainer" workshops, funded by a grant from the U.S. Agency for International Development, will include in-country representatives from industry, government, and legislators.

More Growth Anticipated

Responding to USDA's proposal to strengthen the program, Congress passed legislation that will address the following issues: affordability, multi-year losses, outreach to areas of low participation, the non-insured crop disaster assistance program (NAP), livestock insurance, revenue insurance plans, rating methodologies, and program oversight. While crop insurance can't provide farmers a good price for their crops, coverage is a vital component of USDA's plan to strengthen the overall farmer safety net. More information on RMA and its programs is available at: *http://www.rma.usda.gov/*

Clam Growers Catch a Wave

Bill Thompson of Indian River County, FL, knows the cultivation of clams has changed a lot in the 10 years he's been in the business. "We've learned how to protect our crop better. We stake a second layer of mesh over the seeds to protect them better from predators. Also new techniques to provide better circulation for the young clams help them grow off faster."

Better production methods aren't the only changes for clam producers in the Florida counties of Brevard, Indian River, Dixie, and Levy. Bill was one of the first clam producers to sign up for the pilot cultivated clam insurance program. "Back in 1995, Hurricane Erin caused a lot of losses among producers in Indian River. With this new program, I plan to have my own insurance to cover any future losses."

Leslie Sturmer of the University of Florida Cooperative Extension Service was instrumental in bringing together RMA offices with Florida producers and insurance representatives to help provide input into program development and promote the advantages of the insurance.

The pilot program, which covers the hard-shell or quahog species, is RMA's first experience with aquaculture. Also available in select counties in Massachusetts, South Carolina, and Virginia, the program design aims to document the diverse cultivation cultures in the different climates that will become the basis for a nationwide program.

For More Information

Farm Service Agency

Director, Public Affairs, Legislative Liaison, and Executive Secretariat
Tade Sullivan
Rm 3615-S
Washington, DC 20250
202-720-3865
FAX 202-720-4034
tade_sullivan@wdc.fsa.usda.gov

Public Affairs Branch Chief
Eric L. Parsons
Rm 3624-S
Washington, DC 20250
202-720-7809
FAX 202-690-2828
eric_parsons@wdc.fsa.usda.gov

Communications Services Section Chief
Danniel W. Stuart
Rm 3633-S
Washington, DC 20250
202-690-0474
FAX 202-690- 2839
dann.stuart_@wdc.fsa.usda.gov

Field Services Section Head
Greg Hawkins
Rm 3621-S
Washington, DC 20250
202-720-8768
FAX 202-690- 2828
greg_hawkins@wdc.fsa.usda.gov

FOIA Coordinator
Diane Korwin
Rm 3623-S
Washington, DC 20250
202-720-5534
FAX 202-690- 2828
diane_korwin@wdc.fsa.usda.gov

Farm Service Agency State Public Affairs Contacts

CA
Erica Szlosek
430 G Street #4161
Davis, CA 95616-4161
530-792-5537
FAX 530-792-5555
Erica_Szlosek@wdc.fsa.usda.gov

GA
Cynthia Valles
355 E. Hancock Avenue
Stop 107
Athens, GA 30601- 2775
706-5463177
FAX 706-546-2151
Cynthia_Valles@wdc.fsa.usda.gov

IA
Bruce Cordes
10500 Buena Vista Court
Des Moines, IA 50322
515-254-1540 x 602
FAX 515-254-1573
Bruce_Cordess@wdc.fsa.usda.gov

MN
Jim Meisenheimer
400 Agribank Building
375 Jackson Street
St Paul, MN 55115
651-602 7719
FAX 651-602-7743
Jim_Meisenheimer@wdc.fsa.usda.gov

MS
David Reagan
6310 I-55 North
Jackson, MS 39211
601-965-4774 x108
FAX 601-965-4184
David_Reagan@wdc.fsa.usda.gov

OH
Mike Kauffman
200 N High Street
Room 540 Federal Building
Columbus, OH 43215
614-255-2500
FAX 614- 255-2542
Mike_Kauffman@wdc.fsa.usda.gov

SD
Kathy Lindquist
200 4th St SW
Room 308, Federal Building
Huron, SD 57350-2478
605-352-1163
FAX 605-352-1195
Kathy_Lindquist@wdc.fsa.usda.gov

WA
Scott Hallett
West 316 Boone Avenue
Rock Pointe Tower, Suite 568
Spokane, WA 99201-2350
509-323-3002
FAX 509-323-3074
Scott_Hallett@wdc.fsa.usda.gov

WI
Susan Hunter
Madison, WI 53719
6515 Watts Road
608-276-8732 x141
FAX 608-271-9425
Susan_Hunter@wdc.fsa.usda.gov

—Information on FSA can also be found on the FSA Home Page at *http://www.fsa.usda.gov*

Foreign Agricultural Service

Director, Information Div.
Maureen Quinn
Rm 5074-S
Washington, DC 20250
202-720-7115
FAX 202-720- 1727
quinn@fas.usda.gov

Deputy Director
Sally Klusaritz
Rm 5074-S
Washington, DC 20250
202-720-3448
klusaritz@fas.usda.gov

Team Leader
Lynn Goldsbrough
Rm 5713-S
Washington, DC 20250
202-720-0328
FAX 202-720-3229
goldsbrough@fas.usda.gov

Freedom of Info Act Officer
Donald Washington
Rm 5709-S
Washington, DC 20250
202-720-3101
FAX 202-720-3229
washington@fas.usda.gov

Risk Management Agency

Director of External Affairs
Pat Engel
Rm 3058-S
Washington, DC 20250
202-720-7956
FAX 202-690-2002
Pat_Engel@WDC.USDA.GOV

Director, Regulatory
Diana Moslak
Rm 6624-S
Washington, DC 20250
202-720-2832
FAX 202-690-5879
Diana_Moslak@WDC.USDA.GOV

Dir, Claims&Underwriting Srvcs
Mike Hand
Rm 6749-S
Washington, DC 20250
202-720-3439
FAX 202-690-2540
MHAND@WDC.USDA.GOV

Freedom of Info Act Officer
Donna Bassett
Rm 6606-S
Washington, DC 20250
202-690-5701
FAX 202-690-5890
Donna_Bassett@WDC.USDA.GOV

8. Food, Nutrition, and Consumer Services

Food and Nutrition Service

The Food and Nutrition Service (FNS) is the gateway to adequate access for appropriate nutrition and nutrition education for all Americans. FNS administers USDA's domestic nutrition assistance programs, and for more than 30 years the agency has worked to accomplish an unusually complex mission—reducing hunger and food insecurity by providing children and needy families better access to food, a healthful diet, and nutrition education.

FNS works in partnership with the States to ensure that its programs operate effectively and efficiently. This partnership allows the States to determine most administrative details regarding participant eligibility and distribution of nutrition benefits, and FNS provides funding to cover some of the States' administrative costs.

For Fiscal Year (FY) 2000, the funding for FNS and its programs is $35.5 billion.

Overall, the nutrition assistance programs reach one out of every six Americans and touch every community in the United States. Most of the programs are directed at low-income people or schoolchildren. They include:

- The Food Stamp Program
- The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
- The National School Lunch Program
- The School Breakfast Program
- Team Nutrition
- The Emergency Food Assistance Program
- The Child and Adult Care Food Program
- The Afterschool Snack Program
- The Commodity Supplemental Food Program
- The Summer Food Service Program
- The Special Milk Program
- The Nutrition Program for the Elderly
- The Food Distribution Program on Indian Reservations
- The WIC Farmers' Market Nutrition Program
- The Nutrition Assistance Program in Puerto Rico and the Pacific Islands

FNS is also the primary Federal agency that delivers food assistance in response to domestic natural disasters and other crises.

Additional information on FNS and its programs can be found on the World Wide Web at *http://www.fns.usda.gov*

■ ***Nutrition Program Fact:***
Determining eligibility: Many of USDA's nutrition assistance programs use household income as a guideline for program eligibility. Depending on the program rules, household income of 100 percent, 130 percent, or 185 percent of the Federal poverty level may be used to determine levels of eligibility. As of July 1, 2000, 100 percent of the poverty guideline is $17,050 a year for a family of four; 130 percent is $22,165 a year; and 185 percent is $31, 543 a year. Federal poverty guidelines are established by the Office of Management and Budget and are updated annually by the U.S. Department of Health and Human Services.

The Food Stamp Program

The Food Stamp Program is the cornerstone of USDA's nutrition assistance programs. The program helps low-income households increase their food purchasing power and their choices for a better diet. It is the primary source of nutrition assistance for low-income Americans. The program was initiated as a pilot program in 1961 and made permanent in 1964.

The first line of defense against hunger for millions of families, the Food Stamp Program provides critical support for families making the transition from welfare to work and the elderly and disabled. The program issues monthly allotments of coupons or electronic benefits through Electronic Benefit Transfer (EBT) that are redeemable at authorized retail food stores, farmers' markets, and certain other providers.

The Federal Government pays for the benefits issued and shares with the States the cost of administrative expenses. An average of 18.2 million people received benefits each month in FY 1999. Participation has fallen steadily from a high of 28. 0 million in March 1994.

President Clinton announced a major, new initiative last summer to ensure that eligible people know they are eligible and how to access program benefits. FNS is working with the States to provide information about the program to the public. An 800 number (800-221-5689) for information was activated in April 1999.

Most States have converted food stamp issuance to EBT systems. EBT allows food stamp customers, using a magnetic stripe card, to buy groceries by transferring funds directly from a food stamp benefit account to a retailer's account. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 requires all States to convert to EBT issuance by the year 2002.

EBT is only one component of FNS' commitment to Food Stamp Program efficiency and integrity. The agency works closely with the States to ensure that they issue benefits in the correct amounts and only to people who are eligible. EBT has enhanced FNS' ability to catch those who abuse the program, and penalties have been increased for people who are caught. In addition, FNS now has broader authority to review the performance of food retailers who participate in the program and to quickly remove those who fail to follow program rules.

USDA also provides educational materials to help States integrate nutrition into the Food Stamp Program. States may use program administrative funds for nutrition education to help food stamp recipients make healthier food choices as they use their benefits.

Eligibility: Eligibility and allotments are based on household size, income, assets, and other factors. In Fiscal Year 2000, the maximum benefit for a family of four is $426 per month; the average household benefit is about $170 per month; and the average per-person benefit is about $73 per month.

Benefits: The level of benefits an eligible household receives is based on its household income and expenses. Households with no countable net income receive the maximum monthly allotment of food stamps. The allotment is based on the cost of the Thrifty Food Plan, a low-cost model food plan. The Federal Government pays for the benefits issued and shares with the States the cost of administrative expenses.

Funding: For FY 2000, the Food Stamp Program appropriation is $19.6 billion.

■ ***Nutrition Program Fact:***
Participation in the Food Stamp Program has fallen steadily from a high of 27.5 million in 1994.

■ ***Nutrition Program Fact:***
How EBT works: Electronic Benefit Transfer (EBT) is a computerized system that allows food stamp customers to use a plastic debit card similar to a bank card to access their food stamp benefits. Eligible recipients have an account established for their monthly benefits. At the grocery checkout, they present the card, which is used to debit their food stamp account for the amount of eligible purchases. The funds are automatically transferred to the retailer's account, and an electronic record is made of the transaction. No money and no food stamps change hands.

The National School Lunch Program

The National School Lunch Program (NSLP) is a federally assisted meal program operating in nearly 97,000 public and nonprofit private schools and residential child care institutions. It provides nutritionally balanced, low-cost or free lunches and afterschool snacks to almost 27 million children each school day.

NSLP is usually administered by State education agencies, which operate the program through agreements with local school districts. FNS administers the program at the Federal level. School districts and independent schools that choose to take part in the lunch program receive cash reimbursement and donated commodity foods from USDA for each meal they serve. In return, they must serve meals that meet Federal nutrition requirements, and they must offer free and reduced-price lunches to eligible children.

The afterschool snack component of NSLP provides reimbursement for nutritious snacks served to children through age 18 in eligible afterschool care programs. In order to qualify for these reimbursements, the school districts must operate the lunch component of NSLP and must sponsor or operate an afterschool care program that provides children with regularly scheduled educational or enrichment activities in an organized, structured, and supervised environment.

Sites in which more than 50 percent of the students qualify for free or reduced-price breakfasts or lunches are referred to as "area eligible," and these sites serve all snacks free. Otherwise, eligibility for free, reduced-price, and full-price snacks is based on income. To qualify for reimbursement, the snacks must meet meal pattern requirements.

USDA's School Meals Initiative for Healthy Children was launched in June 1994 and is a public policy blueprint to ensure that school meals meet the Dietary Guidelines for Americans, that we motivate children to make food choices for a healthful diet, and that we support these changes through training and technical assistance for school food service professionals.

In support of this commitment for healthier schoolchildren, Team Nutrition evolved as the implementation tool for this initiative. Extensive training and technical assistance has been provided to all school food service professionals for preparing meals that meet the new nutrition standards and for educating children about nutrition so they have the knowledge to choose foods that are good for them.

The Department has placed special emphasis on improving the quality of USDA commodity foods donated to NSLP, as well as their consistent and timely availability. The Commodities Improvement Council promotes the health of schoolchildren by improving the nutritional profile of USDA commodities while maintaining USDA's support for domestic agricultural markets. Based on the council's recommendations, USDA has reduced the fat, sodium, and sugar content of commodities and has increased the variety of low-fat and reduced-fat products.

USDA has greatly increased the amount of fresh produce available to schools and is now offering unprecedented amounts and varieties of fresh fruits and vegetables. A cooperative project with the Department of Defense (DOD) has allowed USDA to increase the variety of produce available to schools by utilizing DOD's buying and distribution system. USDA is also exploring ways to connect schools to small-resource farmers in their areas to help the schools purchase fresh, local produce directly from the producers.

Eligibility: Any child, regardless of family income level, can receive a meal through NSLP. Children from families with incomes at or below 130 percent of the Federal poverty level are eligible to receive free meals. Children from families with incomes between 130 and 185 percent of poverty are eligible for reduced-price meals. Children from families with incomes over 185 percent of poverty pay the full price, which is established by the local school food authority.

Benefits: Children receive meals free or at low cost because of USDA support for the school meals programs. Most of that support comes in the form of cash reimbursements to schools for meals served. USDA's per-meal reimbursement rates for the contiguous United States for School Year 1999-2000 were $1.99 for free meals;

$1.59 for reduced-price meals; and 19 cents for full-price meals. Reimbursement rates are slightly higher in Alaska and Hawaii. Schools may charge no more than 40 cents for a reduced-price meal. They set their own prices for full-price meals, though they must operate their meal services on a nonprofit basis.

In addition to cash reimbursements, schools are entitled to receive commodity foods, called "entitlement" foods, at an annually adjusted per-meal rate (14.75 cents per meal in School Year 1999-2000) for each meal they serve. Schools can receive additional commodities, known as "bonus" commodities, when these are available from surplus stocks purchased by USDA under surplus removal and price support programs. USDA commodities make up approximately 17 percent of the cost of the food served by the average school food authority. The rest of the food served is purchased locally by the school food authority.

Funding: For FY 2000, Congress appropriated $6.34 billion for NSLP.

■ ***Nutrition Program Fact:***
The value of USDA commodity foods makes up only about 17 percent of the cost of the foods that are served to children in the National School Lunch Program. Nonetheless, USDA provided nearly 1 billion pounds of food, valued at almost $700 million, to schools in School Year 1999-2000.

The School Breakfast Program

The School Breakfast Program (SBP) provides cash assistance to States to operate nonprofit breakfast programs in schools and residential child care institutions. The program operates in more than 72,000 schools and institutions, serving a daily average of some 7.4 million children. It is administered at the Federal level by FNS. State education agencies administer the SBP at the State level, and local school food authorities operate it in schools.

Eligibility: Any child at a participating school may receive a meal through SBP. Children from families with incomes at or below 130 percent of the Federal poverty level are eligible for free breakfasts. Children from families with incomes between 130 and 185 percent of the poverty level are eligible for reduced-price breakfasts. Children from families with incomes over 185 percent of poverty pay the full, locally established price for their breakfasts.

Benefits: Students receive their meals free or at low cost because USDA supports the School Breakfast Program with cash reimbursements for meals served. For School Year 1999-2000, schools in the contiguous United States received reimbursements of $1.09 for a free meal; 80 cents for a reduced-price meal; and 21 cents for a full-price meal. As with the National School Lunch Program, reimbursements are slightly higher in Alaska and Hawaii. Schools may charge no more than 30 cents for a reduced-price breakfast. Local schools set their own prices for full-price meals, but must operate on a nonprofit basis.

F**unding:** For FY 2000, Congress appropriated $1.4 billion for SBP.

- ***Nutrition Program Fact:***
  About 85 percent of children who participate in SBP receive their meals free or at a reduced price. That compares to 57 percent of children who receive free or reduced-price meals in NSLP. However, FNS promotes the benefits of a healthy breakfast for all children, regardless of income status. Teachers have long reported that their students are more alert and perform better in class if they eat breakfast. Studies have shown that students who ate breakfast had improved math grades, reduced hyperactivity, and decreased absence and tardiness rates.

Team Nutrition

FNS provides nutrition education through Team Nutrition.

Team Nutrition is a multifaceted nutrition education program delivered in schools, WIC, and child care sites, with ongoing expansion to encompass all the nutrition assistance programs administered by USDA. The goal of Team Nutrition is to continuously improve children's lifelong eating and physical activity habits through public-private partnerships that promote the health and education of children nationwide in accordance with the *Dietary Guidelines for Americans* and the *Food Guide Pyramid*.

Team Nutrition engages three behavior-oriented strategies:

- Empower school food service professionals through a variety of training and technical assistance to serve meals that meet the *Dietary Guidelines for Americans* and that appeal to children.
- Motivate and build skills for children to make food and physical activity choices for a healthy lifestyle through a comprehensive, integrated nutrition education program designed for children, parents, teachers, and school food service professionals.
- Support from school administrators and other school and community partners is vital to the success of Team Nutrition's goal. Persons in these positions can actively support Team Nutrition activities and can help create a healthy school environment.

Six communication channels are involved, and they offer a comprehensive network of delivering consistent nutrition messages to children and their caretakers that will educate them about the importance of food and physical activity choices for a healthy lifestyle where they live, work, and play. These message are delivered and reinforced through a variety of sources. They include: (1) food service initiatives, (2) classroom activities, (3) schoolwide events, (4) home activities, (5) community programs and events, and (6) media events and coverage.

Eligibility: All children participating in or eligible to participate in the USDA Child Nutrition Programs may receive nutrition education through Team Nutrition. Professional school food service staffs can also receive training and technical support.

Funding: In FY 2000, Congress appropriated $10 million for Team Nutrition.

The WIC Program

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a grant program for States intended to improve the health of pregnant, postpartum, and breastfeeding women; and infants and children up to 5 years old by providing supplemental foods, nutrition education, and access to health care. A few State agencies provide food directly to participants, but most States provide WIC recipients vouchers that they can use at authorized food stores for approved foods at no cost to the recipient.

WIC provides each State with a grant of funds to serve its most needy eligible population. Because of documented successes of the WIC program in improving the nutritional well-being of participants, it has been expanded to serve more eligible people. In FY 1999, WIC served an average of more than 7.3 million people each month.

Eligibility: To be eligible for WIC, an applicant must be a pregnant, breastfeeding, or postpartum woman, or an infant or child under age 5 and must meet State residency requirements, meet an income standard, and be determined by a health professional to be at nutritional risk. This nutrition evaluation is done at no cost to the applicant.

Benefits: In most States, WIC participants receive vouchers that allow them to purchase a monthly food package especially designed to supplement their diets. The foods provided are high in protein, calcium, iron, and vitamins A and C. WIC foods include iron-fortified infant formula and infant cereal; iron-fortified adult cereal; vitamin C-rich fruit or vegetable juice; eggs, milk, and cheese; and legumes such as peanut butter, dried beans, or peas. Special therapeutic formulas and foods are provided when prescribed by a physician for a specified medical condition.

WIC mothers are encouraged to breastfeed their babies whenever possible. Women who breastfeed their babies receive an enhanced WIC food package that includes tuna, carrots, cheese, legumes, and extra juice. Those who do not breastfeed their babies receive infant formula for the babies and a regular food package for themselves.

Funding: The appropriation for the WIC Program in FY 2000 is $4.032 billion.

■ ***Nutrition Program Fact:***
Involving partners at the Federal, State, and local levels, WIC has undertaken a dynamic new initiative called Revitalizing Quality Nutrition Services. This initiative refocuses attention on delivering meaningful, user-friendly nutrition services as one of the fundamental benefits of the WIC Program to all WIC participants.

■ ***Nutrition Program Fact:***
"WIC and the Nutrient Intake of Children," a study by USDA's Economic Research Service released April 18, 2000, shows that WIC significantly boosts children's intakes of iron, vitamin B-6, and folate. These nutrients are essential to children's overall health and play an important role in preventing disorders and illnesses that can have long-term detrimental effects.

■ ***Nutrition Program Fact:***
How satisfied are WIC customers? In December 1999, when the results were announced for the first governmentwide customer satisfaction survey, the WIC Program received a customer satisfaction index rating of 83. That's 10 points higher than the national average. This survey was commissioned by the President's Management Council and was rated by the American Customer Satisfaction Index, which is used by more than 200 U.S. private companies to measure the quality of their goods and services.

The WIC Farmers' Market Nutrition Program

The WIC Farmers' Market Nutrition Program (FMNP) was established in 1992. The program has two goals: to provide fresh, nutritious, unprepared food, such as fruits and vegetables, from farmers' markets to WIC participants who are at nutritional risk; and to expand consumers' awareness and use of farmers' markets. This program, operated in conjunction with the regular WIC Program, is offered in 33 States, the District of Columbia, Guam, and 4 Indian tribal organizations.

Eligibility: Women, infants over 4 months old, and children who receive WIC program benefits or who are WIC-eligible, may purchase foods at farmers' markets through FMNP.

Benefits: Fresh produce can be purchased with FMNP coupons. State agencies may limit FMNP sales to specific produce that is locally grown to encourage participants to support the farmers in their own State.

Funding: Congress made up to $15 million available for FMNP under the FY 2000 WIC appropriation.

■ ***Nutrition Program Fact:***
Studies have shown that where the WIC Farmers' Market Nutrition Program has been available, WIC participants have consumed more fresh fruits and vegetables.

The Commodity Supplemental Food Program

The Commodity Supplemental Food Program (CSFP) is a program of grants to States, administered by FNS at the Federal level. CSFP provides commodity foods to supplement the diets of low-income; pregnant, postpartum, and breastfeeding women; their infants and children up to the age of 6; and persons 60 years of age and older.

In 1999, CSFP operated at more than 70 sites in 17 States, the District of Columbia, and 2 Indian tribal organizations. In 2000, the program was expanded to include five new States. USDA donates commodity foods to the State agencies for distribution and provides funds to State and local agencies to cover certain administrative costs. The program served an average of more than 381,000 people each month in FY 1999, including more than 269,000 elderly people and more than 112,000 women, infants, and children..

Eligibility: State agencies that administer CSFP may establish a residency requirement and/or require applicants to be determined to be at nutritional risk in order to be eligible for program participation. To be income eligible, women, infants, and children must be eligible for benefits under existing Federal, State, or local food, health, or welfare programs and must not currently be receiving WIC benefits. Elderly persons must meet a low-income standard.

Benefits: There are six food packages for different categories of participants. The food packages are not intended to provide a complete and balanced diet, but rather they are supplements that are good sources of the nutrients often lacking in participants' diets.

Funding: The FY 2000 appropriation for CSFP is $88.3 million.

The Child and Adult Care Food Program

The Child and Adult Care Food Program (CACFP) provides healthful meals and snacks in child care centers, family day care homes, and adult day care facilities.

By reimbursing participating day care operators for their meal costs and providing them with USDA commodity food and nutrition information materials, CACFP helps ensure that children and adults in day care receive healthful meals. Family day care homes must be overseen by sponsoring organizations that also receive reimbursements from USDA for their administrative expenses.

The program generally operates in child care centers, outside-school-hours care centers, family and group day care homes, homeless shelters, and some adult day care centers. In return for Federal support, care providers in CACFP must serve meals that meet Federal nutritional guidelines and must offer free or reduced-price meals to eligible people. Afterschool care centers can also be reimbursed for snacks served to children through age 18 in afterschool educational or enrichment programs.

First authorized as part of a larger pilot project in 1968, the program was formerly known as the Child Care Food Program. It was made a permanent program in 1978, and the name was changed in 1989 to reflect the addition of an adult component. CACFP is administered at the Federal level by FNS. State agencies or FNS regional offices oversee the program at the local level.

In FY 1999, CACFP provided meals to nearly 2.9 million participants.

Eligibility: At child and adult day care centers, participants from families with incomes at or below 130 percent of the Federal poverty level qualify for free meals; those from families with incomes between 130 percent and 185 percent of the poverty level qualify for reduced-price meals; and those from families with incomes above 185 percent of the poverty level pay full price.

For family day care homes, Congress instituted a two-tier system of reimbursements under the Welfare Reform Act of 1996. Under this system, a higher reimbursement rate (tier 1 reimbursement) is paid to providers located in areas where 50 percent of the children are eligible for free and reduced-price meals or where the provider's household meets established income criteria for free or reduced-price meals. All other providers are reimbursed at a lower rate (tier 2 reimbursement) unless they choose to have their sponsoring organizations identify children who are income eligible. Meals served to such income-eligible children are reimbursed at the higher tier 1 level.

Afterschool care centers are eligible for CACFP on the basis of the income in their area. All snacks are reimbursed at the "free" rate of reimbursement.

Benefits: Children and adults who attend day care facilities receive nutritious meals and snacks. Care providers receive reimbursement for eligible meals and snacks. Family day care sponsoring organizations receive reimbursement for their administrative costs.

Funding: Congress appropriated $1.74 billion for the CACFP in FY 2000.

■ ***Nutrition Program Fact:***
Congress expanded reimbursement in 1998 to provide snacks for educational and enrichment afterschool care programs for at-risk children through age 18. Funding for snacks in afterschool programs is provided through the National School Lunch Program and the Child and Adult Care Food Program.

■ ***Nutrition Program Fact:***
More than 175,000 family day care homes and nearly 40,000 day care centers participated in the Child and Adult Care Food Program in Fiscal Year 1999.

The Summer Food Service Program

The Summer Food Service Program (SFSP) provides free meals to low-income children during school vacations.

SFSP was first created as part of a larger pilot program in 1968 and became a separate program in 1975. SFSP served over 2.2 million children a day during the summer of 1999.

The program is administered at the Federal level by FNS. Locally, it is operated by approved sponsors who receive reimbursement from USDA for the meals they serve.

Sponsors provide meals at a central site such as a school or community center. All meals are served free.

SFSP operates in low-income areas where half or more of the children are from households with incomes at or below 185 percent of the Federal poverty guideline. Residential children's camps also may get reimbursement through SFSP for meals served to income-eligible children.

Eligibility: Children age 18 and under who participate in a school program for the mentally or physicall handicapped and people over age 18 who are determined by a State educational agency to be mentally or physically handicapped may receive meals through SFSP.

Benefits: At most sites, participants receive either one or two meals a day. Residential camps and sites that primarily serve children from migrant households may be approved to serve up to three meals per day.

Sponsors are reimbursed for documented operating and administrative costs.

Funding: Congress appropriated $300 million for the SFSP in FY 2000.

■ ***Nutrition Program Fact:***
Some 27 million children eat school lunch every day when school is in session, and more than half of them receive their meals free or at a reduced price. The Summer Food Service Program offers those needy children nutritious food when school is not in session. However, only about 2.2 million children currently participate in SFSP, in part, because many communities do not sponsor the program.

The Special Milk Program

The Special Milk Program (SMP) provides milk to children in schools and child care institutions who do not participate in other Federal meal service programs. The program reimburses schools for the milk they serve.

Schools in the National School Lunch or School Breakfast Programs may also participate in SMP to provide milk to children in half-day pre-kindergarten and kindergarten programs where children do not have access to the school meal programs.

Expansion of the National School Lunch and School Breakfast Programs, which include milk, and the prohibition against using SMP to fund extra milk for lunch and breakfast program activities, has led to a substantial reduction in SMP since its peak in the late 1960's.

Eligibility: Any child at a participating school or kindergarten program can get milk through SMP. Children may buy milk or receive it free, depending on the school's choice of program options. When local officials offer free milk under the program, any child from a family that meets income guidelines for free meals and milk is eligible.

Benefits: Participating schools and institutions receive reimbursement from the Federal Government for each half-pint of milk served. They must operate their milk programs on a nonprofit basis and agree to use the Federal reimbursement to reduce the selling price of milk to all children.

Funding: Congress appropriated $17.2 million for SMP in FY 2000.

> ■ ***Nutrition Program Fact:***
> *In 1999, approximately 127 million half-pints of milk were served through the Special Milk Program.*

Nutrition Program for the Elderly

The Nutrition Program for the Elderly (NPE) helps provide elderly persons with nutritionally sound meals through meals-on-wheels programs or in senior citizen centers and similar settings.

NPE is administered by the U.S. Department of Health and Human Services (DHHS) through the Administration on Aging but receives commodity foods and financial support from USDA under provisions of the Older Americans Act of 1965. USDA provided reimbursement for more than 21 million meals a month in FY 1999.

Eligibility: Age is the only factor used in determining eligibility. People age 60 or older and their spouses, regardless of age, are eligible for NPE benefits. There is no income requirement to receive meals under NPE, although the program targets lower income areas.

Benefits: Each recipient can contribute as much as he or she wishes toward the cost of the meal, but meals are free to those who cannot make any contribution.

Under NPE, USDA provides cash reimbursements and/or commodity foods to organizations that provide meals through DHHS programs. Meals served must meet a specified percentage of the Recommended Dietary Allowances (RDA's) in order to qualify for cash or commodity assistance.

Funding: Congress appropriated $140 million for NPE in FY 2000.

> ■ ***Nutrition Program Fact:***
> *Indian tribal organizations may select an age below 60 for defining an "older" person for their tribes for purposes of eligibility for the Nutrition Program for the Elderly.*

The Food Distribution Program on Indian Reservations

The Food Distribution Program on Indian Reservations (FDPIR) provides monthly food packages to low-income families living on reservations and to Native American families living near reservations. Many Native Americans participate in FDPIR as an alternative to the Food Stamp Program if their tribe has been authorized to run the program. An average of 129,000 people received food through FDPIR each month in 1999.

The program is administered at the Federal level by FNS in cooperation with State and tribal agencies. USDA provides food to these agencies, which are responsible for program operations such as storage and distribution, eligibility certification, and nutrition education.

The food packages distributed through FDPIR were updated in 1997 in a cooperative effort by USDA nutritionists, tribal leaders, and health advocates. Changes have made the food packages easier to use and they better serve the health needs and preferences of Native Americans. USDA also provides nutrition information in the monthly food package, along with suggestions for making the most nutritious use of the commodity foods.

Eligibility: To participate in FDPIR, the household must have low income within program requirements, have assets within specified limits, and be located on or near an Indian reservation.

Benefits: USDA donates a variety of foods to help FDPIR participants maintain a balanced diet. These commodities include canned meats and fish products; vegetables, fruits, and juices; dried beans; peanuts or peanut butter; milk, butter, and cheese; pasta, flour, or grains; adult cereals; corn syrup or honey; and vegetable oil and shortening. Frozen chicken and ground beef are increasingly available as tribes are able to store and handle these products safely, and the 1997 review of food packages resulted in the addition of noodles, spaghetti sauce, crackers, reduced-salt soups, and low-fat refried beans.

Each participant receives a monthly package that contains a variety of foods. For FY 1999, the value of the monthly food package was about $33 per person.

Funding: Congress appropriated $75 million for FDPIR in FY 2000.

The Emergency Food Assistance Program

The Emergency Food Assistance Program (TEFAP) provides food assistance to needy Americans through the distribution of USDA commodities. Under TEFAP, commodities are made available to States for distribution to organizations that provide them to low-income households for home consumption and to organizations that use them in congregate meal service for the needy, including the homeless. Local agencies, usually food banks, shelters, and soup kitchens, are designated by the States to distribute the food.

TEFAP was first authorized in 1981 to distribute surplus commodities to households. Its aim was to help reduce Federal food inventories and storage costs while assisting the needy. The Hunger Prevention Act of 1988 required the Secretary of Agriculture not only to distribute surplus foods but also to purchase additional foods for further distribution to needy households. Funds are also provided for State and local administrative expenses. Foods available vary, depending on market conditions.

Eligibility: Each State sets its own income limits for household eligibility to receive food for home use. States can adjust the income criteria based on the level of need in order to ensure that assistance is provided only to those most in need.

No income test is applied to people who receive meals at soup kitchens and other congregate feeding sites that make use of TEFAP foods.

Benefits: TEFAP has provided many billions of pounds of food since its beginning. More than 1 billion pounds of food, valued at $846 million, was distributed at the program's height in 1987. In 1999, more than 311 million pounds of food, valued at more than $198 million, was distributed.

Funding: Congress appropriated $143 million for TEFAP in FY 2000.

The Nutrition Assistance Programs in Puerto Rico, American Samoa, and the Commonwealth of the Northern Mariana Islands

The Food Stamp Program in Puerto Rico was replaced in 1982 by a block grant program. American Samoa and the Northern Marianas in the Pacific also provide benefits under block grants.

Eligibility: The territories determine eligibility and allotments for their programs based on household size, income, assets, and other factors.

Benefits: The territories provide cash and coupons to participants rather than food stamps or food distribution. The grant can also be used for administrative expenses or for special projects related to food production and distribution.

Funding: In FY 2000, Congress appropriated $1.3 billion for Puerto Rico, $5.3 million for American Samoa, and $2.5 million for the Northern Marianas.

USDA Disaster Assistance

FNS is the primary agency responsible for providing Federal food assistance in response to domestic disasters such as fires, floods, storms, and earthquakes. FNS provides assistance through the Food Distribution Program and the Disaster Food Stamp Program.

Food Distribution Program: FNS can provide USDA-donated food assistance through State food distribution agencies. All States have stocks of USDA food on hand for use in their commodity programs for schools or needy people. These stocks can be released immediately for use in a disaster situation.

Upon request from a State, FNS will procure additional food to meet the needs of people affected by a disaster. Nearby States may be asked to release their stocks of USDA food to help feed disaster victims, and USDA will provide replacement of the foods. State agencies then distribute the food to emergency shelters and other mass feeding sites operated by disaster relief agencies such as the American Red Cross.

The State may also request that food be made available for household distribution if commercial channels of food supply are not available because of the disaster.

Disaster Food Stamp Program: When commercial channels of food supply are still operable, or have been restored following a disaster, a State may request approval from the Administrator of the Food and Nutrition Service to operate the Disaster Food Stamp Program.

If approval is granted, FNS may provide on-site guidance for establishing and operating the disaster program. FNS ensures that funding for food stamp benefit issuance is available. State and local officials are responsible for determining the eligibility of households to receive disaster food stamp benefits and for issuance.

■ ***Nutrition Program Fact:***
In FY 1999, FNS provided approximately $45.6 million in disaster food stamp assistance to victims of natural disasters, including hurricane victims in North Carolina, South Carolina, and Virginia, and victims of severe winter storms, tornadoes, droughts, and flooding in several States.

■ ***Nutrition Program Fact:***
How to apply: People who want to apply for any of the nutrition assistance programs that FNS operates must do so through the appropriate State or local agency. In general, applicants for the largest programs should contact the following State or local agencies:

- *Food Stamp Program: Contact the State welfare agency. Food stamp offices may be listed in the telephone book under "food stamps," "social services," "human services," or some similar term.*
- *National School Lunch or School Breakfast Program's free and reduced-price meals: Contact the neighborhood school or local school district.*
- *WIC Program: Contact State or local public health offices.*

For programs not listed above, State and local welfare agencies, health departments, or education agencies can provide information about what programs are available and how and where to apply. Local congressional representatives' offices may also be able to provide assistance in contacting the appropriate agency.

The Office of Communications and Governmental Affairs

In 1999, FNS's Governmental Affairs, Community Affairs, and Public Affairs offices merged to form a single office called the Office of Communications and Governmental Affairs. This office is responsible for providing news, information to consumers, constituents, Congress, and the media. In addition, this is the office that manages the agency's web site, publications, and outreach efforts.

Small Farms/School Meals Initiative

The Small Farms/School Meals Initiative, popularly known as the farm-to-school initiative, began in the summer of 1997. The initiative depends on the cooperation of Federal, State, and local governments, as well as local farm and educational organizations. It encourages small farm operators to sell fresh fruits and vegetables to schools and schools to buy this wholesale produce from small farm operators.

■ ***Nutrition Program Fact:***
In the 1994-95 School Year, FNS partnered with USDA's Agricultural Marketing Service and the Department of Defense to buy and deliver fresh fruits and vegetables to schools in 8 States; and by the 1998-99 School Year, the project had expanded to 31 States and Guam.

■ ***Nutrition Program Fact:***
"Small Farms/School Meals Initiative Town Hall Meetings, A Step-by-Step Guide on How to Bring Small Farms and Local Schools Together," shares successes and offers a "how-to" to local producers and local school food service staff working together for mutual benefit.

Center for Nutrition Policy and Promotion

The Center for Nutrition Policy and Promotion was established in December 1994 to provide direction and coordination for USDA's nutrition research and policy activities. The Center's mission is to enhance the nutritional status of Americans by linking scientific research to the nutritional needs of the American consumer. Nutrition research is translated into information and materials for nutrition educators and policy makers, health professionals, private companies, and consumers to increase public knowledge and understanding of the importance of nutrition and how to improve diet quality.

The Center is best known for the *Dietary Guidelines for Americans*, the *Food Guide Pyramid*, the *Food Guide Pyramid for Young Children*, the *Healthy Eating Index*, USDA's Food Plans, and Expenditures on Children by Families. These and other products developed by the Center are available at the Center's web site at *http://www.usda.gov/cnpp*

The Center is an independent resource in USDA which reports to the Under Secretary for Food, Nutrition, and Consumer Services and works cooperatively with other parts of the Department to provide strategic planning and coordination for education and nutrition policy. The Center receives administrative support from FNS. Its funding for FY 2000 is $2.5 million.

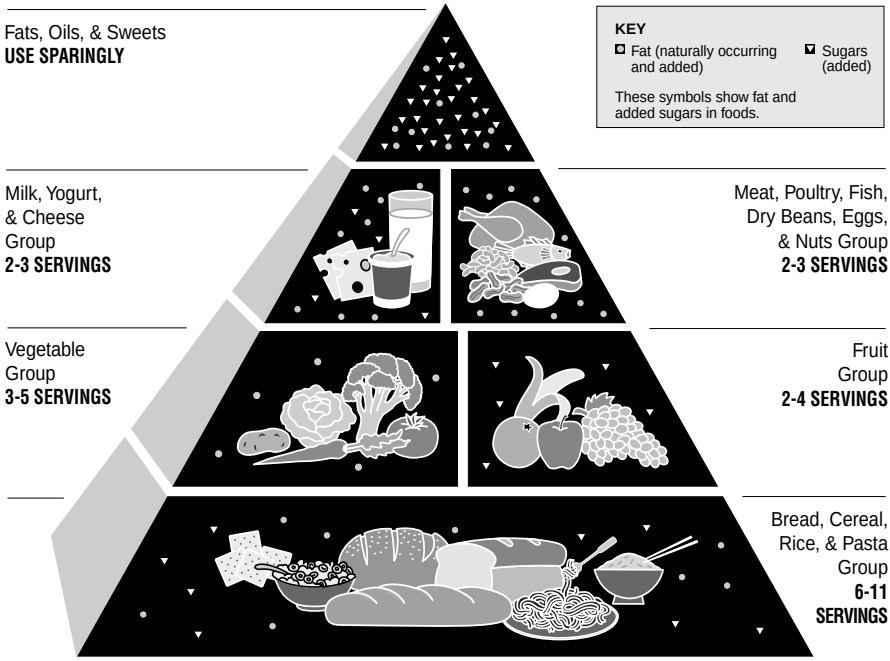
FOOD Guide PYRAMID for Young Children

A Daily Guide for 2- to 6-Year-Olds

U.S. DEPARTMENT OF AGRICULTURE
CENTER FOR NUTRITION POLICY AND PROMOTION

USDA is an equal opportunity provider and employer.

The Food Guide Pyramid



Source: U.S. Department of Agriculture/U.S. Department of Health and Human Services

WHAT COUNTS AS A SERVING?

Food Groups

Bread, Cereal, Rice, and Pasta		
1 slice of bread	1 ounce of ready-to-eat cereal	1/2 cup of cooked cereal, rice, or pasta

Vegetable		
1 cup of raw leafy vegetables	1/2 cup of other vegetables, cooked or chopped raw	3/4 cup of vegetable juice

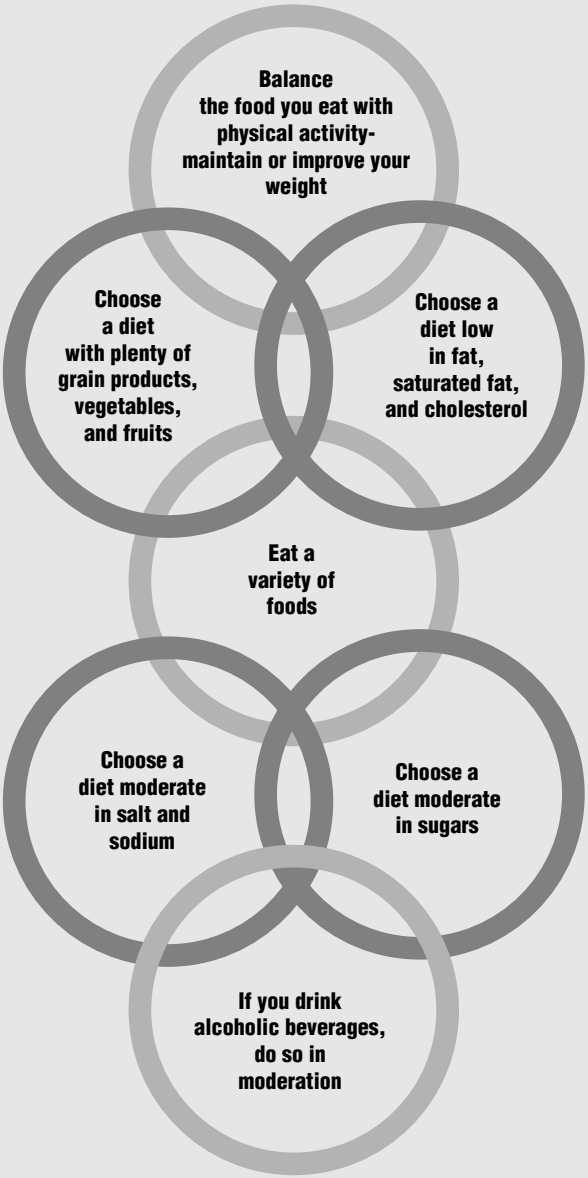
Fruit		
1 medium apple, banana, orange	1/2 cup of chopped, cooked, or canned fruit	3/4 cup of fruit juice

Milk, Yogurt, and Cheese		
1 cup of milk or yogurt	1-1/2 ounces of natural cheese	2 ounces of process cheese

Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts	
2-3 ounces of cooked lean meat, poultry, or fish	1/2 cup of cooked dry beans or 1 egg counts as 1 ounce of lean meat. 2 tablespoons of peanut butter or 1/3 cup of nuts count as 1 ounce of meat.

Nutrition and Your Health:

Dietary Guidelines for Americans



U.S. Department of Agriculture
U.S. Department of Health and Human Services

Table 8-1.

Food Stamp Program participation and costs (data as of August 29, 2000)

Fiscal Year	*Average Participation {Thousands}*	*Average Benefit {Dollars}*	*Total Benefits {$ in Millions}*	*All Other Costs {$ in Millions}*	*Total Costs {$ in Millions}*
1990	20,067	58.92	14,186.7	1,304.4	15,491.1
1991	22,624	63.86	17,338.7	1,430.4	18,769.1
1992	25,406	68.57	20,905.7	1,556.6	22,462.3
1993	26,982	67.96	22,006.0	1,647.0	23,653.0
1994	27,468	69.01	22,748.6	1,744.1	24,492.7
1995	26,619	71.26	22,764.1	1,855.5	24,619.6
1996	25,542	73.21	22,441.5	1,885.5	24,327.0
1997	22,858	71.27	19,550.2	1,936.7	21,486.9
1998	19,788	71.12	16,889.1	2003.5	18,892.6
1999	18,183	72.20	15,755.4	1,946.2	17,701.6

Table 8-2.

WIC Program participation and average monthly benefit (data as of August 29, 2000)

Fiscal Year	*Total Participation {in thousands}*	*Average Monthly Benefit Per Person {Actual Dollars}*
1990	4,517	30.20
1991	4,893	29.84
1992	5,403	30.21
1993	5,921	29.76
1994	6,477	29.91
1995	6,894	30.41
1996	7,188	31.19
1997	7,407	31.67
1998	7,367	31.75
1999	7,311	32.53

For More Information:

Food and Nutrition Service

Director, Office of Communications and Governmental Affairs
Joyce Willis
3101 Park Center Dr.,#805PC
Alexandria, VA 22302
703-305-2281
FAX 703-305-2312
joyce.willis@fns.usda.gov

Deputy Director, Office of Communications and Governmental Affairs
Mike Haga
3101 Park Center Dr., #926PC
Alexandria, VA 22302
703-305-2039
mike.haga@fns.usda.gov

Director, Governmental Affairs
Frank Ippolito
3101 Park Center Dr., #806PC
Alexandria, VA 22302
703-305-2010
FAX 703-305-2464
frank.ippolito@fns.usda.gov

Director, Public Information
Jean Daniel
3101 Park Center Dr.,#819PC
Alexandria, VA 22302
703-305-2286
FAX 703-305-1117
jean.daniel@fns.usda.gov

Team Leader, Publishing/AV Branch
Chris Kocsis
3101 Park Center Dr.,#814PC
Alexandria, VA 22302
703-305-2286
FAX 703-305-1117
chris.kocsis@fns.usda.gov

Team Leader, News Branch
vacant
3101 Park Center Dr., #815PC
Alexandria, VA 22302
703-305-2286
FAX 703-305-1117

Freedom of Info Act Officer
Sara Bradshaw
3101 Park Center Dr.,#308PC
Alexandria, VA 22302
703-305-2244
FAX 703-305-2921
sara.bradshaw@fns.usda.gov

FNS Regional Public Information Offices

Northeast Reg. PA Director
Charles De Julius
10 Causeway Street
Boston, MA 02222-1068
617-565-6395
FAX 617-565-6472
charles.dejulius@fns.usda.gov

Mid-Atlantic Reg. PA Director
Margarita Maisterrena
Mercer Corp. Park, 300 Corporate Blvd
Robbinsville, NJ 08691-1598
609-259-5091
FAX 609-259-5147
margarita.maisterrena.@fns.usda.gov

Southeast Reg. Public Affairs
Karen Dean
61 Forsyth St.,SW,Suite 112
Atlanta, GA 30303
404-562-1812
FAX 404-527-4502
karen.dean@fns.usda.gov

Midwest Reg. PA Director
Lawrence Rudmann
77 W. Jackson Blvd., 20th Flr
Chicago, IL 60604
312-353-1044
FAX 312-353-0171
lawrence.rudmann@fns.usda.gov

Mtn. Plains Reg. PA Director
Craig Forman
1244 Speer Boulevard, Rm903
Denver, CO 80204
303-844-0312
FAX 303-844-6203
craig.forman@fns.usda.gov

Southwest Reg. PA Director
Judy Barron
1100 Commerce Street,Rm5C30
Dallas, TX 75242
214-290-9802
FAX 214-767-6249
judy.barron@fns.usda.gov

Western Reg. PA Director
Cordelia Morris
550 Kearny Street, Rm 400
San Francisco, CA 94108
415-705-1311
FAX 415-705-1364
cordelia.morris@fns.usda.gov

Center for Nutrition Policy and Promotion

Information Director
John Webster
Suite 200 North Lobby,
1120 20th St., NW
Washington, DC 20036
202-418-2312
FAX 202-208-2322
john.webster@usda.gov

9. Food Safety

Office of Food Safety and the Food Safety and Inspection Service

The Food Safety and Inspection Service (FSIS) is the agency within the U.S. Department of Agriculture (USDA) responsible for ensuring the safety, wholesomeness, and correct labeling and packaging of meat, poultry, and egg products. FSIS operates under the authority of the Federal Meat Inspection Act, the Poultry Products Inspection Act, and the Egg Products Inspection Act. FSIS sets public health performance standards for food safety and inspects and regulates all raw and processed meat and poultry products, and egg products sold in interstate and foreign commerce, including imported products. FSIS is implementing a strategy for change to reduce the incidence of foodborne illness attributable to meat, poultry, and egg products. The Office of Food Safety, headed by USDA's Under Secretary for Food Safety, provides oversight of the agency.

In FY 1999, FSIS inspected over 8.3 billion poultry, 155 million head of livestock, and 3.4 billion pounds of egg products.

The activities of FSIS include:

- Inspecting poultry and livestock, as well as carcasses and processed products made from them;
- Inspecting all liquid, frozen, and dried egg products;
- Setting standards for plant sanitation, process controls, product contents (standards of identity), packaging and labeling, and microbial and chemical contamination;
- Analyzing products for microbiological and chemical adulterants;
- Conducting risk assessments, as well as epidemiologic and other scientific studies, to estimate human health outcomes associated with the consumption of meat, poultry, and egg products. These risk assessments and studies provide science-based information for risk management and communication; and
- Educating consumers about foodborne illness by way of publications, educational campaigns, and a toll-free, nationwide USDA Meat and Poultry Hotline (1-800-535-4555).

FSIS inspectors examine animals before and after slaughter, preventing diseased animals from entering the food supply and examining carcasses for visible defects that can affect safety and quality. Inspectors also test for the presence of drug and chemical residues that violate Federal law. Over the last 20 years, FSIS has made significant progress in reducing the violation rate for drug residues.

(See corrected table 9-2.)

More than 7,500 FSIS inspectors carry out the inspection laws in over 6,000 privately owned meat, poultry, egg product, and other slaughtering or processing plants in the United States and U.S. Territories.

Table 9.1

Livestock, poultry, and egg products federally inspected in 1999

Cattle	43,891,921
Swine	105,755,405
Other livestock	5,420,077
Poultry	8,365,372,345
Egg products	3,400,000,000

In addition, about 250,000 different processed meat and poultry products fall under FSIS inspection. These include hams, sausages, soups, stews, pizzas, frozen dinners, and other products containing 2 percent or more cooked poultry or at least 3 percent raw meat. In addition to inspecting these products during processing, FSIS evaluates and sets standards for food ingredients, additives, and compounds used to prepare and package meat and poultry products.

As part of the inspection process, FSIS inspectors test for the presence of pathogens and toxins such as *Salmonella*, *Listeria monocytogenes*, and *Staphylococcal enterotox*in in ready-to-eat and other processed products. No pathogens are permitted in such products.

FSIS also tests for pathogens in some raw products. In 1994, USDA declared *E. coli* O157:H7 an adulterant in raw ground beef and established a monitoring program for the pathogen in raw ground beef. As part of the Pathogen Reduction/Hazard Analysis and Critical Control Point (HACCP) Systems final rule issued on July 25, 1996, FSIS for the first time set pathogen reduction performance standards for *Salmonella* that slaughter plants and plants producing raw ground products must meet. The final rule also requires meat and poultry slaughter plants to conduct microbial testing for generic *E. coli* to verify the adequacy of their process controls for the prevention of fecal contamination.

Imported meat and poultry products are also subject to FSIS scrutiny. The agency reviews and monitors foreign inspection systems to ensure they are equivalent to the U.S. inspection system before those countries are allowed to export to the United States. When the products reach the United States, products are reinspected at 120 active import locations by import inspection personnel.

Nearly 3 billion pounds of meat and poultry passed inspection for entry into the United States from 32 countries during 1999.

Pathogen Reduction/Hazard Analysis and Critical Control Point (HACCP) Systems—Implementation

FSIS issued its landmark rule, Pathogen Reduction/Hazard Analysis and Critical Control Point (HACCP) Systems on July 25, 1996. The rule addresses the serious problem of foodborne illness in the United States associated with meat and poultry products by focusing more attention on the prevention and reduction of microbial pathogens on raw products that can cause illness. It also clarifies the respective roles of government and industry in food safety. Industry is accountable for producing safe food. Government is responsible for setting appropriate food safety standards, maintaining vigorous oversight and verification to ensure those standards are met, and operating a strong enforcement program to, among other things, deal with plants that do not meet regulatory standards.

The Pathogen Reduction and HACCP rule: (1) requires all meat and poultry plants to develop and implement written standard operating procedures for sanitation (SSOP's); (2) requires meat and poultry slaughter plants to conduct microbial testing for generic E. coli to verify the adequacy of their process controls for the prevention of fecal contamination; (3) requires all meat and poultry plants to develop and implement a system of preventive controls, known as HACCP, to improve the safety of their products; and (4) sets pathogen reduction performance standards for Salmonella that slaughter plants and plants producing raw ground products must meet.

The Pathogen Reduction and HACCP rule applies to over 6,000 federally inspected and 2,400 State-inspected slaughter and processing plants in the United States. Countries that export meat and poultry products to the United States must also meet the requirements of the final rule. Egg products are not covered by the final rule, but FSIS has developed a strategy that would include HACCP to improve the safety of egg products.

Implementation of the new science-based, prevention-oriented food safety system began on January 27, 1997, when all plants, regardless of size, were required to have in place written SSOP's, and slaughter plants were required to begin testing for generic *E. coli*. On January 26, 1998, large plants, those with 500 or more employees, were required to have HACCP systems in place and meet the performance standards for *Salmonella*. Small plants, defined as having between 10 and 500 employees, were required to implement HACCP by January 25, 1999. Very small plants, defined as having less than 10 employees or less than $2.5 million in sales, were required to implement HACCP by January 25, 2000.

Implementation in all plants has been smooth. The new prevention-oriented meat and poultry inspection system is showing positive results. New data from the first 2 years of testing in large plants and the first year of testing in small plants show that the prevalence of *Salmonella* in most categories was substantially lower after HACCP implementation. Large plants had a 90-percent compliance rate with the *Salmonella* performance standards for 1999, and the compliance rate for small plants was 84 percent. Data for very small plants are not yet available.

The tables on the next page illustrate *Salmonella* prevalence and compliance rates for broilers, swine, ground beef, and ground turkey in large plants; and broilers, swine, cows and bulls, and ground beef in small plants.

For more information on HACCP and compliance, visit the FSIS web site at: *http://www.fsis.usda.gov*, and access "HACCP Implementation."

Table 9-2.

Prevalence of *Salmonella* in meat and poultry products: Post-HACCP implementation results from large plants—January 26, 1998, through January 24, 2000.

Class of Product	*Pre-HACCP Baseline Studies (%)***	*Post-HACCP implementation Salmonella Prevalence (%, n=no. samples)*
Broilers	20.0%	10.9% (n=9,639)
Swine	8.7%	4.4% (n=2,475)
Ground Beef	7.5%	5.8% (n=1,696)
Ground Turkey	49.9%	34.6% (n=1,537)

Table 9-3.

Percentage of complete data sets from large plants meeting the *Salmonella* performance standards—January 26, 1998, through January 24, 2000

Class of Product	*Number of Plants*	*Number of Complete Data Sets*	*Percent (Number) Meeting Salmonella Performance Standard*
Broilers	129	189	91% (171)
Swine	32	45	87% (39)
Ground Beef	25	32	88% (28)
Ground Turkey	21	29	93% (27)
Total	207	295	90% (265)

Table 9-4.

Prevalence of *Salmonella* in meat and poultry products: Post-HACCP implementation results from small plants—January 25, 1999, through January 24, 2000

Class of Product	*Pre-HACCP Baseline Studies*	*Post-HACCP Implementation Salmonella Prevalence (%, n=number of samples)*
Broilers	20%	16.3% (n=2,193)
Swine	8.7%	18.2% (n=825)
Ground Beef	7.5%	4.3% (n=14,522)
Cows and Bulls	2.7%	2.3% (n=1,276)

Table 9-5.

Percentage of complete data sets from small plants meeting the *Salmonella* performance standards—January 25, 1999, through January 24, 2000

Class of Product	*Number of Plants*	*Number of Complete Data Sets*	*Percent (Number) Meeting Salmonella Performance Standard*
Broilers	49	43	79% (34)
Swine	28	15	47% (7)
Ground Beef	356	274	87% (239)
Cows and Bulls	37	22	77% (17)
Total	470	354	84% (297)

Food Safety From Farm to Table

Ensuring the safety of food is the first priority of the Office of Food Safety and FSIS. As industry has complied with the new pathogen reduction and HACCP requirements, FSIS is continuing to move more effectively to protect consumers from unsafe meat and poultry. First, as effective implementation occurs within plants, inspection resources can be focused more directly on food safety concerns. Second, FSIS will be able to expand its efforts beyond the four walls in slaughter and processing plants to other parts of the farm-to-table food safety chain. The agency is working cooperatively with other agencies, producers, and various organizations to minimize hazards throughout the farm-to-table continuum and thereby reduce foodborne illness.

HACCP-Based Inspection Models Project

HACCP does not currently apply to all activities associated with the slaughter process. Therefore, FSIS has developed new inspection models for plants that slaughter young, healthy, and uniform animals. The project is a natural extension of HACCP in all meat and poultry plants and will allow FSIS to better focus on public health concerns. The project is an effort to more fully integrate the principles of a science-based, preventive food safety system into slaughter operations. Approximately 25 volunteer plants that slaughter young chickens, market hogs, and young turkeys are participating in the project.

Under the project, FSIS has established performance standards for food safety and non-food safety conditions that volunteer plants must meet. In order to meet these standards, plants are extending their HACCP systems to address the food safety conditions, and they are developing process control plans to address non-food safety conditions. Plants are responsible for identifying and removing meat and poultry carcasses that do not meet these standards. FSIS inspectors conduct oversight inspection and verification inspection to ensure that plants are meeting regulatory requirements and are producing food that is safe for consumers. Baseline organoleptic and microbial data are being collected to document the accomplishments of the current inspec-

tion system. Once each plant completes a transition to the new plant controls and slaughter inspection procedures, data are again collected to provide a before-and-after picture.

The achievements of the new system must meet or exceed the achievements of the current system in order for FSIS to consider the new system to be successful. The project is being carried out through an open public process that allows all interested constituents the opportunity to provide input. The agency intends to redeploy a small number of inspectors currently assigned within plants to verify the safety and wholesomeness of meat and poultry products in the storage, transportation, and retail sale stages of the food production chain. FSIS will cooperate very closely with the States on this project to achieve the agency's goal of establishing one fully integrated system that utilizes all available resources to improve food safety.

Workforce of the Future

Having developed the food safety regulatory system of the future, FSIS must also reshape its workforce, and the way it deploys that workforce to achieve its goal. The agency needs to redeploy its resources, to improve the skills and qualifications of its workforce, and to take full advantage of these skills to meet its goal of reducing foodborne illness and to provide appropriate regulatory oversight within its statutory authorities along the farm-to-table continuum. The agency has identified core competencies in food production practices, auditing skills, and production systems verification. The agency will develop these skills in two ways. It will educate and retrain current employees, and it will recruit and hire employees in occupational series that focus on these skills and qualifications. The workforce of the future will be more versatile and better trained, with opportunities for higher grades.

FSIS would like to introduce and use the professional series, consumer safety officer (CSO), as a major occupation in its workforce. Consumer safety officers possess the needed scientific qualifications for employees at the field level. The conversion of the major part of the agency's workforce from inspectors to CSO's would be accomplished over a period of time. FSIS is also in the process of strengthening the role of veterinarians in the agency. FSIS believes the skills of its veterinary medical officers are underutilized and wants to make better use of the veterinarians' skills in epidemiology, microbiology, toxicology, and other scientific areas throughout the regulated food production and distribution process. A Workforce of the Future Steering Committee was established in 1999 to lead, coordinate, and oversee FSIS workforce planning activities and to guide the transition to the workforce of the future.

FSIS Training and Education Committee (TEC2001)

To complement the Workforce of the Future Initiative, on August 5, 1999, FSIS formed a Training and Education Committee (TEC2001), which will conduct a comprehensive examination of the agency's training and education needs for the coming years.

In support of the FSIS mission, TEC2001 will develop a program designed to ensure a well-educated, competent FSIS workforce, and explore and establish educational partnerships in the community FSIS serves, including other Federal agencies,

State agriculture and public health departments, the international trading arena, industry, and consumer groups. In addition, TEC2001 will explore technology-based approaches to training delivery, such as state-of-the-art technical training, distance learning, and continuing education.

All FSIS employees, including employee organizations, and other stakeholders who share an interest in and commitment to food safety, will have the opportunity to provide input into this program. The wealth of experience from these groups beyond the agency will ensure that all interests are represented.

Federal-State Cooperation

Recognizing the key role that State and local government agencies play in a seamless national food safety system, FSIS launched a Regulator's Food Safety Information Line for State food and public health agencies (1-800-233-3935) in September 1999. Located at FSIS' Technical Service Center in Omaha, NE, the site of the successful HACCP Hotline (1-800-233-3935), the new service answers food safety questions related to meat, poultry, and egg products. The information line is expected to improve cooperation and communication at all levels of government and to provide timely, authoritative answers to State colleagues' questions.

As part of the National Food Safety System (50 States Program) project that began in September 1998, the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), and representatives from several States are working to more fully integrate their laboratories. Six workgroups are working to implement these top three goals: (1) to lead a national movement toward laboratory accreditation under international acceptance standards (ISO standards 17025); (2) to implement a pilot project to efficiently document and validate modified and new analytical methodology; and (3) to promote data exchange. In 1999, eight Federal, State, and local laboratories began a pilot project, in which information is shared among the participating laboratories.

On February 23, 1999, FSIS and FDA signed a Memorandum of Understanding (MOU) to facilitate the exchange of information at the field level about food establishments and operations that are subject to the jurisdiction of both agencies. A recent evaluation of how this MOU is working has shown it to be a great success and found that communication was greatly improved at the local level.

Interstate Shipment

Another example of cooperation between the Federal Government and the States is the Department's bill, S. 1988, on the interstate shipment of meat and poultry products that was introduced by Senators Daschle (D-SD) and Hatch (R-UT) in November 1999. The key objective of the bill is to eliminate the prohibition on the interstate shipment of State-inspected meat and poultry products by ensuring that all meat and poultry products produced in the United States are inspected under a seamless national system enforcing a single set of requirements.

Regulatory Reform

FSIS continues to make progress on regulatory reform. This initiative began in 1995 to improve food safety, allow a more productive use of Federal resources, eliminate unnecessary burdens, and expand consumer choice in the marketplace. One direction in which the agency is headed is a shift away from "command and control" regulations toward performance standards, which provide companies with the flexibility needed to innovate.

In January 1999, FSIS converted into performance standards the regulations governing the production of cooked beef, roast beef, corned beef products, fully and partially cooked meat patties, and certain fully and partially cooked poultry products. Unlike the previous requirements for these products, which mandated step-by-step processing measures, the new performance standards spell out the objective level of food safety performance that establishments must meet, but they allow establishments to develop and implement processing procedures customized to the nature and volume of their production.

FSIS issued a final rule in October 1999 on updated sanitation regulations for official meat and poultry establishments. The rule converts many highly prescriptive sanitation requirements to performance standards, while streamlining and consolidating sanitary regulations applicable to both official meat and poultry establishments.

In November 1999, FSIS issued a final rule that defines each type of enforcement action and procedure it may take against a meat or poultry plant that violates inspection regulations. The rule is part of FSIS' ongoing effort to consolidate, streamline, and clarify meat and poultry product inspection regulations.

In December 1999, FSIS amended the Federal meat and poultry products inspection regulations to harmonize and improve the efficiency of the procedures used by FSIS and FDA for reviewing and listing or approving the use of food ingredients and sources of radiation in the production of meat and poultry products. Except in very limited circumstances, FDA will list in its regulations in title 21 of the Code of Federal Regulations (CFR) food ingredients and sources of radiation that are safe for use in the production of meat and poultry products. Requests for approval to use food ingredients and sources of radiation that are not currently permitted under title 9 or title 21 of the CFR in the production of meat and poultry products will have to be submitted to FDA.

Irradiation of Meat and Poultry

In December 1999, FSIS amended its regulations to permit the use of ionizing radiation for treating refrigerated or frozen uncooked meat, meat byproducts, and certain other meat food products to reduce levels of foodborne pathogens and to extend shelf life. FSIS also amended its regulations governing the irradiation of poultry products so that they would be as consistent as possible with the regulations for the irradiation of meat products.

Emerging Issues

Over the past several years, FSIS has enhanced the public health focus of its food safety program, helping the agency address emerging and re-emerging issues, such as *Campylobacter, E. coli O157:H7*, and *Listeria monocytogenes*.

Campylobacter

Based on current data from the Centers for Disease Control and Prevention (CDC), *Campylobacter* is still the number one cause of sporadic cases of foodborne illness. In January 1999, FSIS began a baseline data collection in young chickens to update a previous baseline study. The information from the baseline study will be made available to support the establishment of a performance standard for *Campylobacter*.

E. coli O157:H7

Another emerging cause of foodborne illness is *E. coli* O157:H7. The CDC estimates that 73,000 cases of infection and 60 deaths occur in the United States each year as a result of this pathogen. In January 1999, FSIS announced the availability of its revised guidance document intended to assist processors of ground beef, especially small processors, in developing procedures to minimize the risk of *E. coli* O157:H7 and other pathogens in ground beef products produced in their establishments. This was an updated version of the guide that FSIS made available to the public in March 1998, and presented in a public meeting on April 22, 1998. To better ensure the safety of the Nation's food supply, FSIS, in January 1999, published a *Federal Register* notice clarifying its policy regarding raw non-intact beef products contaminated with the *E. coli* O157:H7 pathogen.

Listeria monocytogenes

According to the CDC, an estimated 1,100 people in the United States become ill from listeriosis caused by *Listeria monocytogenes* each year, and approximately 20 percent die as a result of the illness. Because pregnant women and newborns, older adults, and people with weakened immune systems caused by cancer treatments, AIDS, diabetes, kidney disease, etc., are at risk for becoming seriously ill from eating foods that contain *Listeria monocytogenes*, FSIS consumer education programs specifically target those groups.

In May 1999, FSIS announced three near-term and four long-term initiatives to help industry control *Listeria monocytogenes* in ready-to-eat products and, thus, better protect public health. First, FSIS published a notice in the *Federal Register* advising plants to reassess their HACCP preventive control plans to ensure they are adequately addressing the pathogen. Second, the agency provided guidance to industry recommending environmental and end-product testing. And third, FSIS carried out extensive educational efforts targeted to at-risk consumers.

New information about *Listeria* has been distributed in many forms: a brochure, *Listeriosis and Food Safety Tips* (available through the Federal Consumer Information Center in Pueblo, CO), a video news release, newspaper features,

and radio interviews. To reach those at risk, a letter from USDA's Under Secretary for Food Safety was sent along with a video news release to more than 50 groups that work with at-risk populations. Publications were distributed through USDA's Food and Nutrition Service at regional meetings with school nurses, and videos were provided for Extension food safety leaders. Outreach to vulnerable populations, and those involved in patient care, is ongoing.

FSIS also has the following four longer term initiatives:

- The agency is drafting a protocol to study the post-production growth of *Listeria monocytogenes* in a wide variety of ready-to-eat products and will ask USDA's Agricultural Research Service to conduct the study;
- FSIS is developing an in-depth verification protocol that can be used to evaluate plants' HACCP plans for ready-to-eat products, particularly regarding *Listeria monocytogenes*;
- A risk assessment of *Listeria monocytogenes*, in conjunction with the Food and Drug Administration, is focusing on all foods, particularly refrigerated, ready-to-eat foods; and
- FSIS is developing food safety standards for ready-to-eat products that will address the need to control all pathogens, including *Listeria monocytogenes*.

For more information on the *Listeria* strategy, visit the FSIS web site at: *http://www.fsis.usda.gov*, and access "*Listeria*."

President's Council on Food Safety

In August 1998, President Clinton signed an Executive Order establishing the President's Council on Food Safety. The Council was established to enhance the coordinated approach to food safety in this country and create a seamless, science-based food safety inspection system. The primary functions of the Council are: to develop a comprehensive strategic Federal food safety plan; advise agencies of priority areas for investment in food safety; ensure that Federal agencies annually develop coordinated food safety budgets; and oversee the recently established Joint Institute for Food Safety Research, ensuring that it addresses the highest priority research needs. The Council is jointly chaired by Agriculture Secretary Glickman, U.S. Health and Human Services Secretary Shalala, and Neal Lane, the President's science advisor and Director of the White House Office of Science and Technology Policy (OSTP).

The Council has been involved in two major activities during the past year. First, it is developing a comprehensive strategic plan for Federal food safety activities that will help Federal agencies address the most important food safety challenges. To develop the strategic plan, due to the President in 2000, food safety officials worked together throughout 1999 delineating a vision and core goals. Agency staff were actively engaged in this strategic planning process. Second, the Council is developing a coordinated food safety budget in order to more fully integrate the budget process among the various agencies with food safety responsibilities. It also provided the President with a response to the 1998 National Academy of Sciences' food safety system study. For more information on the Council and the President's Food Safety Initiative, visit the web site at: *http://www.foodsafety.gov*, and access "President's Council on Food Safety."

Egg Safety Action Plan

Continuing their joint efforts to combat foodborne illness, FSIS and FDA, in June 1999, announced three important new measures to prevent illnesses caused by contaminated eggs. The FDA proposed to require safe handling statements on labels of shell eggs to warn consumers about the risk of illness caused by *Salmonella* Enteritidis (SE). In addition, for the first time, there is a uniform Federal requirement that all eggs and egg products packed for consumers be refrigerated at 45 degrees or below. Retail establishments governed by the proposed FDA regulation include supermarkets, restaurants, delicatessens, caterers, vending operations, hospitals, nursing homes, and schools. Also, FSIS is issuing a directive applying the refrigeration requirement to warehouses and other distribution locations that store shell eggs packed into containers destined for consumers, including transport vehicles. A joint USDA-HHS risk assessment identified the relationships between refrigeration and SE growth.

Finally, the President's Council on Food Safety developed an action plan, announced by the President in December, to further improve the safety of shell eggs and processed egg products. The strategic plan addresses the issue of controlling pathogens, including SE, and suggests further steps to help better coordinate egg safety from the farm to the table.

Foodborne Diseases Active Surveillance Network (FoodNet) and PulseNet

Through the Foodborne Diseases Active Surveillance Network (FoodNet), FSIS, FDA, and the CDC, in collaboration with State and local health departments at nine sites across the country to date, are better able to track the incidence of foodborne illness. The agencies can also monitor the effectiveness of food safety programs or control measures, such as USDA's pathogen reduction and HACCP rule, in reducing foodborne illness. FoodNet does not replace, but rather augments, the many long-standing activities of the Federal and State agencies that are used to identify, control, and prevent foodborne disease hazards. USDA, in conjunction with the other Federal and State agencies, submits an annual report to Congress on FoodNet activities. For more information on FoodNet or for copies of this report, visit the FoodNet web site at: *http://www.cdc.gov/ncidod/dbmd/foodnet*

PulseNet is a national computer network of public health laboratories that helps to rapidly identify and stop episodes of foodborne illness. The laboratories perform DNA "fingerprinting" on bacteria that may be foodborne and the network permits rapid comparison of these "fingerprint" patterns through an electronic database at the CDC. PulseNet is an early warning system that links seemingly sporadic human illnesses together, and, as a result, more outbreaks can be recognized, especially those that involve many States. Investigation of these outbreaks should result in the identification of hazards and implementation of new measures to increase the safety of the food supply. For more information, visit the PulseNet web site at: *http://www.cdc.gov/ncidod/dbmd/pulsenet/pulsenet.htm*

International Food Safety

In today's global marketplace, the food consumers eat is likely to come from a number of different countries. Consumers must have confidence in the safety of their food, whether it is produced domestically or imported. The Codex Alimentarius Commission (Codex), established in 1962, is the major international organization responsible for protecting the health of consumers, developing international food standards, and encouraging fair international trade in food. Codex is jointly supported by two United Nations organizations, the Food and Agriculture Organization and the World Health Organization. There are many Codex committees that set standards for a variety of commodities and that address a number of general issues. The work of Codex, along with national food safety agencies, is important to maintaining consumer confidence in the safety of the food supply.

In March 1999, FSIS made available a background paper which explains the process for determining whether exporting countries have meat and poultry systems and measures in place that are equivalent to the U.S. inspection system with respect to the requirements of the pathogen reduction and HACCP rule. Only countries that have been certified as having equivalent systems are eligible to export meat and poultry products to the United States. The availability of this document, titled *FSIS Process for Evaluating the Equivalence of Foreign Meat and Poultry Regulatory Systems*, was announced in the *Federal Register*. To date, 32 countries are certified as eligible to export meat and poultry to the United States. The agency is also working through Codex's Committee on Food Import and Export Inspection and Certification Systems to develop international guidelines on determining equivalence to better protect the public health and facilitate trade.

In June 1999, the FSIS Administrator was elected to a 2-year term as Chairman of Codex Alimentarius. Currently, there are 165 member countries in Codex Alimentarius, representing 98 percent of the world's population. In the United States, officials from the USDA, FDA, and U.S. Environmental Protection Agency (EPA) participate in Codex activities. The U.S. Manager for Codex reports to the USDA Under Secretary for Food Safety. The Under Secretary for Food Safety chairs the U.S. Codex Policy Committee. For more information on Codex, visit the FSIS Web site: *http://www.fsis.usda.gov, and access* "U.S. Codex Office."

The Office of Food Safety was active in 2000 in several international areas. The Under Secretary chaired an Organization for Economic Cooperation and Development Food Safety Working Group. The group produced papers describing food safety systems in developed countries, which had been requested by the G8 (heads of state or government of the world's leading industrialized nations). The Deputy Under Secretary for Food Safety cochaired a Committee of the Trans-Atlantic Consumer Dialogue organization.

Civil Rights Activities

Several town hall meetings were held in 1999 and 2000 to enhance communications on civil rights matters. The meetings addressed civil rights accountability and disability awareness. Personnel at headquarters and field personnel participated via audio conference. In September 1999 and 2000, FSIS held its first two diversity conferences. More than 150 headquarters employees attended, and others were able to view portions of the conferences by videotapes that were distributed. This year, the Agency employed more than 55 students under various employment programs, including: the Hispanic Association of Colleges and Universities Summer Intern Program, the Washington Internship for Native Students, the USDA/1890 Scholars Program, the DC Federal Job Initiative, and the Minorities in Agriculture, Natural Resources, and Related Sciences Program. The goal of each program is to help build and diversify the applicant pool at the USDA.

Food Safety and Consumer Education

FSIS conducts an extensive outreach program of consumer education to meet information needs on basic safe food handling to avoid foodborne illnesses. One way in which the agency works to reduce foodborne illness is by providing consumers with the information they need to safely handle meat, poultry, and egg products. Communication projects and educational campaigns are solidly science based, drawn from epidemiological studies concerning foods and behaviors that contribute to food safety risks. Projects are also based on research derived from educational theory, market and consumer research, and focus group testing. Information is disseminated to the media, information multipliers, and consumers through the FSIS web site, printed materials, videos, personal contact via USDA's Meat and Poultry Hotline, and presentations by FSIS representatives.

The agency's consumer education programs focus on providing key food safety materials to the general public and special groups who face increased risks from foodborne illness—the very young, the elderly, pregnant women, people who have chronic diseases, and people with compromised immune systems. These materials are based on the latest scientific advice in education and market research concerning foodborne illness. Educational materials include specific safe food handling advice on *E. coli* O157:H7, *Listeria monocytogenes* and other pathogens, food safety information for seniors and children, and *The Food Safety Educator*—a free quarterly newsletter available in print or on the FSIS web site. FSIS also produces news features, public service announcements, and joint food safety projects with other government agencies and food associations. See "For More Information."

Partnership for Food Safety Education

The Partnership for Food Safety Education is a national organization dedicated to educating consumers about the importance of food safety. The USDA serves as Federal Government liaison to the Partnership, along with the U.S. Departments of Education, Health and Human Services, and the EPA. The Partnership, formed in 1996 in response to an independent panel report calling for a public-private partnership of industry, government, and consumer groups to educate the public about safe

food handling to reduce foodborne illness, was officially launched with an MOU in 1997. Government agencies, including FSIS, provide expert guidance and in-kind support to the Partnership.

To date, here are some of the accomplishments of the Partnership. It has:

- built a network of partners—comprised of more than 500 national, State, and local organizations from the public health, government, consumer, and industry sectors—who support the Fight BAC!™ campaign and assist in the distribution of educational materials;
- produced an animated television public service announcement (PSA) featuring the BAC! character, which aired on more than 100 television stations reaching more than 310 million viewers in the early stages of the campaign. The PSA has been translated into other languages, including Spanish, Chinese, Korean, and Vietnamese;
- created and distributed a Fight BAC!™ brochure in both English and Spanish outlining the basics of fighting foodborne bacteria;
- developed a web site (*http://www.fightbac.org*) that has generated millions of hits from the United States and 50 other countries;
- developed and distributed a new curriculum for grades 4-6, "Your Game Plan for Food Safety," which is an educational package that includes a teaching guide, a video, and an interactive web site;
- developed teachers' kits, such as the Fight BAC!™ "Presenter's Guide," which teaches young children in grades K-3 about the importance of safe food practices; and
- developed Community and Supermarket Action Kits.

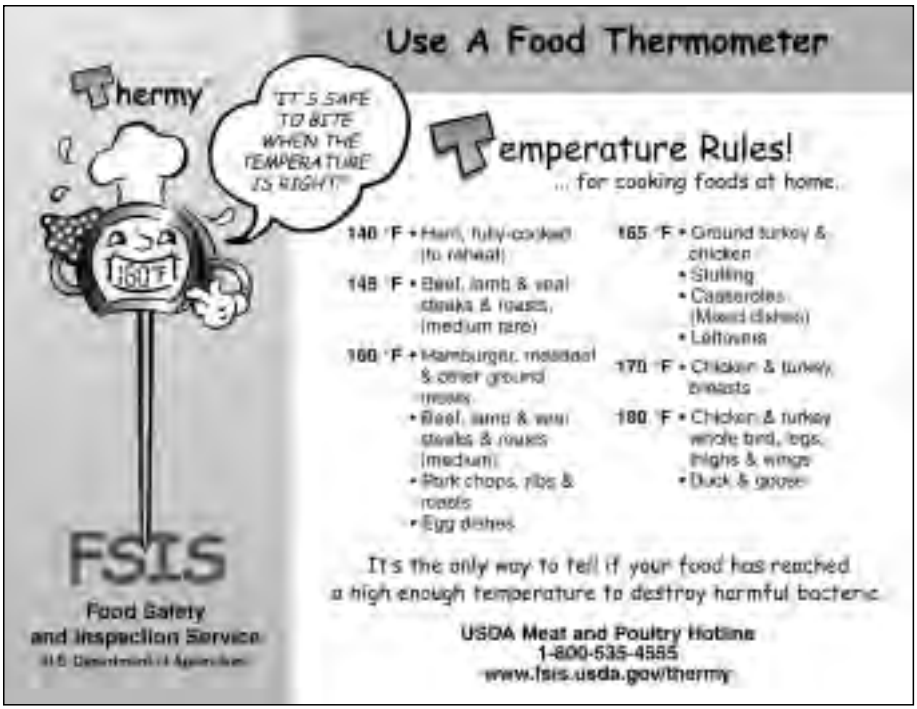
Fight BAC!™ Campaign

The Partnership for Food Safety Education's Fight BAC!™ campaign, which began in 1997, is a far-reaching, ambitious and consumer-friendly public education campaign focused on safe food handling. The Fight BAC!™ campaign's goal is to educate consumers on the four simple steps they can take to fight foodborne bacteria and reduce their risk of foodborne illness. These steps are:

- Clean—wash hands and surfaces often;
- Separate—don't cross-contaminate;
- Cook—cook to proper temperatures; and
- Chill—refrigerate promptly.

The Fight BAC!™ campaign, developed in conjunction with the 1997 National Food Safety Initiative, is designed to make the importance of safe food handling meaningful to American consumers and to motivate them to take action against foodborne pathogens. The campaign is represented by the character "BAC™" (bacteria), the invisible enemy who tries his best to spread contamination wherever he goes. By giving foodborne bacteria a personality, BAC™ makes the learning process more meaningful and memorable for consumers of all ages.

For more information about the Partnership for Food Safety Education and Fight BAC!™, visit *http://www.fightbac.org/*


Use A Food Thermometer
Thermy
"IT'S SAFE TO BITE WHEN THE TEMPERATURE IS RIGHT!"
Temperature Rules!
... for cooking foods at home.
140 °F • Ham, fully-cooked (to reheat)
145 °F • Beef, lamb & veal steaks & roasts, (medium rare)
160 °F • Hamburger, meatloaf & other ground meats
• Beef, lamb & veal steaks & roasts (medium)
• Pork chops, ribs & roasts
• Egg dishes
165 °F • Ground turkey & chicken
• Stuffing
• Casseroles (Mixed dishes)
• Leftovers
170 °F • Chicken & turkey, breasts
180 °F • Chicken & turkey whole bird, legs, thighs & wings
• Duck & goose
It's the only way to tell if your food has reached a high enough temperature to destroy harmful bacteria.
USDA Meat and Poultry Hotline
1-800-535-4555
www.fsis.usda.gov/thermy
FSIS
Food Safety and Inspection Service

FIGHT BAC!
CLEAN
SEPARATE
CHILL
COOK
Keep Food Safe From Bacteria

FIGHT BAC!
BAC
Keep Food Safe From Bacteria

USDA Meat and Poultry Hotline

Consumers have been calling USDA's toll-free Meat and Poultry Hotline (1-800-535-4555) for answers to their food safety questions since 1985. The hotline is staffed by home economists, registered dietitians, and food technologists with expertise in food safety. Consumers are the primary users of the Hotline, but by no means the only ones. Hotline specialists frequently advise and consult with other professionals in government, academia, and industry, and respond to hundreds of media calls each year. To further assist reporters, writers, educators, and other information multipliers, the hotline develops and periodically mails educational materials to several thousand newspaper and magazine food and health editors and some consumer affairs professionals.

The Meat and Poultry Hotline provides direct answers to specific questions on a wide variety of food safety concerns. Between January 1 and December 31, 1999, the hotline received approximately 110,800 calls (including after-hours calls). In addition to basic food handling, storage and preparation questions, the hotline addressed the latest issues: outbreaks of foodborne illness; pathogens such as *Listeria monocytogenes, Campylobacter*, and *E. coli* O157:H7; recalls of meat and poultry products; egg safety, and many others. Its nationwide service area enables the Hotline to serve as an early warning system, detecting possible public health threats. An analysis of caller questions and concerns allows FSIS to plan effective educational campaigns, and data collected by the Hotline helps the Agency discern gaps in consumer knowledge.

National Food Safety Information Network

FSIS and other agencies of the U.S. Department of Agriculture belong to the National Food Safety Information Network, which connects the Federal Government's primary mechanisms for providing food safety information to the public. The network includes: *http://www.FoodSafety.gov*; the "Government Gateway to Food Safety Information;" the USDA Meat and Poultry Hotline; the FDA's Center for Food Safety and Applied Nutrition (CFSAN); the USDA/FDA Foodborne Illness Education Information Center; National Food Safety Educators Network (EdNet); and FoodSafe, an online discussion group with 1,800 subscribers from more than 50 countries around the world. The *FoodSafety.gov* web site is an important part of this growing network. In FY 1999, this web site was expanded and enhanced, with additions including the President's Council on Food Safety home page. See *http://www.foodsafety.gov*.

National Food Safety Education Month℠

September is National Food Safety Education Month℠, and it is another activity within the National Food Safety Initiative. The goals of the Month are: (1) to reinforce food safety education and training among restaurant and foodservice workers; and (2) to educate the public to handle and prepare food properly at home, where food safety is equally important—whether cooking from scratch or serving take-out meals or leftovers. In 1999, a proclamation was signed by Agriculture Secretary Dan Glickman, Health and Human Services Secretary Donna Shalala, and OSTP Director Neal Lane, co-chairs of the President's Council on Food Safety, to recognize the

"many educators and consumers who actively promote safe food products and the safe handling of food." FSIS helped develop and distribute thousands of copies of a Consumer Education Planning Guide. To further focus public attention on food safety, the Under Secretary for Food Safety visited a Washington, DC, area elementary school to demonstrate the use of thermometers to check for safe internal temperatures.

Use of Food Thermometers

Building upon the success of Fight BAC!™, FSIS has introduced a new character, Thermy™, as part of a multi-year campaign to promote food thermometers. FSIS used focus group testing to develop the campaign slogan, graphics, and character. In preparation for the campaign rollout, FSIS developed materials for a variety of media. FSIS has also facilitated meetings and information exchange with the Food Temperature Industry Association, an alliance of manufacturers. As a result, several large grocery store chains have launched their own thermometer promotions.

Year 2000 Outreach

The Under Secretary for Food Safety co-chaired USDA's Food Supply Working Group, an interagency creation of the President's Council on Year 2000 Conversion. The working group led an effort to prepare the food and agriculture industries for possible computer and equipment disruptions caused by the calendar rollover to January 1, 2000.

What To Do If You Have a Problem With Food Products

- FOR HELP WITH MEAT, POULTRY, AND EGG PRODUCTS:
  Call the toll-free USDA Meat and Poultry Hotline at 1-800-535-4555; (202-720-3333 in the Washington, DC, area; TTY, 1-800-256-7072).
- FOR HELP WITH RESTAURANT FOOD PROBLEMS:
  Call your city, county, or State Health Department.
- FOR HELP WITH NONMEAT FOOD PRODUCTS:

Call or write the FDA. Check your local phone book under U.S. Government, Health and Human Services, to find an FDA office in your area. The FDA's Food and Information & Seafood Hotline is 1-800-332-4010 (202-205-4314 in the Washington, DC, area). Or, call the FDA's Outreach and Information Center (O&IC), operated by CFSAN at 1-888-SAFEFOOD.

For More Information

Food Safety and Inspection Service

USDA's Meat and Poultry Hotline may be reached by calling: 1-800-535-4555 (voice)
202-720-3333 (Washington, DC area), or 1-800-256-7072 (TTY).
Callers may speak with a food safety specialist from 10:00 a.m. to 4:00 p.m. weekdays, Eastern Time. Recorded messages are available at all times.
FSIS web site: *http://www.fsis.usda.gov*

Director, Congressional and Public Affairs
Linda Swacina
Rm 1175-S
Washington, DC 20250
202-720-3897
FAX 202-720-5704
linda.swacina @usda.gov

Deputy Director, Congressional and Public Affairs
Christopher Church
Rm 1175-S
Washington, DC 20250
202-720-9113
FAX 202-720- 5704
christopher.church@usda.gov

Director, Food Safety Education
Susan Conley
Rm 2932-S
Washington, DC 20250
202-720-7943
FAX 202-720-1843
susan.conley@usda.gov

Media Staff
Elizabeth Gaston
Rm 1175-S
Washington, DC 20250
202-720-9113
FAX 202-720-5704
elizabeth.gaston@usda.gov

Carol Blake
Rm 1175-S
Washington, DC 20250
202-720-9113
FAX 202-720-5704
carol.blake@usda.gov

Constituent Affairs Staff
Marianne Elbertson
Rm. 1175-S
Washington, DC 20250
202-720-5418
FAX 202-720-5704
marianne.elbertson@usda.gov

Manager, Meat and Poultry Hotline
Bessie Berry
Rm 2925-S
Washington, DC 20250
202-720-5604
FAX 202-690-2859
bessie.berry@usda.gov

Freedom of Info Act Officer
Cheryl Hicks
Rm 3134-S
Washington, DC 20250
202-720-2109
FAX 202-690-3023
cheryl.hicks@usda.gov

10. Natural Resources and Environment

Forest Service

Mission

The Forest Service mission is "Caring for the Land and Serving People." The mission is further expressed in the Forest Service land ethic: "Promote the sustainability of ecosystems by ensuring their health, diversity, and productivity," which is coupled with the service ethic: "Work collaboratively and use appropriate scientific information in caring for the land and serving people."

The Forest Service through ecosystem management applies these land and service ethics. Ecosystem management is the integration of ecological, economic, and social factors in order to maintain and enhance the quality of the environment to meet current and future needs.

The four strategic goals of the Forest Service are to: (1) protect ecosystems, (2) restore deteriorated ecosystems, (3) provide multiple benefits for people within the capabilities of ecosystems, and (4) ensure organizational effectiveness.

In 1998, the Forest Service Chief introduced the Forest Service Natural Resource Agenda, which identifies four key areas of national focus. They are:

- Watershed health and restoration
- Sustainable forest ecosystem management
- Forest roads management
- Recreation enhancement

Implementation of the agenda will help bring people together and help them find ways to live within the limits of the land. This, in turn, will ensure that future generations will forever be endowed with the rich natural bounty of our Nation.

Principal Laws

The Forest Service administers the lands and resources of the National Forest System (NFS) under the Organic Administration Act of 1897, the Multiple Use-Sustained Yield Act of 1960, and the National Forest Management Act of 1976, among others.

The agency also conducts research, provides assistance to State and private landowners, assesses the Nation's natural resources, and provides international assistance and scientific exchanges. These activities are carried out under the Forest and Rangeland Renewable Resources Planning Act of 1974, the Renewable Resources Extension Act of 1978, the Forest and Rangeland Renewable Resources Research Act of 1978, the Cooperative Forestry Assistance Act of 1978, and the International Forestry Cooperation Act of 1990.

Organizational Structure

The Chief, the top administrative official of the Forest Service, reports to the Secretary of Agriculture through the Under Secretary for Natural Resources and Environment. The Forest Service typically is viewed as consisting of three major components: (1) the National Forest System (NFS), (2) State and Private Forestry (S&PF), and (3) Research and Development (R&D). However, the agency supports many other programs, such as International Programs and Job Corps Civilian Conservation Centers. The NFS is organized into six Deputy Areas within the Washington Office, 9 regional offices, 155 national forests managed by 115 supervisors' offices, and approximately 570 ranger districts and 20 national grasslands.

The Forest Service manages the 192 million-acre NFS and supports multiple use; sustained yields of renewable resources such as water, livestock forage, wildlife, habitat, wood, and recreation; and integration of mineral resource programs and visual quality. The agency also mitigates, when appropriate and in a scientific manner, wildfires, epidemics of disease and insects, erosion, floods, water quality degradation, and air pollution.

The NFS provides many recreational activities for the public. In 1999, it hosted more than 800 million recreation experiences—43 percent of the outdoor recreation use on public lands—including 60 percent of the Nation's skiing and significant percentages of hiking, camping, hunting, fishing, and driving for pleasure. NFS takes care of 4,418 miles of the Wild and Scenic Rivers System; 412 units of the National Wilderness Preservation System, 133,000 miles of trails; more than 250,000 heritage sites; and over 23,000 campgrounds, picnic areas, and visitor facilities.

The national forests and grasslands contribute $134 billion to the gross domestic product.

The Forest Service administers many S&PF programs to provide technical and financial conservation assistance to State and private nonindustrial forest land. These programs serve as a link among many public and private organizations, and they help to promote the best use and conservation of America's natural resources on private lands. Wildland fire protection on private and public lands, Smokey Bear, forest health protection, and natural resource education are examples of S&PF programs. S&PF is organized into a Deputy Area within the Washington Office; it has an office in Newtown Square, PA, to work with States and landowners in the Northeastern United States, and has programs delivered from most NFS offices.

Forest Service Research & Development (R&D) is one of the world's leading forestry research organizations, conducting and sponsoring basic and applied scientific research. This research provides both credible and relevant knowledge about forests and rangelands and exciting new technologies that can be used to sustain the health, productivity, and diversity of private and public lands to meet the needs of present and future generations. The FS R&D program is planned and implemented with a focus on accountability through the Government Performance Review Act (GPRA) under goal 3, which states for the 2000 GPRA: "Science and Technical Assistance: Develop and use the best scientific information available to deliver technical and community assistance and support ecological, economic, and social sustainability." The desired outcome is to "...improve the knowledge base provided through

research, inventory, and monitoring to enhance scientific understanding of ecosystems including human uses, roles, and interactions, and to support effective management of the Nation's forests and rangelands."

International Program activities supported by the Forest Service, including programs at the International Institute of Tropical Forestry in Puerto Rico, promote sustainable development and global environmental stability. The director of International Programs reports directly to the Chief.

The Office of Communication, Civil Rights Program, Reinvention Program, and Law Enforcement and Investigations Program also report directly to the Chief.

The Operations area of the Washington Office is organized into three areas: Financial Management, Business Operations, and Programs and Legislation. The Financial Management area is led by the Chief Financial Officer to ensure proper allocation of funds, tracking, control, and reporting of expenditure of funds. The Business Operations Deputy Chief manages the human resource, information resource management, and procurement programs. The Programs and Legislation Deputy Chief manages the development of the agency's budget and coordinates legislative affairs.

As part of the Business Operations area and through agreement with the U.S. Department of Labor, the Forest Service operates 18 Job Corps Civilian Conservation Centers on Forest Service lands. This is the only Federal residential education/training program for the Nation's disadvantaged youth. Over 9,000 students enroll in Forest Service centers each year.

Reinvention

Creating a Forest Service that works better and costs less—that's what Forest Service reinvention is all about. As one of 30 Federal agencies designated by the National Partnership for Reinventing Government as a "High Impact Agency," it is dedicated to delivering first-rate customer service, cutting red tape to do its job more efficiently, and working with its partners—both in and out of government—to do the best job of caring for the land. Some recent highlights:

- With the Bureau of Land Management, the Forest Service is creating one-stop natural resource centers to better serve mutual customers, and sharing people and resources to enable both agencies to do their jobs better. In just two locations, this partnership is delivering better service and better resource stewardship while saving more than $1 million a year.
- In the Pacific Southwest Region and Research Station, the Forest Service began an experiment to let employees create internal enterprise teams that will allow them to bring their entrepreneurial spirit and creativity to bear on all facets of their work. Over time, this will help us import the best practices of the business world and the efficiency of the free market place to raise the level of performance of the Forest Service in achieving its public sector mission.
- In partnership with six other Federal agencies, the Forest Service unveiled an Internet program that makes it possible for anyone with access to a computer to learn about outdoor recreation opportunities on all Federal public lands.

This new one-stop source lets customers discover for themselves the tremendous recreation options in "America's Great Outdoors" and to plan their vacations online. Try it out at *http://www.recreation.gov* and see for yourself what reinvention at the Forest Service can do for you.

Key Facts About the Forest Service:

- *The entire Nation has about 1.6 billion acres of forest and rangeland, under all ownerships.*
- *The entire Nation has 736.7 million acres of forest land area, not including rangeland, under all ownerships; the owners/managers of this forest land are as follows:*
  Federal Government: 249.1 million acres
  Forest Service: 139.9 million acres
  Bureau of Land Management: 36.6 million acres
  National Park Service, U.S. Department of Defense, U.S. Department of Energy, & other Federal: 72.6 million acres
  Non-Federal total: 487.5 million acres
  State: 54.7 million acres
  9.9 million private landowners: 422.3 million acres
  County and municipal: 10.5 million acres
  There are 192.0 million acres of National Forest System land. This is 8.3 percent of the United States' land area, or about the size of Texas. The Forest Service manages:
  National Forests: 187.6 million acres
  National Grasslands: 3.8 million acres
  National Primitive Areas: 173,762 acres
  National Scenic-Research Areas: 6,630 acres
  National Wild & Scenic Rivers: 4,418 miles—95 rivers
  National Recreation Areas: 2.7 million acres
  National Monument Areas: 3.3 million acres
  National Historic Areas: 6,540 acres
  Congressionally Designated Wilderness: 34.7 million acres
- *There are 88 wilderness areas designated Class 1 for air quality protection totaling 15 million acres.*
- *The marginal value of the water from national forest lands is over $3.7 billion per year.*
- *Approximately 14 percent of the Nation's water runoff (about 190 million acre- feet annually) comes from national forest lands (excluding Alaska).*
- *The Forest Service manages 155 national forests for multiple uses:*
  Miles of property boundary line: 249,000
  Number of property corners: approximately 1 million
- *The national forest trail system is the largest in the Nation, with 133,000 miles of trails for hiking, riding, cross-country skiing, snowmobiling, bicycling, and snowshoeing.*

Key Forest Service Figures For 1999:

- *The Forest Service provides more recreation than any other Federal agency. Visitors to national forests are attracted by:*
  5,800 campgrounds and picnic areas
  328 swimming developments
- *1,222 boating sites*
- *250 winter sports sites, including 135 downhill ski areas*
- *If all these sites were fully occupied at the same time, they would accommodate 1.8 million people.*
- *Recreation use: 341.2 million visitor days*
  (1 visitor day equals 12 hours of recreation use)
- *Lands burned by wildfire: 530,000 acres*
- *Insect and disease suppression: 1.7 million acres*
- *Watershed improvements: 35,562 acres*
- *Terrestrial acres restored or enhanced for wildlife: 600,670*
  (of which 146,567 was kilovolt (kV))
- *Aquatic acres restored or enhanced for fisheries: 20,389*
  (of which 682 was kV)
- *Stream miles restored or enhanced for fisheries: 2,741*
  (of which 147 was kV)
- *Reforestation: 268,520 acres*
- *Livestock grazing: 9.3 million animal head months*
- *Grazing allotments administered: 8,783*
- *Timber sold: 2.2 billion board feet, enough to build about 150,000 homes*
- *Timber harvested: 2.9 billion board feet*
- *Road system: 386,000 miles*

National Forest System—Conservation and Multiple Use

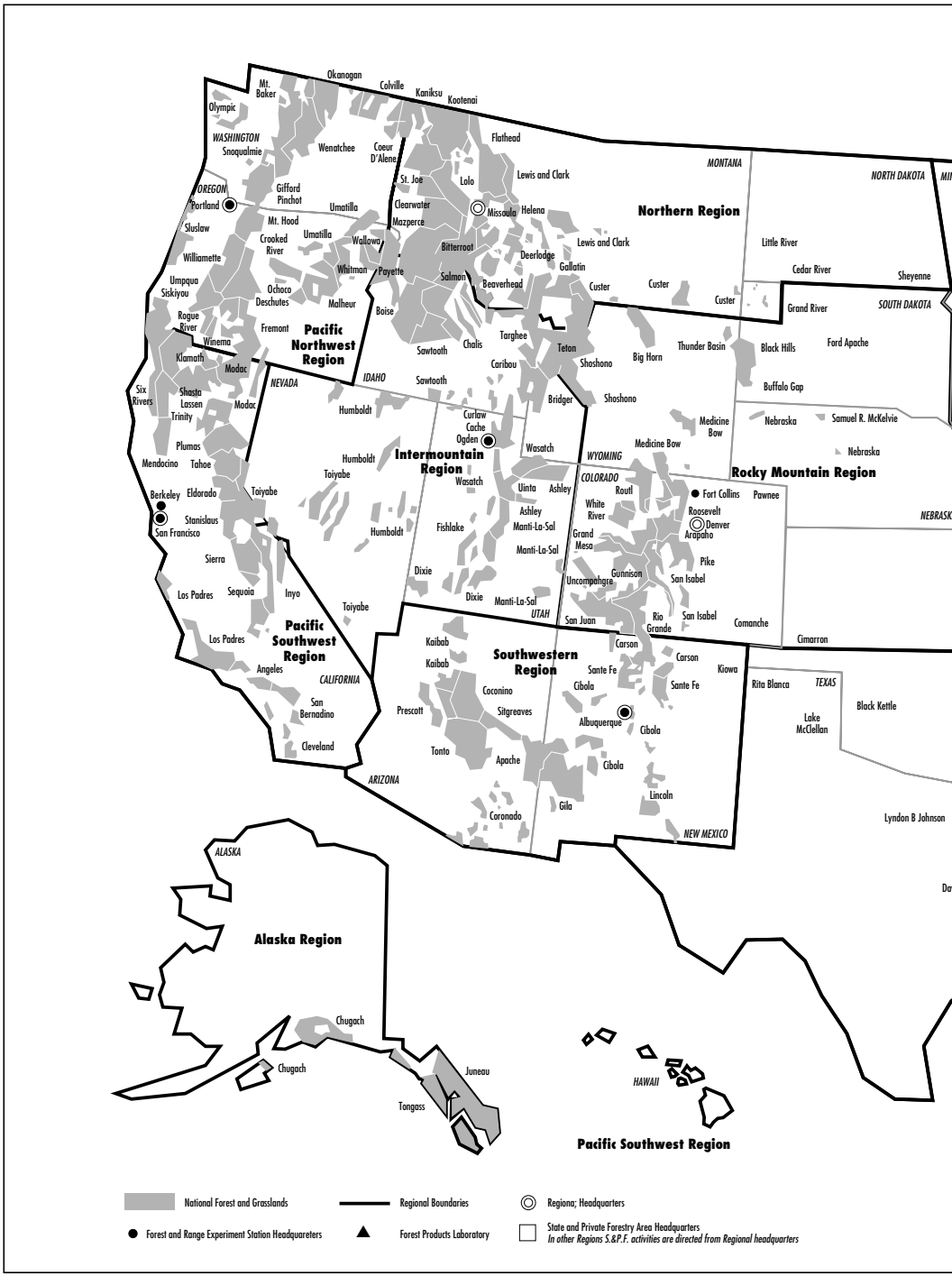
Lands and Realty Management

Lands and Realty Management activities include:

- Purchasing land to protect critical resources areas and provide increased public recreation opportunities;
- Authorizing powerlines to provide electricity to communities;
- Ensuring that hydro-electric projects protect riparian areas on the national forests;
- Exchanging lands to achieve a desired national forest landownership pattern that supports forest land and resource goals and objectives;
- Surveying national forest boundaries to identify and protect private and public lands;
- Determining the fair market value of lands purchased or exchanged, so that transaction is fair to the public and the landowner involved;
- Authorizing right-of-ways for roads to private in-holdings within the forest;

Figure 10-1.

Location of National Forests



MAINE
NESOTA
Chippewa
Superior
Ottawa
Hiawatha
VERMONT
White Mountain
Chequamegon
Nicolet
Huron
Green Mountain
NEW HAMPHIRE
St. Paul
Manistee
MASSACHUSETTS
CONNECTICUTT
RHODE ISLAND
MICHIGAN
NEW YORK
Madison
Milwaukee
WISCONSIN
NEW JERSEY
Allegheny
OHIO
INDIANA
Broomall
ILLINOIS
Eastern Region
PENNSYLVANIA
MARYLAND
Washington
DELEWARE
MISSOURI
Wayne
Monongahela
George Washington
Hoosier
WEST VIRGINIA
Daniel Boone
VIRGINIA
Shawnee
KENTUCKY
Jefferson
KANSAS
Mark Twain
Mark Twain
NORTH CAROLINA
Cherokee
Pisgah
Asheville
Uwharrie
OKLAHOMA
ARKANSAL
TENNESSEE
Naptahala
Croatan
Ozark
Ozark
Cherokee
Sumter
SOUTH CAROLINA
ALABAMA
Sumter
St. Francis
Holly Springs
William B. Bankhead
Chattahoochee
Atlanta
Francis Marion
Quachita
Oconee
MISSISSIPPI
Tombigbee
Caddo
Southern Region
Talladega
Kisatchie
Delta
Tuskegee
Bienville
Sabine
Desoto
Conecuth
GEORGIA
Homochitto
FLORIDA
Apalachicola
Osceola
Angelina
Kisatchie
Ocala
Sam Houston
LOUISIANA
New Orleans
Southern Region
Rio Piedras
Caribbean
PUERTO RICO

- Accepting donations of land to protect archeological, historical, or other significant sites;
- Maintaining records of national forest land areas, land transactions, land status, permitted uses, and easements;
- Securing public road and trail access to existing NFS lands;
- Responding to congressional request drafting services for land ownership adjustment activities.

Wildlife, Fish, and Rare Plants

In 1996, a baseline study revealed that wildlife and fish recreation expenditures tied to national forests tallied $6.8 billion in association with 125.7 million visitor days of hunting, fishing, and wildlife/fish-associated viewing. Anglers spent $2.7 billion (46.8 million visitor days), wildlife/fish viewers spent $2.1 billion (52 million activity days), and hunters spent $2.0 billion (27 million activity days) in pursuit of their pastimes. This $6.8 billion in direct spending translates to a total of $20 billion in local economic output and 226,000 jobs. Specific examples include the following:

- Commercial salmon harvested from the Tongass National Forest averages 120 million pounds per year, with an average annual earnings of $66 million. In 1999, estimates were at 150 million pounds. Meanwhile, sportfishing numbers in Southeast Alaska increased by 62 percent from 1984 to 1993, a significant revenue source for local economies.
- In 1999, over 179,000 people joined in "Celebrating Wildflower" events on national forests.
- The Forest Service and its partners held 2,750 aquatic education events in 1999 that landed 397,000 people. Events included National Fishing Week, Pathways to Fishing clinics, and classroom talks.

Key Facts About Wildlife, Fish, and Rare Plants

- *The National Forest System includes 2.3 million acres of fishable lakes, ponds, and reservoirs and more than 197,000 miles of perennial streams.*
- *National forests and grasslands support habitats for more than 3,000 species of birds, mammals, reptiles, amphibians, and fish, as well as some 10,000 plant species.*
- *The national forests and grasslands also provide:*
  —80 percent of the elk, mountain goat, and bighorn sheep habitat in the lower 48 States,
  —28 million acres of wild turkey habitat,
  —5.4 million acres of wetland habitat,
  —Habitat for 250 species of neotropical migratory birds, and
  —More than 366 for FY 1999 and 2,800 species classified as sensitive, threatened, or endangered plants, fish, or wildlife.

Partnerships

In 1999, $16.8 million in Federal funds was matched by partners' $26.7 million, for a total of $43.5 million to accomplish partnership projects for wildlife, fish, and threatened, endangered, and sensitive species on the national forests and grasslands. A small sampling of partnerships include the following:

- In a combined effort, the Audubon Society; Ruffed Grouse Society; and Montana Department of Fish, Wildlife, and Parks have joined with the Custer National Forest in a long-term aspen restoration effort by removing invading conifers and restoring fire in order to rejuvenate declining aspen stands. This effort will make significant improvement to grouse habitat as well as many other wildlife species.
- The black-footed ferret project is continuing to gain momentum in the Conata Basin of the Buffalo gap national grassland in South Dakota. By the fall of 1999, the population on the grassland included over 200 females with over 40 wild-born litters. About 50 captive-reared females and 20 wild-born were released in three reintroduction sites. Partners in this continuing effort include South Dakota Game, Fish, and Parks; National Park Service; Fish and Wildlife Service; and Geological Survey.
- WOW! Wings Over Willcox, a 3-day birding festival, has become one of the largest yearly tourism events for the small southern Arizona town of Willcox. The festival is a partnership effort that includes the Coronado National Forest and 10 other organizations, businesses, and agencies.
- The Ouachita National Forest has been co-sponsoring kids fishing derbies and senior derbies for years in Arkansas and Oklahoma. Some are held on the forest; others on nearby State-owned lakes. State wildlife and fish agencies provide catchable-sized catfish. Derby "kits" are provided by Hooked on Fishing International, and 208 cases of baits were provided by the Magic Baits Company in 1999. Over 2,200 kids and seniors participated in the 10 derbies in 1999. Over 100 volunteers assisted, and another 100 sponsors played a vital role in making these popular events a success.
- The Lac Vieux Desert Tribe and the Great Lakes Indian Fish and Wildlife Commission teamed with the Ottawa National Forest in Michigan to begin restoration of wild rice stands in lakes where wild rice grew in the past, but was eliminated by past changes in lake levels. From boats, members of the tribe collected wild rice seed in nearby marshes and then broadcast them by hand onto suitable shorelines in areas targeted for restoration. Wild rice marshes typically attract large numbers of waterfowl in the fall and are used year-round by muskrats.
- Over 400 structures were submerged in a flood-control reservoir on the Allegheny National Forest in Pennsylvania to improve habitat for warm water fish. The Kinzua Fish and Wildlife Association, Pennsylvania Fish and Boat Commission, and the U.S. Army Corps of Engineers joined in the effort.

Water, Soil, and Air

About 14 percent of the surface water supply in the United States flows from NFS watersheds. The goals of the Forest Service's watershed, soil, and air management programs are to (1) manage watersheds to maintain or improve watershed conditions to sustain forestland and rangeland health for multiple uses; (2) sustain soil productivity, (3) protect 88 Class I wilderness areas from air pollution, and (4) evaluate Forest Service activities and their effect on air quality, watershed, and soil condition.

The task of mapping all soils within NFS, with the cooperation with USDA's Natural Resources Conservation Service, is about 50 percent complete. In FY 1999, the Forest Service completed 35,562 acres to improve water and soil resources. Other significant ongoing activities include watershed inventory and analyses to better understand the capability of watersheds to sustain forestland and rangeland health; participating in water rights adjudications; restoring desired watershed conditions by cleaning up abandoned mines and hazardous materials sites located on national forests; monitoring to determine air pollution impacts on visibility, water, and soil chemistry in wilderness areas; and leading collaboration on large-scale watershed restoration efforts.

Key Facts About Water, Soil, and Air:

- *There are approximately 6,000 watersheds on NFS lands that produce an average 190 million acre-feet of water annually.*
- *There are 3,336 municipalities, serving 60 million people, which get their tap water from NFS lands.*
- *173 trillion gallons of water are supplied by National Forest System municipal watersheds annually.*
- *There are 88 wilderness areas designated Class I for air quality protection, totaling 15 million acres.*
- *About 600 remote weather data collection platforms are used in agricultural, fire, weather, and streamflow forecasting.*

Rangeland

NFS rangeland is managed to conserve the land and its vegetation while providing food for both livestock and wildlife. Under multiple-use concepts, grazing areas also serve as watersheds, wildlife habitat, and recreation sites. Grazing privileges are granted on national forests and grasslands through paid permits; permittees cooperate with the Forest Service in range improvement projects.

NEPA process decisions were made on allotments across the country in adherence to the Rescissions Act of 1995 (Public Law 104-19). The first 3-year time block in the 15-year Rescissions Act schedule, 1996 through 1999, ended with approximately one-third of all the livestock grazing allotments that needed environmental analyses being analyzed on schedule. Implementation of improved management was undertaken on these allotments. Monitoring both implementation and effectiveness of the management actions has been undertaken and will continue into the future.

The noxious weed management program was a success in FY 1999 with 110,683 acres treated. This was accomplished by the Forest Service in cooperation with the States, counties, and cities working together to prevent the spread of noxious weeds, treat existing infestations, and educate citizens about noxious weed problems.

Key Facts About Rangeland[1]:

- *In FY 1999, the Forest Service administered 8,783 grazing allotments.*
- *Permitted livestock grazing totaled 9.3 million animal head months. (A head month is 1 month's occupancy by an adult animal.)*
- *By the end of 1999, 1,978 allotments underwent environmental analyses in the first Recissions Act 3-year time block. Management decisions made on these analyses resulted in improved rangeland vegetation.*
- *In FY 1999, 110,683 acres of rangelands were treated to control noxious weeds infestations.*
- *Forage improvement took place on 28,123 acres of rangelands.*
- *In FY 1999, 1,322 structural improvements were constructed on NFS rangelands to implement management changes prescribed in recent decisions.*

[1]Rangeland improvements were accomplished with appropriated dollars, range betterment funds, trust funds, challenge cost agreements, permit holder cooperation, and other private cooperation.

Energy, Minerals, and Geology

Energy and mineral development fosters economic development, as does the application of geologic principles on National Forest System lands, including development of private minerals underlying these lands. Ecosystems are protected by requiring appropriate design, mitigation, and reclamation measures, and by monitoring and inspecting operations to ensure compliance. Cleaning up abandoned mines on Forest Service land restores deteriorated ecosystems. Over 38,000 abandoned mines exist on National Forest System land. Of that, 6,000 required clean up. As of 1999, 28 sites have been cleaned up, 30 sites have safety hazards fixed, and work has begun on an additional 100 sites.

An Ecosystem Restoration Technology Center has been established to make technology available at the field level for cleanup actions at both active and inactive abandoned mines. This is a partnership with the Environmental Protection Agency, the Bureau of Land Management, the Office of Surface Mining, the State of Montana, and several academic institutions.

Exploration, development, and production of energy and minerals from National Forest System lands contribute to economic growth, provide employment in rural communities, and raise revenues that are shared with the States. The energy and minerals component of the program is directed at obtaining these benefits while ensuring operations are conducted in an environmentally sound manner. In terms of the magnitude of the energy and minerals program, there are approximately 5.8 mil-

lion acres leased for oil and gas, over 150,000 mining claims, about 7,000 mineral material pits and quarries, over 2,000 new operations proposed each year, and more than 20,000 operations to monitor and inspect. The largest coal mine in the United States is on NFS lands, and much of the Nation's phosphate and lead production comes from NFS lands. The value of all energy and mineral production exceeds $2.4 billion per year. Annual revenues are about $170 million, 25-50 percent of which is returned to the States where production occurs.

The geology and paleontology components of the program provide basic scientific information about the Earth's materials and processes. Forest Service geologists and paleontologists identify and interpret geologic and paleontological conditions and hazards for land management decisionmaking and cost-effective project design. They inventory and evaluate sites with geologic and paleontological resources such as groundwater, fossils, and caves for appropriate management; and interpret sites having significance for scientific, educational, or recreational use. The interpretation is the legacy of all people, and the Forest Service recognizes its responsibility to manage that part of the fossil record occurring on NFS lands as a public legacy for future generations. Fossils are nonrenewable resources, and their value may be greatly diminished or lost entirely in the absence of proper management.

The USDA Forest Service recognizes multiple-use values for fossil resources that include: legacy value for present and future generations, scientific value, educational and interpretive values, and recreational and aesthetic values.

Recreation, Heritage and Wilderness Resources

America's national forests and grasslands are the "gold crown" of outdoor settings where American and international visitors alike enjoy a wide variety of premier recreation activities. From the Tongass National Forest in Alaska, where glaciers and coniferous forests abound, through the wild and scenic rivers of Idaho, to the heritage sites of the Jemez Mountains in New Mexico and the tropical forest of the Caribbean National Forest in Puerto Rico, recreation is outdoor fun on our national forests and grasslands.

Forest Service Recreation Portfolio

- 43 percent of all public land outdoor recreation on NFS lands
- 60 percent of the Nation's skiing
- Significant percentages of hunting, fishing and wildlife viewing
- World-class hiking, camping, and driving for pleasure
- 50 percent of habitat for salmon and trout (lower 48 States)
- 80 percent of habitat for elk, bighorn sheep, and mountain goat (lower 48 States)
- 50 percent of public lands trail miles in the country

Key Facts About Forest Service Energy, Minerals, and Geology Program

- *Minerals found on Forest Service lands provide more than $3.3 billion in private sector revenue.*
- *7 million acres where there is a possibility for coal leasing (95 billion tons)*
- *45 million acres where there is a possibility for oil and gas leasing; 5.4 million acres leased*
- *About 7,000 sand, gravel, and stone pits and quarries*
- *Approximately 2,000 new locatable mineral operations requiring review each year*
- *Over 95 percent of domestic platinum/palladium comes from the Custer National Forest*
- *Over 20,000 existing locatable mineral operations requiring monitoring*
- *45 percent of the Nation's production of lead*
- *One of the world's largest molybdenum deposits (Tongass National Forest, AK)*
- *Many of the Nation's 100,000 rock hounds, recreational mineral collectors, students, and geologic organizations use the national forests for education and recreational purposes.*
- *Recreational panning for gold is an activity that is rapidly increasing.*
- *The Forest Service manages fossil and geologic sites of interest as resources for present and future generations, scientific, education, interpretive, recreational, and aesthetic values.*
- *The most complete Champsosaurus skeleton in the world (55 million years old) came off Little Missouri National Grasslands and is on display at FS headquarters.*
- *FS has partnerships with communities, States, and universities on managing the paleontological resource.*

The following resources are produced annually on NFS lands:

- *8.5 million barrels of oil*
- *250 billion cubic feet of gas*
- *115 million tons of coal*
- *500 million pounds of lead*
- *200 million pounds of copper*
- *11 million ounces of gold*
- *20 million tons of sand and gravel*

Key Recreation Facts:

- *399 wilderness areas (34.7 million acres)*
- *63 percent of National Wilderness Preservation System managed by Forest Service in lower 48 States*
- *34 percent of National Wilderness Preservation System managed by Forest Service in total United States.*
- *20 national recreation areas (NRA) (includes land between the lakes NRA)*
- *9 national scenic areas (NSA)*
- *4 national monuments and volcanic monuments (NM)*
- *6.7 million acres of NRA, NSA and NM (includes land between the lakes NRA)*

Recreation Roads, Trails, and Rivers

- 136 (9,126 miles) national forest scenic byways
- 95 (4,418 miles) wild and scenic rivers
- 133,087 miles of trails
- 6,709 miles of scenic and historic trails

Sites, Facilities, and Services

- 277,000 heritage sites
- 4,300 campgrounds
- 23,000 developed recreation sites
- 135 Alpine ski areas
- 1,496 picnic sites
- 1,222 boating sites
- 140 swimming areas
- 18,000 recreation facilities
- 14,900 recreation residences
- 480 resorts

National Forest System Inventory, Assessment, and Planning

Sustainable and effective management of National Forest System lands is dependent upon scientifically credible information and collaborative planning. Sustainable management includes the continued existence and use of resources to meet human physical, economic, and social needs; the desire to preserve the health of ecosystems in perpetuity; and the ethical choice of preserving options for future generations while meeting the needs of the present.

Regulations for National Forest System planning activities are currently being revised to reflect experience gained in developing Land and Resource Management Plans for 127 administrative units. The focus of the revision is to enhance the use of collaborative planning principles and techniques and to establish sustainability as an overarching management goal for resource management direction.

National Forest System planning consists of four basic activities that constitute a continuous planning framework: inventory, assessment, land management planning, and monitoring. Inventories locate, characterize, and document resource features and

conditions across each national forest and grassland. Data from inventories are analyzed in assessments that span broad areas (broad-scale) and watersheds to provide the ecological context of issues facing the agency. The knowledge gained from assessments provide focus to land and resource management plans (LRMP's). Land management planning activities identify desired resource conditions to achieve long-term sustainability; management goals and objectives; and land allocations that provide uses, values, products, and services the public desires. Monitoring is critical for evaluating trends in resource conditions and assuring management actions are effective and implemented as designed, planning assumptions are valid, and short- and long-term sustainability and land management objectives are being accomplished.

Inventories provide information necessary to evaluate the context and consequences of management options being addressed in the planning process and must be scientifically and legally defensible. Development and management of agency-wide standards for inventory, storage, and analysis of resource information reduces long-term information management costs, and promotes exchange of information with partners and the public. Geographic information systems provide analytical capability and a medium for data exchange with our land management partners and the public. The agency has established a goal to bring inventories of national forests and grasslands into compliance with a 10-year "refreshment" cycle.

Assessments are characterizations of ecosystems that provide ecological context and information for a broad range of land management decisions, including LRMP revision or amendment. Assessments document and evaluate current land and resource conditions, including ecosystem composition, function, and structure; ecosystem capabilities; and limits to sustained production of goods and services. Assessments provide a fundamental opportunity for initiating collaborative planning activities and developing long-term working relationships necessary to update and implement LRMP's.

The need to complete a new LRMP or change an existing LRMP is determined by an evaluation of the effectiveness of current direction, and the consideration of desired conditions of national forest and grassland resources and values. Revision of an LRMP is required whenever circumstances affecting the entire plan area or major portions of the plan area have changed significantly, or at least every 15 years as required by the National Forest Management Act (NFMA). Plan revision activities are initiated and completed through integrated, interdisciplinary planning; collaboration with all interested parties; and by using a science-based approach in meeting the requirements of the NFMA and other environmental laws, regulations, and policies. Plans are also kept current by the use of amendments.

Monitoring is our primary avenue for adapting management from lessons learned and progressively improving the quality of natural resource programs and services. The Forest Service has made significant progress in developing more credible methods for storing data for use in monitoring activities. The Forest Service collaborates with other agencies and organizations to acquire data, expertise, and use protocols devised by other groups (e.g., NASA, The Nature Conservancy, EPA, and Census) to fulfill monitoring needs. These efforts help offset significant expenses associated with having to gather information and monitor ecosystems with greater scientific and technical credibility.

Collaborative planning activities have improved relationships with local communities and land management partners. Resource management decisions are made using the procedures of the National Environmental Policy Act and are documented in environmental impact statements, environmental assessments, or decision memorandums. However, as the significance of National Forest System resources continues to increase, controversy over management activities is reflected in administrative appeals and lawsuits. These administrative procedures provide the opportunity for higher level review of management decisions and afford an opportunity for recourse that is part of our democratic process.

Key Facts about Inventory, Assessment and Planning:

- *Inventories of National Forest System resources are currently being conducted at a refreshment rate of 15-18 years and total 10,432,000 acres/year.*
- *A total of 130 watersheds and 18 broad-scale assessments were completed.*
- *Land and resource management plans have been prepared for 126 administrative units and include all national forests and grasslands. Revisions were initiated or completed on 11 units.*
- *Annual reports of monitoring results were prepared for 126 administrative units.*
- *Each year the Forest Service produces:*
  —10,000 decision memorandums
  —5,000 environmental assessments
  2—50 environmental impact statements
- *Over 1,200 projects, plans, and permit decisions were administratively appealed.*
- *On average, the Forest Service had over 200 lawsuits, pending at any given time, challenging resource management decisions.*

Forest Vegetation Management

Approximately 73 percent of the 192 million acres of national forests is considered forested. Of the forested land, 29 percent is available for regularly scheduled timber harvest and less than 1 percent is subject to some form of timber harvest treatment in any given year. The remaining 71 percent of the forested land is protected as wilderness, used for recreation, or cannot be harvested due to environmental or economic conditions such as steep slopes, fragile soils, and lack of feasible access.

In most cases, forested ecosystems on the national forests are in a healthy, functioning condition due to past active management and environmental protection measures. These forests provide highly diverse and often unique resources, opportunities, and experiences for the public. In some cases, ecosystems are not functioning in a way that can be sustained without unacceptable risk of losses to wildfire, insects, or diseases. It is important that the agency assesses each ecological situation at the local level; establish management objectives based on ecological, social, and economic information; and utilize the best tools available to achieve established vegetation objectives.

The removal of woody biomass through the Forest Service's timber sale program is an essential component of national forest management. Restoration and maintenance of healthy forests is the best way to sustain the production of goods and services and protect the environment. Timber sales represent one tool that can be used to achieve forestland restoration and maintenance goals. Furthermore, since timber sales generate some financial return, they are oftentimes the least net cost means of implementing desired vegetation management treatments.

The Forest Service is strongly committed to managing NFS lands in an ecologically sensitive manner. One of the agency's top priorities is to maintain and improve the health and vigor of forest ecosystems for the enjoyment of current and future generations. The Forest Service operates Federal timber sales under some of the most substantial and effective environmental protection policies in the world. The agency is taking an active role in managing vegetation to help achieve the complex interrelated objectives of resource use and environmental protection.

Stewardship Demonstration Projects

Experience has shown that the agency's traditional tools for managing vegetation, i.e., the standard timber sale and service contracts, are oftentimes not well suited to addressing many of today's most pressing vegetative management needs, or to implementing truly integrated resource management projects. The standard timber sale contract was designed to dispose of commercially valuable timber, but many of today's most important treatment needs— e.g., reducing excessive fuel loadings - often involve managing wood of little or no commercial value. The standard service contract can be a flexible and powerful tool, but funding frequently limits the amount of work that can be accomplished in this manner.

Recognizing the problems associated with its traditional vegetative management tools, Congress gave the Forest Service the authority to test an array of new processes and procedures through a series of 28 stewardship contracting end-results demonstration projects. Under the terms of this legislation, the projects that are undertaken are to address one or more of the following resource management objectives:

- road and trail maintenance or obliteration to restore or maintain water quality;
- soil productivity, habitat for wildlife and fisheries, or other resource values;
- setting of prescribed fires to improve the composition, structure, condition, and health of stands or improve wildlife habitat;
- noncommercial cutting or removing of trees or other activities to promote healthy forest stands, reduce fire hazards, or achieve other noncommercial objectives;
- watershed restoration and maintenance;
- restoration and maintenance of wildlife and fish habitat; and
- control of noxious weeds and reestablishing native plant species.

New processes and procedures the agency may test include the following: award of contracts on the basis of best value, service contracts of up to 10 years' duration, exchange of goods for services, retention of receipts, offer of sales valued at over $10,000 without advertisement, designation of timber to be cut by description, and use of State foresters as Federal agents in helping to prepare and administer national forest timber sales.

Key Facts About the Forest Vegetation Management Program

Accomplishments:

- *2.3 BBF (billion board feet) of timber offered for sale in FY 1999*
- *2.2 BBF of timber sold and awarded in FY 1999*
- *2.9 BBF of timber harvested in FY 1999*
- *448,746 acres subject to some type of harvesting operation in FY 1999*
- *268,520 acres naturally or artificially regenerated in FY 1999*
- *264,182 acres of timber stand improvement treatments in FY 1999*
- *757,206 in value of free use forest products in FY 1999*
- *227,688 Christmas trees sold in FY 1999*
- *$2.7 million in special forest products sold in FY 1999*
- *221,200 families assisted through personal use sales in FY 1999*
- *4,119 miles of existing forest roads reconstructed in FY 1999*
- *192 miles of new forest roads constructed in FY 1999*
- *22 new bridges constructed*
- *64 bridges reconstructed*
- *2,907 miles of road decommissioned*

Passport in Time

Through the Passport in Time program, the Forest Service offers unique, nontraditional recreation opportunities such as archaeological excavation, historic structure restoration, and wilderness surveys. These experiences foster environmental stewardship while providing the public with unusual, educational experiences.

Passport in Time has over 13,000 volunteers contributing over $5.2 million worth of time and effort to preserve our Nation's history by restoring historic structures, stabilizing National Register eligible sites, evaluating sites for inclusion in the National Register of Historic Places, working on projects in wilderness, and developing heritage interpretive sites. Every activity is aimed at making our Nation's unique history accessible to the public and preserving it for future generations.

State and Private Forestry—Providing Assistance to Nonindustrial Private Landowners

The State and Private Forestry programs represent important tools for the monitoring, management, protection, and better use of America's forests, with emphasis on non-Federal forest land stewardship. These programs connect forestry to all land managers—whether small, urban woodlot owners, tribal foresters, State agencies, or Federal—in efficient, nonregulatory ways. Through a coordinated effort in management, protection, and better use, the programs of State and Private Forestry help facilitate sound forestry across ownerships on a landscape scale.

About 70 percent of America's forests are in State and private ownership, and 80 percent of the wood fiber potential comes from these lands. These lands are also critical to watershed conditions, fish and wildlife habitat, and the aesthetic quality of the Nation's landscape; and they represent one of the best sources of carbon sequestration. Since these non-Federal forests represent most of the forests in our country,

keeping these lands healthy, productive, and sustainable in the rural and urban areas on a cumulative basis is especially important to the Nation. With increasing fragmentation and development pressure, the unique Federal role in maintaining the value and functions of these lands across ownership divisions has never been greater or more important.

Through a partnership role of technical advice and focused financial assistance, the program leverages Federal resources to help produce a variety of forest-based goods and services— including recreation, wildlife and fish, biological diversity, and timber—to help meet domestic and international needs.

Forest Health Protection

The Forest Service provides technical and financial assistance to Federal agencies, tribal governments, States, and (through State foresters) to private landowners. In 1998, with the assistance of State foresters and others, the Forest Service conducted insect and disease detection surveys on 213 million acres of NFS, other Federal land, and tribal lands, and 552 million acres of State and private lands. In addition, the Forest Service and State foresters participate in a forest health monitoring program. With USDA's Animal and Plant Health Inspection Service, the Forest Service works to protect the Nation's forests from exotic insects, diseases, and plants. The Forest Service provides technical assistance in the safe and effective use of pesticides, shares the cost of insect and disease prevention and suppression projects with States, and funds prevention and suppression projects on Federal lands. The agency also evaluates and applies new, more efficient and environmentally sensitive technologies for forest health protection.

Cooperative Forestry—Providing Assistance to Nonindustrial Private Landowners and Community and Urban Areas

Cooperative Forestry (CF), in partnership with State forestry and other non-Federal forestry interests, provides for multidirectional links between Federal forestry programs and objectives and the non-Federal forestry sector. CF connects ideas and people to resources and one another so they can better care for forests to sustain their communities. Since the 1990 Farm Bill, all programs have strategic plans in place to guide nationwide delivery. CF has three major goals:

- Ensure sustainable ecosystems
- Provide multiple benefits for people within the capabilities of ecosystems
- Ensure organizational effectiveness

The **Forest Stewardship Program** provides technical assistance to nonindustrial private forest landowners interested in managing their forests for multiple resources. More than two-thirds of the Nation's forests are non-Federal, owned by 9.9 million nonindustrial private forest landowners. Since 1990, over 133,400 landowners have enrolled in the program, and stewardship plans have been prepared on more than 18.4 million acres of nonindustrial private forests.

The **Stewardship Incentives Program** provides cost share assistance to landowners implementing Forest Stewardship Landowner Plans. This program is managed in cooperation with State forestry agencies and USDA's Farm Service Agency to provide assistance on more than 250,000 acres annually. This includes

approximately 50,000 acres of tree planting annually. Since 1990, Stewardship Incentives Program practices have been implemented on 1.5 million acres, including approximately 200,000 acres of tree planting.

The **Forest Legacy Program** is designed to effectively protect and conserve environmentally important forest areas that are threatened by conversion to nonforest uses. These lands can be protected through conservation easements and other mechanisms. This program is based on the concept of "willing seller and willing buyer" and is completely nonregulatory in its approach. No eminent domain authority or adverse condemnation is authorized. To date, 15 States have completed an Assessment of Need, which is the formal document that allows for entry into the Forest Legacy Program. Program partners include The Trust for Public Lands, State governments, and local land trusts. Since 1993, almost 62,000 acres in eight States have been protected from development. These lands have a value of more than $25 million and have been protected with about $18 million of Federal funds. States with legacy lands include Connecticut, Maine, Maryland, New Hampshire, New Jersey, New York, Vermont, and Washington.

Urban and Community Forestry (U&CF) is a key part of the agency's interest in urban forest resources management; it helps people better manage the natural resources where 80 percent of America lives. Through the National Tree Trust Foundation, the National Urban and Community Forestry Advisory Council, Urban Resources Partnerships, and State Forestry agencies, the U&CF program provides support for ongoing, critical developments in urban ecosystem management through improvements in urban forest policy, planning, assessment, tree planting, technical standards, education, budgets, and financial management. Education activities include support for the Treeture environmental education program through a partnership with the International Society of Arboriculture, the National Tree Trust, and American Forests. To assist with building local community forest management capabilities, technical and financial assistance is currently provided to more than 11,600 communities annually.

Grants made available through Federal funding from U&CF totaled more than $9.9 million in 1997 to support a full range of program development activities from the national to the local level. Matching grants generate more than $49.1 million in private donations of cash, goods, and services for all activities supporting tree planting, care, and protection, approximately a 5:1 ratio of private to Federal financing of urban and community forestry activities.

Economic Action Programs

A collection of long- and short-term programs together make up a strategic overall effort to help communities and businesses that depend on natural resources to pursue self-sufficiency and sustainability. Through Economic Action Programs, the Forest Service provides technical and financial assistance to more than 3,240 rural communities and businesses that are adversely affected by change in availability of natural resources or in natural resource policy. Of the total number assisted, more than 175 were tribal and minority communities.

Rural Community Assistance

The Forest Service implements the national strategy on rural development in coordination with USDA's Rural Development mission area and other State and Federal agencies. The goal is to strengthen rural communities by helping them diversify and expand their economies through the wise use of natural resources. In FY 1998, the over 269 communities have established indicators and measures to determine progress.

Economic Recovery is a long-term program that targets areas with acute economic problems associated with changes in Federal land management policies and natural resource decisions. The purpose of the effort is to assist eligible natural-dependent areas to diversify by developing new or different economic activities. In FY 1998, over 2,500 eligible communities received technical and financial assistance, training, and education to help them diversify their forest-based economies. Of these communities, over 690 are taking action based on locally led strategic plans.

Rural Development is a long-term program that provides technical and financial assistance to help strengthen, diversify, and expand local economies, especially those experiencing long-term or persistent economic problems. Rural Development is a grant program that provides technical assistance and matching funds for locally initiated and planned projects. They are designed to stimulate improvements in the economic, environmental, or social well-being of rural citizens through forest resources.

A short-term emphasis is the **Pacific Northwest Assistance** effort, which supports the diversification of local economies experiencing reductions in Federal timber harvest levels. This effort provides technical and financial assistance to over 900 communities. It is part of a larger, multi-agency effort to target resources to rural areas facing acute economic problems. Over 90 percent of these Forest Service funds are granted directly to the communities, counties, and tribes for community-identified projects to meet local needs. About 7.5 percent of the funds goes into agency technical assistance. In addition, for every dollar of Forest Service funding, over $2 is leveraged from partners.

The **Forest Products Conservation and Recycling Program** continually provides a cadre of Federal forest products technology transfer specialists trained in logging, sawmilling, drying, processing, marketing, engineering, and wood technology. This assistance directly affects communities and businesses that foster conservation and ecosystem health through proper utilization of forest products. In FY 1997, over 1,100 technical assists were provided and over 90 workshop presentations made, leading directly and indirectly to over 100 jobs being created or retained. This work is supported by regional and State specialists as well as a Technology Marketing Unit at the Forest Products Laboratory in Madison, WI.

The **Wood in Transportation Program** improves rural transportation networks and demonstrates the commercial potential of using wood from undervalued tree species for bridges and other transportation structures in rural communities. This demonstration program has built market value for these species, which in turn stimulates economic return and value for protecting the forest and its ecosystems. In FY 1997, 14 structures were funded, leveraging over $772,000, with nearly a 2:1 ratio of

private to Forest Service funding. More than 57,000 pieces of technical information were requested and disseminated to local and State officials responsible for transportation infrastructure.

Natural Resource Conservation Education

The Forest Service supports a lifelong learning process that promotes the understanding of ecosystems and natural resources—their relationships, conservation, use, management, and values to society. Our large partnership base assists the Natural Resource Conservation Education (NRCE) program in about 200 projects across the country each year, reaching about 2.4 million young people and more than 118,700 teachers. More than 40 separate program efforts are coordinated. They include Project Learning Tree, which reaches 400,000 teachers. The Forest Service budget is leveraged through a variety of organizations and groups to reach a 3.8:1 ratio of private to agency funds.

Smokey Bear. Smokey Bear has been spreading the forest fire prevention message for 54 years. The Forest Service began a fire prevention program during World War II, and in 1944, a bear was introduced as the program symbol. Smokey is one of the most recognized symbols of fire prevention worldwide. Educational programs using Smokey Bear are delivered to people of all age groups and backgrounds. The message is primarily oriented toward elementary school-age children. Almost every State has a Smokey suit that is used for a wide variety of fire prevention purposes from school programs to parades. There is a Smokey Bear hot air balloon that is displayed at events across the Nation.

Smokey Bear

Woodsy Owl. Woodsy Owl is a colorful and fanciful character designed to be especially appealing to young children. Woodsy is recognized by over 83 percent of all American households and is America's leading symbol for environmental improvement. Woodsy's appearance and message have recently been redesigned and revitalized. He now sports a backpack, hiking shoes, and field pants. His new slogan builds on his previous message: "Lend a hand—care for the land!" The Forest Service officially launched the Woodsy Owl campaign on September 15, 1971. In June 1974, Congress enacted a law establishing "Woodsy Owl"—with his slogan, "Give a hoot! Don't pollute!"—as a "symbol for a public service campaign to promote wise use of the environment and programs that foster maintenance and improvement of environmental quality."

Woodsy Owl

Wildland Fire Management

The Wildland Fire Management program protects life, property, and natural resources on the 192 million acres of NFS lands. An additional 20 million acres of adjacent State and private lands are also protected through fee or reciprocal protection agreements. Wildland fire activities are conducted with the highest regard for public and firefighter safety.

Preparedness provides the basic fire organization and the capability to prevent forest fires and take prompt, effective initial attack suppression action on wildfires.

In FY 1998, 1.5 million acres of NFS lands received **Hazardous Fuel Treatment** to reduce the amount of hazardous fuels (combustible carbon from trees, understory growth, etc.). This was a 120-percent increase over the 1987-1996 average of 0.5 million acres. Fuel treatment benefits the health of the forest and can reduce the danger of catastrophic wildfire.

Suppression Operations provide for the suppression of wildfires on or threatening NFS lands or other lands under fire protection agreement.

In 1997, over 7,800 fires burned approximately 129,000 acres of NFS and other protected lands. The annual average is approximately 11,500 fires burning on 634,000 acres.

Cooperative Fire Protection

The Cooperative Fire Protection (CFP) program provides technical and financial assistance to State and volunteer fire departments to aid in the protection of over 1 billion acres of State and private lands.

The **State Fire Assistance** component of this program protects natural resources from fire on State and private lands. This is done through fire prevention efforts, training and equipping fire organizations, and aggressive initial attack to keep wildland fire ignitions small. Federal funds are cost-shared with State and local funds and help augment State protection needs. State and local fire organizations, capable of quickly and efficiently extinguishing wildland and wildland/urban interface fires, reduce risk to public safety, prevent resource loss, and help contain costs of fire suppression.

The **Volunteer Fire Assistance** component of the CFP improves the ability of America's 26,000 rural fire departments to protect lives, property, and natural resources in rural and wildland/urban interface areas. The focus of the Federal assistance is to provide adequate fire and personal safety equipment, provide training, and to organize new fire departments in unprotected communities.

Federal Excess Personnel Property is acquired by the Forest Service and loaned to State forestry agencies and their cooperators, rural fire departments, for wildland and rural community fire protection. In 1997, 11,271 excess property items valued at $128,008,876 were acquired and placed in service in the United States. In the past 42 years, this program has saved taxpayers of the United States over $1 billion.

Research and Development

Forestry research in the U.S. Department of Agriculture goes back a long way. In 1876, Congress appropriated $2,000 to USDA to gather forestry information, and thus the Federal forestry research program was born. In 1908, Gifford Pinchot estab-

lished the first research station within the newly formed Forest Service in Fort Valley, AZ. The Forest Products Laboratory, which was established in Madison, WI, in 1910, distinguished itself in meeting the Nation's demands during two World Wars and the housing needs of the booming economy after that.

Currently, Forest Service Research and Development has 77 laboratories in 67 locations across the country. They are organized within 6 research stations, the national Forest Products Laboratory, and the International Institute of Tropical Forestry in Puerto Rico. Of the 192 million acres of forest and rangeland managed by the Forest Service, 408,600 acres are officially designated as Experimental Forests.

Key Facts About Research and Development:

- *Research and Development develops and maintains key databases for enhancing forest health, productivity, and conservation, including an extensive portfolio of long-term research databases with many more than 60 years old.*
- *About 550 permanent full-time scientists are working on the productivity, health, and diversity of the temperate, boreal, and tropical forests.*
- *Research and Development scientists are held to high standards of scientific ethics and many are recognized worldwide for the quality of their work. All three of the U.S. scientists who received the prestigious Marcus Wallenberg Award (the forestry equivalent of the Nobel prize) are research and development scientists.*
- *Research and Development manages 83 experimental forests and ranges and 444 research natural areas devoted to long-term research.*
- *Research and Development works with the National Forest System and university partners on a network of 62 long-term soil productivity sites across the United States and Canada with the goal of monitoring management effects on sustainability and productivity.*
- *The Forest Service provides leadership in tropical forestry through collaborative research programs at the International Institute of Tropical Forestry in Puerto Rico and the Institute of Pacific Islands Forestry in Hawaii.*
- *Scientific products in 1999 include more than 2,505 publications, including patents, computer models, videos, and books, that address the questions and needs of natural resource managers, other scientists, and the public.*
- *Collaboration with research partners through 807 domestic grants, agreements, and contracts total about $23 million of extramural funding.*
- *In 1999, the Forest Inventory and Analysis program conducted inventory on 47 million acres of forest lands across all ownerships in 24 states and reported status and trends in 90 inventory reports. In addition, forest health monitoring was conducted in 32 States.*
- *Large-scale ecosystem studies to support planning and conservation efforts included the Rio Grande basin, the Upper Columbia River Basin, and the Sierra Nevada.*

To provide scientific and technological information to manage the Nation's forests and rangelands, Research and Development maintains a strong base program which includes a wide range of studies in vegetation management, watersheds, fisheries, wildlife, forest products and recycling, insects and diseases, economics, ecosystem functioning, silviculture, fire ecology and prevention, urban forestry and recreation. In addition, Research and Development focuses on initiatives that address urgent and critical national problems. Some of them are:

- Landscape change—to understand and respond to the effects of urban sprawl, forest fragmentation, and population growth pressures.
- Recycling and wood use—to solve technical problems that hinder wastepaper recycling and develop new products from agricultural and wood fibers and byproducts.
- Short rotation woody cropping systems—to increase forest productivity, ensure long-term carbon sequestration, conserve and restore forest and marginal lands, and produce revenue.
- Utilization for small diameter and low-value material—to reduce fire risks in the wildland urban interface areas, increase forest productivity, and improve efficient use of resources.
- Non-native invasive species—to understand and respond to the numerous non-native invasive insects, diseases, and weeds that may have severe adverse effects on ecosystems and economy.
- Water quality—to maintain and restore water quality in streams emanating on or flowing through forests and range lands that supply a large part of the Nation's drinking water.
- Forest inventory and analysis—In addition to expanding the program to cover more States, R&D will develop new inventory technologies in remote sensing and geospatial tools and techniques.

Financial Management

The Forest Service's first Chief Financial Officer (CFO) was appointed during FY 1999 and a new Deputy Chief area was formed. The CFO organization was created to improve the Forest Service's outstanding accountability problems and the quality of financial management systems and information by consolidating all of the financial management functions within the Washington office. In developing the new organization, the CFO analyzed Forest Service's financial management needs, assessed the requirements in implementing the new accounting system, Foundation Financial Information System (FFIS), and other initiatives. A set of key themes was developed which became the driving force behind the design of the organization and became the basis for a strategy that outlines a clear vision and a set of goals that will deliver the processes, systems, tools, and people with the skills to improve Forest Service's financial management.

- Financial Systems Management
- Nationwide Policy Management
- Quality Assurance and Compliance Review
- Financial Analysis

- National Financial Operations Management
- Financial Statement Preparation and Financial Management Audit

Four staffs were formed around these themes:

- Program and Budget Analysis: Develops and presents the agency's budget with a focus on the Government and Performance Results Act and manages the allocation and use of funds; provides leadership in analysis and formulation of policies for developing, allocating, and managing annual agency budgets.
- Financial Management: Develops national policies and procedures, oversees national resource accounting operations, and provides financial and accounting services for the Washington office.
- Financial Reports and Analysis: Prepares financial statements, conducts financial analysis, and manages a nationwide Quality Assurance Program.
- Financial Management Systems: Manages the FFIS and oversees financial systems development and operations.

The new organization has accomplished much during FY 1999 toward establishing accountability in the agency, and the General Accounting Office commended the Agency on its progress. Examples of these accomplishments:

- First, CFO defined and began to implement goals aimed to improve financial accountability.
- A new integrated, standard general ledger compliant accounting system, FFIS, was implemented.
- Business process reengineering efforts were undertaken to improve the current budget and financial processes.
- Primary Purpose was implemented to more accurately reflect how to plan and spend the agency's budget. Primary Purpose allows for a realignment of funding around the central purpose for an activity instead of multiple activities that might benefit from the work.
- Coordinated efforts were made with the congressional staff and the Office of Management and Budget toward simplification of the Forest Service's budget structure, and development of new land-health performance measures.
- Major steps were taken toward obtaining a clean audit opinion including: significant improvement in assuring an accurate and complete inventory and valuation of real and personal property, and development of an indepth project management timeline for preparing financial statements.

Business Operations—Acquisition Management

The agency spent nearly $900 million in over 728,000 actions for goods and services in FY 1998. Over 69 percent of the total procurement dollars were awarded to small businesses. Awards included more than $52 million to small disadvantaged businesses and $32 million to women-owned small business firms. Forest Service dollars benefited States, research, international organizations and other organizations through a variety of grants and cooperative agreements totaling more than $414 million. (This expenditure is not included in the figures cited above.) The agency managed approximately 22 million square feet of owned office and related space plus 6 million square feet of agency-leased and General Services Administration-controlled

space with an annual rental of $62 million. The Forest Services also manages approximately 4,000 units of living quarters for employees valued at $375 million. Property managers oversee more than $2.7 billion worth of Forest Service personal property, including property on loan to State forestry departments. The agency supports the President's initiative on recycling with emphasis on both procurement of and efficient collection and recycling of recyclable materials. The agency national strategy for waste prevention and recycling is available via the Internet's World Wide Web at: *http://www.fs.fed.us/land/recycle.html*.

Senior, Youth, and Volunteer Programs

Senior, Youth, and Volunteer Programs provide job opportunities, training, and education for the unemployed, underemployed, elderly, young, and others with special needs, while benefiting high-priority conservation work. In FY 1998, these programs included more than 125,600 participants and accomplished over $109 million in conservation work on Forest Service lands.

Through an agreement with the U.S. Department of Labor, the Forest Service operates 18 Job Corps Civilian Conservation Centers on Forest Service lands. The Job Corps program is the only Federal residential education/training program for the Nation's disadvantaged youth.

Key Facts About Job Corps Civilian Conservation Centers:

- *18 Job Corps Centers, 17 co-ed*
- *9,373 enrolled, ages 16-24*
- *$98.6 million budget*
- *17.2 million work accomplishment*
- *82 percent placed*
- *Average starting salary, approximately $7 per hour*
- *45 percent minorities*

The Senior Community Service Employment Program is designed to provide useful part- time employment and training for persons age 55 and over.

Key Facts About the Senior Community Service Employment Program:

- *5,484 older workers participated*
- *$28.4 million budget*
- *$40.7 million work accomplishment*
- *Only Federal agency among 10 national sponsors*
- *44 percent females*
- *24 percent placed in unsubsidized employment*
- *$1.43 return on dollar invested*

In the Youth Conservation Corps summer employment program, persons aged 15-18 accomplish projects that further the development and conservation of the United States' natural resources.

Key Facts About the Youth Conservation Corps:

- *594 enrollees, ages 15-18*
- *$1.8 million operating costs*
- *$1.6 million work accomplishment*
- *$.88 return on dollar invested*
- *43 percent females*

The Volunteers in the National Forests program allows organizations and individuals to donate their talents and services to help manage the Nation's natural resources.

Key Facts About Volunteers in the National Forests:

- *98,271 volunteers have participated (including 105 international volunteers and 265 Touch America Project volunteers, ages 14-17)*
- *$38.3 million work accomplishment*
- *33 percent females*
- *Over 1.3 million volunteers served since the 1972 legislation*

Hosted programs provide conservation training and work opportunities on national forests or in conjunction with Federal programs. Programs are administered through agreements with State and county agencies, colleges, universities, Indian tribes, and private and nonprofit organizations.

Key Facts About Hosted Programs:

- *11,976 participants*
- *$11.3 million work accomplishment*
- *30 percent females*
- *24 percent minorities*

Office of International Programs

The Forest Service promotes technical cooperation and develops support for sustainable forest management practices worldwide. In addition, many individual research relationships exist between Forest Service researchers and managers and their counterparts around the world.

The Office of International Programs (IP) is divided into three program areas: technical cooperation, policy, and disaster assistance support. Partners include other U.S. Government agencies, as well as international organizations such as the International Tropical Timber Organization and the Food and Agriculture Organization of the United Nations. In addition, IP has developed numerous country-specific partnerships that promote training and technical exchange and tap into the diversity of experience within the Forest Service.

IP is involved with a wide variety of activities. Some examples from 1997 include: organizing a workshop on nontimber forest products in Central Africa; facilitating research to combat invasive pests in the United States; and coordinating Forest Service technical participation in response to drought, flood, and fire disasters in Africa, Asia, and Latin America.

In addition, long-term partnerships include working with the Partners in Flight program to support neotropical migratory bird habitat restoration in Mexico, working with the Federal Forest Service of Russia to advance the ability of their fire ecologists and managers to more effectively use fire as a management tool, and working with the Indonesians to develop mapping technology for land management.

In the policy area, IP is working to develop criteria and indicators for international and forest level monitoring. Further policy work includes issue briefs that explore current issues affecting international and domestic forestry. Other efforts include providing Incident Command System training to foreign firefighters so that they are prepared to deal with wildfires when they arise, and promoting reduced impact harvesting techniques through a network of forestry research organizations.

Since October 1997, over 100 Forest Service employees representing each of the 10 regions as well as research stations have been involved in international forestry work. They have participated in international forestry meetings, conducted assessments of disaster situations, coordinated interagency response teams, and conducted original research. The partnerships that have developed and that are being encouraged enable a great exchange of ideas and techniques, which lead to more sustainable forestry practices, in this country and abroad.

Key Facts About the Impact of International Programs:

- *Through involvement with industry, State foresters, and major nongovernmental organizations, 12 countries forged a consensus on a set of criteria and indicators for assessing progress towards sustainable forest management.*
- *International collaboration on research and monitoring help to reduce the impact of invasive pests such as the Asian gypsy moth and hemlock woolly adelgid, which have severe impacts on timber resources.*
- *Partnerships with organizations such as Ducks Unlimited to restore waterfowl habitat will increase the populations of waterfowl that migrate to the Western and Southwestern United States from Mexico and further south.*
- *A program with the Federal Forest Service of Russia, the State of Alaska, and U.S. companies and nongovernmental organizations will help to ensure that Russians have access to the best environmental technology as petroleum resources on Sakhalin Island are developed. This will promote increased employment in Alaska and preserve salmon fisheries around Sakhalin Island and Alaska.*

Law Enforcement and Investigations

The objective of the Forest Service law enforcement program is to provide for public and employee safety, and to protect natural resources and property within the authority and jurisdiction of the Forest Service. The program focuses on activities such as vandalism, archaeological resource violations, timber theft, wildland arson, and the cultivation and manufacture of illegal drugs.

Forest Service drug control efforts continue to focus on the detection, apprehension, and prosecution of persons responsible for illegal drug activities on the forests. Drug enforcement efforts annually result in the seizure of several million dollars' worth of assets and the seizure and destruction of nearly $1 billion worth of marijuana and other drugs.

In FY 1998, 520 cooperative law enforcement agreements enhanced cooperation with State and local law enforcement agencies and with other Federal agencies to increase the protection and service to forest visitors. About 160 drug enforcement agreements were set up between the Forest Service, State and local law enforcement agencies, and other Federal agencies or task forces to cooperate in eliminating illegal drug activities in the National Forest System.

Key Facts About Law Enforcement and Investigations:

- *Nearly 290,000 incidents or criminal violations were reported and handled by Forest Service (FS) officers in FY 1999. These violations resulted in many millions of dollars in damages and losses to FS property and natural resources.*
- *Nearly 338,000 marijuana plants valued at over $1.0 billion were eradicated from approximately 3,900 sites. Officers and agents made over 2,800 arrests for drug-related offenses, seized nearly $12 million in processed marijuana, and seized over $4.8 million in assets. There were 14 incidents of assault, 23 incidents of intimidation, and 174 firearms seized in relation to drug activities.*
- *About 460 uniformed officers and 135 criminal investigators performed investigation and enforcement activities unique to the FS, the resources, and its nearly 191 million acres.*

Natural Resources Conservation Service

Introduction

As the Nation's lead Federal agency addressing private lands conservation, the Natural Resources Conservation Service (NRCS) provides technical assistance and administers a wide range of programs to help solve this country's natural resource problems.

Our well-being depends on healthy, productive natural resources and their sustainable use. Just as soil, water, and habitat are interrelated, the programs that address these resources are interrelated, and programs that help one resource also benefit others. If you stop erosion, for example, you also enhance soil productivity and protect water and air quality. Improving the environment enhances the economic future of communities throughout the United States.

The mission of NRCS is to provide national leadership, in a partnership effort, to help people conserve, improve, and sustain the Nation's natural resources and environment.

NRCS' authorizing legislation directs the agency to assist resource owners, operators, and managers in conserving soil, water, and related resources. Conservation of natural resources is necessary to ensure that the Nation's people enjoy the benefits of:

- A productive resource base supporting a strong agricultural sector
- A high-quality natural environment
- Watersheds and water supplies protected against risks imposed by weather and climate
- A healthy economy and high quality of life in rural communities

A Partnership Approach to Resource Conservation

For more than 6 decades, NRCS employees have worked side by side with landowners, conservation districts, Resource Conservation and Development Councils, tribes, State and local governments, and urban and rural partners to restore and enhance the American landscape. The agency helps landowners and communities take a comprehensive approach in conservation planning, working toward an understanding of how all natural resources—soil, water, air, plants, and animals—relate to each other and to humans. The agency works to solve the natural resource challenges on the Nation's private lands—reducing soil erosion, improving soil and rangeland health, protecting water quality and supply, conserving wetlands, and providing fish and wildlife habitat.

Most NRCS employees serve in USDA's network of local, county-based offices, including those in Puerto Rico and the Pacific Basin. The rest are at State, regional, and national offices, providing technology, policy, and administrative support. They serve all people who live and work on the land. Nearly three-fourths of the agency's technical assistance goes to helping farmers and ranchers develop conservation systems uniquely suited to their land and their ways of doing business.

The agency helps rural and urban communities curb erosion, conserve and protect water, and solve other resource problems. American Indian tribes, Alaska Natives, Pacific Islanders, and other Native groups work with NRCS on a variety of

initiatives that include resource inventories and the adaptation of conservation programs to fit the special needs of their people and their land. Also, countries around the globe seek NRCS' advice on building their own conservation delivery systems and in coping with severe natural resource problems.

NRCS carries out the agency mission in cooperation and coordination with numerous partners. NRCS assistance to private landowners is provided through conservation districts, which are units of government created by State law. NRCS works in a long-standing partnership with State conservation agencies and other State and local agencies, resource conservation and development councils, Federal agencies, tribal governments, and private sector organizations such as the National Association of Conservation Districts (NACD) and the Soil and Water Conservation Society (SWCS).

NRCS also collaborates with many others in pursuit of the agency mission:

In research and education, NRCS works primarily with USDA's Agricultural Research Service (ARS); Cooperative State Research, Education, and Extension Service (CSREES); and Forest Service (FS); the Department of the Interior's U.S. Geological Survey (USGS), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), and Bureau of Reclamation (BOR); Department of Defense (DOD); U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA); and the U.S. Environmental Protection Agency (EPA).

Major collaborators in data collection and analysis include USDA's National Agricultural Statistics Service (NASS), Economic Research Service (ERS), and FS; USGS, FWS, BLM, EPA, and U.S. Army Corps of Engineers (COE).

For program delivery, NRCS primarily works with USDA's FS, Rural Development (RD)mission area, Farm Service Agency, and CSREES. Internationally, NRCS cooperates with agencies such as USDA's Foreign Agricultural Service, ARS, the U.S. Agency for International Development (USAID) and other organizations such as the InterAmerican Development Bank, World Bank, and the Inter-American Institute of Cooperation in Agriculture, among others.

Many Federal and State agencies also rely on NRCS' technical expertise to plan and implement their programs that affect rural residents and natural resources. Within USDA, the major interagency relationship on conservation involves NRCS and the Farm Service Agency (FSA). FSA administers the Conservation Reserve Program (CRP) and the Emergency Conservation Program (ECP), and NRCS provides the technical assistance that landowners need to accomplish the conservation goals of the programs. NRCS has signed Memoranda of Understanding with USDA's Cooperative State Research, Education, and Extension Service for water quality data and training and with USDA's Agricultural Research Service for cooperation on water quality research. Examples of coordination with non-USDA agencies include: the Surface Mine Control and Reclamation Programs of the U.S. Department of the Interior (DOI); the Coastal Zone Management Program of the U.S. Department of Commerce; and the Chesapeake Bay Agreement, National Estuary Program, and Clean Lakes Program of the U.S. Environmental Protection Agency (EPA). NRCS has signed Memoranda of Understanding with EPA for cooperation on nonpoint source control and with DOI's U.S. Geological Survey for cooperation on water quality research.

Major Activities

NRCS provides locally based conservation assistance in cooperation with conservation districts, through a nationwide network of local field offices. Locally based NRCS technical staff work directly with individual farmers, ranchers, local and State officials and employees, and community groups, providing them technical, financial, and information assistance. Specifically, NRCS:

Helps individual land users plan, apply, and maintain conservation systems that are economically and environmentally sustainable. Assistance in applying conservation systems includes advice on the design, layout, construction, management, operation, maintenance, and evaluation of the practices in a conservation plan. Practices may be applied with cost share assistance from the USDA programs or other Federal, State, or local programs or entirely with the resource manager's own funds. NRCS administers programs that provide financial incentives for protecting natural resources and environmental quality.

Assists units of government, tribes, and community groups to protect the environment and improve the standard of living and quality of life for the people they represent. This includes providing information and technical assistance to local officials so that they can set standards, develop plans for resource management, implement programs, and develop and provide technical training to employees of local, State, and tribal agencies. NRCS administers programs that provide financial assistance for impleneting certain measures that benefit watershed and farmland protection.

Conducts inventories and assesses natural resource conditions, and trends and makes thisinformation available to landowners and communities for use in individual and community resource planning processes. NRCS inventories and monitors resource conditions through soil surveys, conservation needs assessments, and natural resource inventories. These science-based efforts present an accurate, unbiased look at the condition of key natural resources.

Develops conservation standards, specifications, and guidelines to ensure that conservationsystems are technically sound. These technical standards ensure that conservation is based on sound and up-to-date science. NRCS technical guides are used not only by NRCS staff, but also by private consultants and engineers, conservation district staff, State agencies, and Federal agencies.

Erosion and Sediment Control

While NRCS has cut erosion on cropland by 38 percent between 1982 and 1997, soil erosion continues to threaten agricultural productivity on about one-third of our Nation's cropland.

During fiscal year 1999, conservation plans were applied on 8,680,000 acres of cropland to the Resource Management System level. As a result, 5,320,000 acres of cropland that were eroding above two times the soil's tolerable level are now protected against excessive erosion.

Farmland

Prime farmland—land best suited to agricultural production—continues to be converted to non-agricultural or natural resource uses. In the past 5 years, there has been a significant increase of conversion of agricultural land to development.

NRCS has been able to protect a small amount of prime or unique farmland from development through local partnerships with State, tribal, or local governments.

Since 1996, NRCS has entered into agreements with State, local, and tribal governments in 19 States to leverage funds to protect over 127,000 acres of agricultural lands from being converted to non-agricultural uses.

Wetlands, Fish and Wildlife

Wetlands provide vital wildlife habitat and help trap nutrients and sediment before they enter our streams. Loss of wetlands is still a concern; however, landowners have begun to restore, protect, and enhance this resource in a serious way. Since 1992, the net loss of wetland acreage on agricultural land has decreased dramatically. Continuing the reduction in net loss trend, in 1999 wetlands were created or restored on 270,000 acres with NRCS technical and financial assistance.

Conservation Buffers

During 1999, conservation plans also resulted in the establishment of 73,400 milesof conservation buffers for water quality and wildlife. These buffers slow water runoff, trapsediment, and enhance water infiltration. They also trap fertilizers, pesticides, pathogens, and heavy metals, which minimize the potential of these pollutants from reaching surfaceandgroundwater. Conservation buffers offer protection for livestock from harsh weather and provide valuable wildlife habitat. Conservation buffer practices include: alley cropping, contour buffer strips; field windbreaks/shelterbelts; riparian forest buffers; filter strips; grassed waterways; streambank protection; hedgerows, herbaceous wind barriers; and cross wind trap strips.

Overview of NRCS Programs

NRCS Technical Assistance

NRCS provides conservation technical assistance (CTA) to improve and conserve natural resources. This assistance is based on voluntary local landowner cooperation.

CTA is the foundation upon which NRCS delivers its services through local conservation districts, to private landowners, communities, and others who care for natural resources. CTA is the intellectual capital of the agency; experts in soils and other physical and biological sciences, with knowledge of local conditions, work with private landowners in the stewardship of our natural resources.

CTA provides the infrastructure through which the agency is able to respond to a multitude of needs, from natural resource disasters to complex site specific natural resource problems. CTA is the means by which this Nation is able to voluntarily bring about land stewardship that improves our soil, water, wildlife, and air resources

while providing for sustainable agricultural production. The investments in CTA return the American public significant benefits from an improved environment and quality of life to a safe and abundant food supply.

Wetlands Reserve Program

The Wetlands Reserve Program (WRP) is a voluntary program to restore wetlands. Participating landowners can establish conservation easements of either permanent or 30-year duration or can enter into restoration cost-share agreements where no easement is involved. In exchange for establishing a permanent easement, the landowner receives payment up to the agricultural value of the land and 100 percent of the restoration costs for restoring the wetland. The 30-year easement payment is 75 percent of what would be provided for a permanent easement on the same site and 75 percent of the restoration cost. The restoration cost-share agreements are for a minimum 10-year duration and provide for 75 percent of the cost of restoring the involved wetlands.

Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) works primarily in locally identified priority areas where there are significant natural resource concerns, such as soil erosion, water quality and quantity, wildlife habitat, wetlands, and forest and grazing lands. Priority is given to areas where State, tribal, or local governments offer financial, technical, or educational assistance, and to areas where agricultural improvements will help meet water quality objectives. Activities must be carried out according to a conservation plan. The program offers financial, educational, and technical help to install or implement structural, vegetative, and management practices called for in 5- to 10-year contracts. Cost sharing may pay up to 75 percent of the costs of certain conservation practices. Nationally, half of the funding for this program is targeted to livestock-related natural resource concerns and the remainder to other significant conservation priorities.

Wildlife Habitat Incentives Program (WHIP)

The Wildlife Habitat Incentives Program (WHIP) provides financial incentives to develop habitat for fish and wildlife on private lands. Participants agree to implement a wildlife habitat development plan, and USDA agrees to provide cost-share assistance for the initial implementation of wildlife habitat development practices. USDA and program participants enter into 5- to 10-year cost-share agreements for wildlife habitat development.

Farmland Protection Program

The Farmland Protection Program (FPP) provides assistance to State, tribal, or local government entities to help purchase development rights to keep productive farmland in agricultural use. USDA joins with State, tribal, or local governments, working through their existing programs, to acquire conservation easements or other interests from landowners. USDA provides up to 50 percent of the costs of the easements. To qualify, farmland must: be part of a pending offer from a State, tribe, or local farmland protection program; be privately owned; have a conservation plan; be

large enough to sustain agricultural production; be accessible to markets for what the land produces; have adequate infrastructure and agricultural support services; and have surrounding parcels of land that can support long-term agricultural production.

Soil Surveys

The year 1999 marked the centennial of the soil survey in the United States—perhaps the largest and most valuable natural resource database in the world. NRCS conducts soil surveys cooperatively with other Federal agencies, land-grant universities, State agencies, and local units of government. Soil surveys provide the public with local information on the uses and capabilities of their soil resource. Soil surveys are based on scientific analysis and classification of the soils, and are used to determine land capabilities and conservation treatment needs. The published soil survey for a county or designated area includes maps and interpretations with explanatory information that is the foundation of resource policy, planning, and decisionmaking for Federal, State, county, and local community programs. Soil survey mapping has been completed on more than 90 percent of the Nation's private land, 48 percent of American Indian lands, and 47 percent of public lands. In addition, over 700 soil surveys have been digitized and made available for resource assessments.

Snow Survey and Water Supply Forecasts

NRCS field staff collect snow information through a network of about 655 Snow Telemetry (SNOTEL) and 1,100 manual snow courses to provide 13 Western States with water supply forecasts. The data are collected, assembled, and analyzed to make about 6,300 annual water supply forecasts, which provide estimates of available annual yield, spring runoff, and summer stream flow. Snowmelt provides approximately 80 percent of the streamflow in the West. Water supply forecasts are used by individuals, organizations, and State and Federal agencies to make decisions relating to agricultural production, fish and wildlife management, flood control, recreation, power generation, and water quality management.

Plant Materials Centers

NRCS employees at 26 Plant Materials Centers assemble, test, and encourage increased plant propagation and usefulness of plant species for biomass production, carbon sequestration, erosion reduction, wetland restoration, water quality improvement, streambank and riparian area protection, coastal dune stabilization, and to meet other special conservation treatment needs. The work is carried out cooperatively with State and Federal agencies, universities, commercial businesses, and seed and nursery associations. After species are proven effective for conservation purposes, they are released to the private sector for commercial production. NRCS has released almost 400 varieties of conservation plants to commercial producers. Nearly 250 improved varieties are now in commercial production and used in conservation programs. Forty-two new plants have been released since 1997.

Small Watershed Program

The Small Watershed Program works through local government sponsors and helps participants solve natural resource and related economic problems on a specific watershed. Project purposes include watershed protection, flood prevention, erosion and sediment control, water supply, water quality, fish and wildlife habitat enhancement, wetlands creation and restoration, and public recreation in watersheds of 250,000 or fewer acres. Both technical and financial assistance are available.

Emergency Watershed Protection

The Emergency Watershed Protection (EWP) program is designed to reduce threats to life and property in the wake of natural disasters. It provides technical and cost-sharing assistance. Assistance includes establishing vegetative cover; installing streambank protection devices; removing debris and sediment; and stabilizing levees, channels, and gullies. In subsequent storms, EWP projects protect homes, businesses, highways, and public facilities from further damage. Floodplain easements under EWP may be purchased to help prevent future losses due to natural disasters.

Watershed Operations

Under the Flood Control Act of 1944, NRCS is authorized to administer watershed works of improvement. Flood prevention operations include planning and installing improvements and land treatment measures for flood prevention; for the conservation, development, utilization, and disposal of water; and for the reduction of sedimentation and erosion damages. This may also include the development of recreational facilities and the improvement of fish and wildlife habitat. Activities are authorized in 11 specific flood prevention projects covering about 35 million acres in 11 States.

Watershed Surveys and Planning

NRCS cooperates with other Federal, State, and local agencies in conducting river basin surveys and investigations, flood hazard analysis, and flood plain management assistance to aid in the development of coordinated water resource programs, including the development of guiding principles and procedures. Cooperative river basin studies are made up of agricultural, rural, and upstream water and land resources to identify resource problems and determine corrective actions needed. These surveys address a variety of natural resource concerns including water quality improvement, opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, rural development, municipal and industrial water needs, upstream flood damages, and water needs for fish, wildlife, and forest-based industries. Flood plain management assistance includes the identification of flood hazards and the location and use of wetlands. NRCS represents USDA on river basin regional entities and River Basin Interagency Committees for coordination among Federal departments and States.

Forestry Incentives Program

The Forestry Incentives Program (FIP) supports good forest management practices on privately owned, non-industrial forest lands nationwide. The program is designed to benefit the environment while meeting future demands for wood products. Eligible practices are tree planting, timber stand improvement, site preparation for natural regeneration, and related activities. The program is available in counties designated by a Forest Service survey of eligible private timber acreage.

Resource Conservation and Development Program

The Resource Conservation and Development (RC&D) Program provides a framework for local people to join together to improve their community's economy, environment, and living standards. RC&D areas are locally organized, sponsored, and directed. USDA provides technical and financial assistance and helps sponsors secure funding and services from Federal, State, and local sources. The major emphasis is environmental conservation and rural development. Currently, there are 315 RC&D areas covering more than 75 percent of the United States. Each year, these locally organized and directed areas create thousands of new jobs, protect thousands of miles of water bodies, conserve hundreds of thousands of acres of land, and improve the quality of life in hundreds of communities.

RC&D areas are run by a council of volunteers who serve without pay. Currently more than 20,000 people donate 78,000 days per year to improve their communities through this program. USDA provides a person to work full-time with each area to help implement local objectives.

Other Activities

National Resources Inventory

Every 5 years, NRCS develops an inventory on the condition and trends of natural resources on non-Federal land. The National Resources Invnetory (NRI) contains the most comprehensive and statistically reliable data of its kind in the world. It measures trends in soil erosion by water and wind, wetland losses, prime farmland acreage, irrigation, habitat and conservation treatment at national, regional, State, and sub-State levels.

Conservation of Private Grazing Land Initiative

The Conservation of Private Grazing Land Initiative ensures that technical, educational, and related assistance is provided to those who own private grazing lands. The Nation's more than 600 million acres of private grazing lands produce food and fiber, sustain important water resources, and offer wildlife habitat and recreational opportunities.

National Conservation Buffer Initiative

In April 1997, Agriculture Secretary Dan Glickman announced a new public-private partnership called the National Conservation Buffer Initiative. The goal of the initiative is to help landowners install 2 million miles of conservation buffers by the year 2002. Agricultural producers and other landowners who install buffers can

improve soil, air, and water quality; enhance wildlife habitat; restore biodiversity; and create scenic landscapes.

Conservation buffers are areas or strips of land maintained in permanent vegetation and designed to intercept pollutants. Buffers can be installed along streams or in uplands—within crop fields, at the edge of crop fields, or outside the margins of a field.

The National Conservation Buffer Initiative is a multi-year effort led by NRCS in cooperation with other USDA agencies, State conservation agencies, conservation districts, agribusinesses, and agricultural and environmental organizations. Seven national agricultural corporations have pledged nearly $1 million over 3 years to complement USDA's efforts to promote conservation buffers.

To date, about 753,000 miles of buffers, or 38 percent of the national goal, have been established under the Conservation Reserve Program, Environmental Quality Incentives Program, Wetlands Reserve Program, and other USDA programs.

International Programs

NRCS helps improve the management and conservation of natural resources globally. Participation in collaborative efforts with other countries results in benefits to the United States and in accomplishment of the NRCS mission. During fiscal year 1998, NRCS specialists completed 253 assignments to 49 countries. The objectives of the assignments were to provide short- and long-term technical assistance and leadership for the development of natural resource conservation programs and projects and exchange conservation technology with countries that face soil and water conservation issues similar to those in this country.

NRCS provided opportunities for approximately 205 foreign nationals from more than 25 countries to gain a better understanding of natural resource conservation activities by observing and discussing conservation programs in the United States.

Agricultural Air Quality

The 1996 Farm Bill established a Task Force on Agricultural Air Quality to make recommendations to the Secretary of Agriculture with regard to the scientific basis for agriculture's impact on air quality. The task force is charged with strengthening and coordinating USDA air quality research efforts to determine the extent to which agricultural activities contribute to air pollution and to identify cost-effective ways in which the agricultural industry can improve air quality.

Backyard Conservation Campaign

In 1998, NRCS developed a national Backyard Conservation campaign to tell non-farm audiences about the good conservation work being done by America's farmers and ranchers. The campaign features 10 common conservation practices, such as composting, mulching, tree planting, nutrient management, and water conservation, and shows how miniature versions can work in just about any backyard—whether measured in acres, feet, or flower pots.

Farmers and ranchers are already making progress in natural resource conservation by protecting and restoring wetlands, enhancing wildlife habitat, and reducing soil erosion. There are nearly 2 billion acres of land in the United States. Most of that land, 1.4 billion acres, is managed by farmers and ranchers. However, more than 92 million acres are privately developed, and much of this land is tended by homeowners. These homeowners can join the conservation tradition right in their own backyards to curb water pollution and improve wildlife habitat.

For more information on this campaign or agency programs, visit the NRCS web site at *http://www.nrcs.usda.gov*

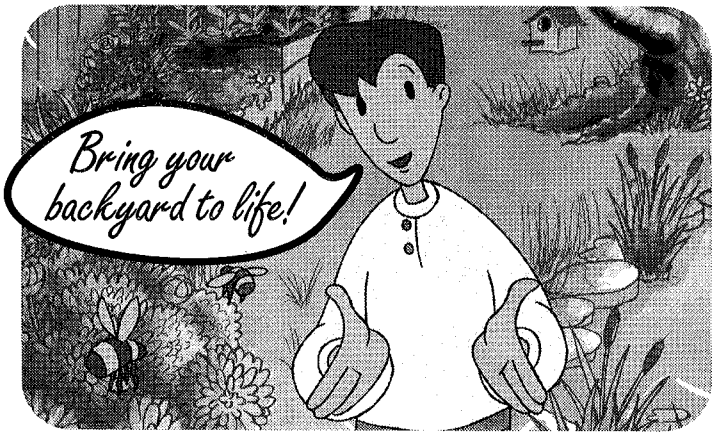
Clean Water Action Plan

USDA works with State and local governments and other Federal agencies to continue implementation of the Vice President's Clean Water Action Plan. In March 1999, USDA and the U.S. Environmental Protection Agency released the United National Strategy for Animal Feeding Operations (AFO's). The strategy established a national performance expectation that all AFO's will develop and be implementing comprehensive nutrient management plans by 2009. This goal will be accomplished primarily through voluntary efforts of AFO owners and operators, with technical and financial assistance from NRCS, other USDA agencies, other Federal agencies, State and local entities, and the private sector.

A series of Federal-tribal regional workshops to assist tribes with their unified watershed assessments and watershed restoration action strategies also took place. In FY 1999, producers completed installation of 6,100 animal waste management systems with NRCS assistance.

BACKYARD CONSERVATION

It'll grow on you.



For years, farmers and ranchers have used conservation practices to save natural resources and improve wildlife habitat. For a free booklet on how you can use some of these same practices in your own backyard – whether you have acres, feet, or a few flower pots –

Call 1-888-LANDCARE

Ask for the Backyard Conservation Booklet.

This is a cooperative project of:
USDA Natural Resources Conservation Service
National Association of Conservation Districts
Wildlife Habitat Council

For More Information

Public Affairs Contacts Natural Resources Conservation Service

Interim Director, Conservation Communications Staff
June Davidek
Rm 6121-S
Washington, DC 20013
202-720-3210
FAX 202-720-1564
june.davidek@ca.usda.gov

Program Assistant
Joyce Hawkins
Rm 6121-S
Washington, DC 20013
202-720-3210
FAX 202-720-1564
joyce.hawkins@usda.gov

Public Affairs Specialist
Mary Cressel
Rm 6121-S
Washington, DC 20013
202-690-0547
FAX 202-690-1221
mary.cressel@usda.gov

Public Affairs Specialist
Brad Fisher
Rm 6121-S
Washington, DC 20013
202-720-4024
FAX 202-720-1564
brad.fisher@usda.gov

Visual Information Specialist
Robert Gresh
Rm 6109-S
Washington, DC 20013
202-720-3933
FAX 202-720-9975
robert.gresh@usda.gov

Public Affairs Specialist
Fred Jacobs
Rm 6121-S
Washington, DC 20013
202-720-4649
FAX 202-690-1221
fred.jacobs@usda.gov

Public Affairs Specialist
Ted Kupelian
Rm 6121-S
Washington, DC 20013
202-720-5776
FAX 202-690-1221
ted.kupelian@usda.gov

Public Affairs Specialist
Tom Levermann
Rm 6116-S
Washington, DC 20013
202-720-7570
FAX 202-690-1221
tlevermann@usda.gov

Visual Information Specialist
Chris Lozos
Rm 6121-S
Washington, DC 20013
202-720-4244
FAX 202-690-1221
chris.lozos@usda.gov

Public Affairs Specialist
Diana Morse
Rm 6121-S
Washington, DC 20013
202-720-4772
FAX 202-690-1221
diana.morse@usda.gov

Printing Specialist
Doug Wilson
Rm 6116-S
Washington, DC 20013
202-720-6243
FAX 202-720-6009
doug.wilson@usda.gov

Freedom of Info Act Office
Wilda Grant
5601 Sunnyside Avenue
Beltsville, MD 20705-5000
301-504-2168
FAX 301-504-2161
wilda.grant@usda.gov

Natural Resources Conservation Service State Public Affairs Contacts

AL
Joan Love Smith
665 Opelika Road,
Auburn, AL 36830-0311
334-887-4530
FAX 334-887-4551
joan.smith@al.nrcs.usda.gov

AK
Jeanette Colville
949 East 36th Avenue, Suite 400,
Anchorage, AK 99508-4362
907-271-2424
FAX 907-271-3951
jeanette.colville@ak.usda.gov

AZ
Mary Ann McQuinn
3003 North Central Avenue, Suite 800,
Phoenix, AZ 85012-2945
602-280-8778
FAX 602-280-8809
mmcquinn@az.nrcs.usda.gov

AR
Sonja Coderre
700 West Capitol Avenue,
Little Rock, AR 72201-3228
501-301-3133
FAX 501-301-3189
scoderre@ar.nrcs.usda.gov

CA
Anita Brown
430 G Street, Suite 4164,
Davis, CA 95616-4164
530-792-5644
FAX 530-792-5791
anita.brown@ca.usda.gov

CO
Petra Barnes
655 Parfet Street, Room E200C,
Lakewood, CO 80215-5517
303-236-2886, ext 216
FAX 303-236-2896
pbarnes@co.nrcs.usda.gov

CT
Carolyn Miller, Acting
16 Professional Park Road,
Storrs, CT 06268-1299
860-487-4029
FAX 860-487-4054
carolyn.miller@ct.nrcs.usda.gov

DE
Paul Petrichenko
1203 College Park Drive, Suite 101,
Dover, DE 19904-8713
302-678-4178
FAX 302-678-0843 ppet-
richenko@de.nrcs.usda.gov

FL
Dorothy Staley
2614 N.W. 43rd Street,
Gainesville, FL 32606-6611
352-338-9565
FAX 352-338-9574
dstaley@fl.nrcs.usda.gov

GA
Pat Hood-Greenberg
Federal Building,
Box 13, 355 East Hancock Avenue,
Athens, GA 30601-2769
706-546-2272
FAX 706-546-2120
pat.hood- greenberg@ga.nrcs.usda.gov

HI
Lynn Howell
300 Ala Moana Boulevard, Room 4316,
Honolulu, HI 96850-0002
808-541-2600, ext 118
FAX 808-541-2652
lhowell@hi.nrcs.usda.gov

ID
Sharon Norris
9173 W. Barnes Drive, Suite C,
Boise, ID 83705-4711
208-378-5725
FAX 208-378-5735
snorris@id.nrcs.usda.gov

IL
Paige Mitchell Buck
1902 Fox Drive,
Champaign, IL 61820-7335
217-353-6606
FAX 217-353-6675
paige.mitchell@il.nrcs.usda.gov

IN
Michael McGovern
6013 Lakeside Boulevard,
Indianapolis, IN 46278-2933
317-290-3222, ext 324
FAX 317-290-3225
mmcgovern@in.nrcs.usda.gov

IA
Lynn Betts
693 Federal Building, 210 Walnut Street,
Des Moines, IA 50309-2180
515-284-4262
FAX 515-284-4394
lynn.betts@ia.nrcs.usda.gov

KS
Mary Shaffer
760 South Broadway,
Salina, KS 67401
785-823-4571
FAX 785-823-4540
mary.shaffer@ks.nrcs.usda.gov

KY
Lois Jackson
771 Corporate Drive, Suite 110,
Lexington, KY 40503-5479
606-224-7372
FAX 606-224-7399
ljackson@kystate.ky.nrcs.usda.gov

LA
Herb Bourque
3737 Government Street,
Alexandria, LA 71302-3727
318-473-7762
FAX 318-473-7682
hbourque@laso2.la.nrcs.usda.gov

ME
Elaine Tremble
5 Godfrey Drive, Orono,
ME 04473
207-990-9100
FAX 207-990-9599
etremble@me.nrcs.usda.gov

MD
Carol Hollingsworth
John Hanson BC, 339 Bucsh's Frontage
Road, Suite 301,
Annapolis, MD 21401-5534
410-757-0861
FAX 410-757-0687
carol.hollingsworth@md.usda.gov

MA
Wendi Kroll
451 West Street,
Amherst, MA 01002-2995
413-253-4371
FAX 413-253-4375
wendi.kroll@ma.usda.gov

MI
Christina Coulon
301 Coolidge Road, Suite 250,
East Lansing, MI 48823-6350
517-324-5244
FAX 517-324-5171
ccoulon@miso.mi.nrcs.usda.gov

MN
Sylvia Rainford
600 Farm Credit Building,
375 Jackson Street,
St. Paul, MN 55101-1854
651-602-7859
FAX 651-602-7914
str@mn.nrcs.usda.gov

MS
Jeannine May
Federal Building, Suite 1321,
100 West Capitol Street,
Jackson, MS 39269-1399
601-965-4337
FAX 601-965-4536
jbm@ms.nrcs.usda.gov

MO
Norm Klopfenstein
Parkade Center, Suite 250,
601 Business Loop, 70 West,
Columbia, MO 65203-2546
573-876-0911
FAX 573-876-0913
norm.klopfenstein@mo.usda.gov

MT
Lori Valadez
Federal Building, Room 443
10 East Babcock Street,
Bozeman, MT 59715-4704
406-587-6842
FAX 406-587-6761
lvaladez@mt.nrcs.usda.gov

NE
Pat McGrane
Federal Building, Room 152,
100 Centennial Mall, North,
Lincoln, NE 68508-3866
402-437-5328
FAX 402-437-5327
pat.mcgrane@ne.usda.gov

NV
Liz Warner
5301 Longley Lane,
Building F, Suite 201,
Reno, NV 89511-1805
775-784-5288
FAX 775-784-5939
lwarner@nv.nrcs.usda.gov

NH
Laura Morton
Federal Building, 2 Madbury Road,
Durham, NH 03824-2043
603-868-7581
FAX 603-868-5301

NJ
Irene Lieberman
1370 Hamilton Street, Somerset, NJ
08873-3157
732-246-1171
FAX 732-246-2358
irene.lieberman@nj.usda.gov

NM
Betty Joubert
6200 Jefferson Street, NE, Suite 305,
Albuquerque, NM 87109-3734
505-761-4406
FAX 505-761-4463
betty.joubert@nm.usda.gov

NY
Kathy Carpenter
441 South Salina Street,
5th Floor, Suite 354,
Syracuse, NY 13202-2450
315-477-6524
FAX 315-477-6550
kathy.carpenter@ny.nrcs.usda.gov

NC
Andrew Smith
4405 Bland Road, Suite 205,
Raleigh, NC 27609-6293
919-873-2107
FAX 919-873-2156
asmith@nc.nrcs.usda.gov

ND
Arlene Deutscher
Federal Building, Room 278,
220 East Rosser Avenue,
Bismarck, ND 58502-1458
701-530-2099
FAX 701-530-2112
ajd@nd.nrcs.usda.gov

OH
Latawnya Dia
200 North High Street
Room 522
Columbus, OH 43215-2748
614-255-2471
FAX 614-469-2083
latawnya.dia@oh.nrcs.usda.gov

OK
Terri Daniel
100 USDA, Suite 203,
Stillwater, OK 74074-2624
405-742-1244
FAX 405-742-1201
terri.daniel@ok.usda.gov

OR
Gayle Norman
101 SW Maine Street, Suite 1300,
Portland, OR 97204-3221
503-414-3236
FAX 503-414-3103
gnorman@or.nrcs.usda.gov

***PACBAS**
Marie Mundheim
FHB Building, Suite 301, 400 Route 8,
Maite, GU 96927
671-472-7375
FAX 671-472-7288
marie1@ite.net

PA
Stacy Mitchell
1 Credit Union Place, Suite 340,
Harrisburg, PA 17110-2993
717-237-2208
FAX 717-237-2238
smitchell@pa.nrcs.usda.gov

PR
Becky Fraticelli
IBM Building, 6th Fl,
654 Munoz Riveria Ave.,
Hato Rey, PR 00918-4123
787-766-5206
FAX 787-766-5987
becky@pr.nrcs.usda.gov

RI
Jeanne Comerford
60 Quaker Lane, Suite 46,
Warwick, RI 02886-0111
401-828-1300
FAX 401-828-0433
jcomerford@ri.nrcs.usda.gov

SC
Perdita Belk
Strom Thurmond FB, 1835
Assembly Street, Room 950
Columbia, SC 29201-2489
803-765-5402
FAX 803-253-3670
pbelk@sc.nrcs.usda.gov

SD
Joyce Watkins
Federal Building, Room 203,
200 4th Street, SW,
Huron, SD 57350-2475
605-352-1228
FAX 605-352-1261
joyce.watkins@sd.nrcs.usda.gov

TN
Larry Blick
675 U.S. Courthouse, 801 Broadway,
Nashville, TN 37203-3878
615-736-5490
FAX 615-736-7764
lblick@tn.nrcs.usda.gov

TX
Harold Bryant
W.R. Poage Federal Building,
101 South Main Street,
Temple, TX 76501-7682
254-742-9811
FAX 254-742-9819
harold.bryant@tx.usda.gov

UT
Ron Nichols
Wallace F. Bennett FB,
125 South State Street, Room 4402,
Salt Lake City, UT 84138
801-524-4556
FAX 801-524-4403
rnichols@ut.nrcs.usda.gov

VT
Anne Hilliard
69 Union Street, Winooski,
VT 05404-1999
802-951-6796
FAX 802-951-6327
ahilliard@vt.nrcs.usda.gov

VA
Pat Paul
Culpeper Building, Suite 209,
1606 Santa Rosa Road,
Richmond, VA 23229-5014
804-287-1681
FAX 804-287-1737
ppaul@va.nrcs.usda.gov

WA
Betty Schmitt
Rock Pointe Tower II
W. 316 Boone Avenue, Suite 450,
Spokane, WA 99201-2348
509-323-2912
FAX 509-323-2909
betty.schmitt@wa..usda.gov

WV
Peg Reese
75 High Street, Room 301,
Morgantown, WV 26505
304-284-7547
FAX 304-284-4839
preese@wv.nrcs.usda.gov

WI
Renae Anderson
6515 Watts Road, Suite 200,
Madison, WI 53719-2726
608-276-8732
FAX 608-276-5890
randerso@wi.nrcs.usda.gov

WY
Nancy Atkinson
Federal Building, 100 East B Street,
Room 3124, Casper, WY 82601-1911
307-261-6482
FAX 307-261-6490
nancy.atkinson@wy.usda.gov

*Pacific Basin

11. Research, Education, and Economics

Agricultural Research Service

The Agricultural Research Service (ARS) is the principal in-house research agency of the USDA. The agency is committed to providing access to agricultural information and developing new knowledge and technology needed to solve technical agricultural problems. Research is done to ensure an abundance of high-quality, safe food and other agricultural products to meet the nutritional needs of the American consumer, to sustain a viable economy, and to maintain a quality environment and natural resource base. Research is conducted at the ARS headquarters in Beltsville, MD, as well as throughout over 100 national laboratories in the United States.

ARS research has contributed to improved crop yields and more environmentally sound farming techniques. In addition to enhancing productivity, today's agricultural research is as much about human health as it is about crop production.

For example, a powerful but expensive anticancer drug could become more plentiful, thanks to a new process developed by ARS scientists. The process makes the drug—called taxol—from laboratory-cultured cells of its increasingly rare natural source, the yew tree. The new process is 100 times more productive than the original process for deriving taxol, which was patented by USDA in 1991. Taxol is a potent chemotherapy drug for breast, ovarian, lung, and other cancers. Under the original process, it took about 6,700 pounds of bark from rare yew trees to make a pound of taxol.

ARS research is also as much about development of new products and new crop varieties. One environmentally friendly product now on the market grew out of ARS research showing that adding alum to poultry litter helps reduce runoff of nutrients from the litter into groundwater and surface waterways. The alum reduces phosphorus runoff by 70 percent, reduces the litter's ammonia vapors—which can physically damage the chickens and cause respiratory problems for poultryhouse workers—and reduces heavy metal runoff such as copper, zinc, and iron by up to 50 percent. The ARS-patented technology is now used by poultry growers across the United States and in Canada.

On the crops side, a new potato variety known as AWN86514-2 is highly resistant to attack by late blight, the disease that caused the Irish potato famine of the 1840's. Late blight is caused by a fungus, *Phytophthora infestans*. New, more aggressive strains of the fungus that are fungicide- resistant have appeared in recent years, so breeders have been scrambling to find potatoes with natural resistance. The new potato held up well in tests when attacked by the newest and most virulent strains of the fungus. That's good news for consumers, because the average American eats about 143 pounds of potatoes a year, making potatoes the Nation's favorite vegetable. ARS released the new potato in collaboration with agricultural experiment stations in Oregon, Idaho, and Washington.

ARS research provides solutions to a wide range of problems related to agriculture—problems that require the long-term commitment of resources or that are unlikely to have solutions with a quick commercial payoff that would tempt private industry to do the research. These problems range from fighting the ongoing battle to protect crops and livestock from costly pests and diseases, to improving the quality and safety of agricultural commodities and products for humans, to making the best use of natural resources. All the while, the research results must help ensure profitability for producers and processors while keeping down costs for consumers.

For more information about ARS, see its home page: *http://www.ars.usda.gov*

ARS Research: Selected Highlights

- *ARS scientists in Peoria, IL, and in New Orleans and Philadelphia have found a way to extract a health-enhancing oil from a waste byproduct of the corn processing industry. The scientific team started with corn fiber, a low-value byproduct of corn milling that's now sold as a low-cost ingredient in cattle rations. From that corn fiber, they've extracted an oil that, in tests with hamsters, lowered total serum cholesterol levels and LDL cholesterol, the type that clogs arteries. They've also extracted a second product from corn fiber, a white gum that could be used in a variety of products—in food as an emulsifier, as a soluble dietary fiber or thickener, or as industrial adhesives and water-based paint thickeners.*
- *The latest twist in alternatives to using chemicals to combat crop pests: plants designed to give insects a stomach ache. ARS scientists teamed up with researchers at Kansas State University to insert an insect enzyme into rice plants. The enzyme—chitinase—causes digestive problems for insects that swallow it. Chitinase causes chitin, a key component in insect skin and gut tissue, to break down. In lab studies, the scientists found that the genetically engineered plants significantly suppressed the growth of feeding insect larvae. Insect chitinase in plants is harmless to humans or animals. Several agricultural biotechnology companies are working with the scientists to transform other plants, such as corn, sorghum, and wheat.*
- *ARS studies in Boston, MA, have shown that certain foods contain higher levels of compounds that could help slow the processes associated with aging in both body and brain. In the studies, eating plenty of foods with these beneficial substances, called antioxidants, raised the power of human blood to defuse harmful internal substances called oxidants by up to 25 percent. Fruits and vegetables found to have the highest amounts of these beneficial antioxidants were prunes, raisins, blueberries, blackberries, kale, strawberries, spinach, raspberries, brussel sprouts, plums, and alfalfa sprouts.*

- *ARS research at the U.S. National Arboretum has yielded two new elm trees resistant to the Dutch elm disease that has ravaged the American elm population since the 1940's, wiping out an estimated 77 million elms. The two new resistant elms from ARS are called Valley Forge and New Harmony. Also, ARS researchers recently unveiled two new maple trees for American streets and yards: Red Rocket, a fiery-red maple cultivar with pest resistance and the ability to grow where temperatures dip to –40 degrees, and New World, which also has pest and cold resistance and is an excellent shade tree, as well as an ideal choice for city landscaping.*
- *ARS research on natural resources uncovered a reason to celebrate: American farmers have crossed an auspicious environmental boundary and begun reducing the level of atmospheric carbon dioxide rather than adding to it. CO2 is one of the greenhouse gases thought to cause global warming. The ARS study showed that U.S. farmers have shifted from being net producers of carbon dioxide to net accumulators of carbon, in the form of valuable soil organic matter. The changeover was due largely to farmers' increasing abandonment of a cherished symbol of past American agriculture, the moldboard plow used to break up the prairies. Instead, many farmers now leave crop residue on or near the soil surface, where the residue readily decays to organic matter.*
- *For decades, USDA has battled scrapie, a fatal brain disease of sheep and goats. Now, the first preclinical, noninvasive test for scrapie should be available in a few years as a result of ARS research. Reliable diagnosis of scrapie is the first step to eradicating the disease, which would greatly improve U.S. sheep and goat export opportunities. ARS scientists discovered that the nictitating membrane, or third eyelid, in sheep collects proteins known as prions. Abnormal prions are the infectious agents believed to cause scrapie. The researchers developed a new laboratory-built molecule, called a monoclonal antibody, that detects the presence of the abnormal prions. The test will eventually allow veterinarians to detect scrapie before animals show clinical signs.*

National Agricultural Library

The National Agricultural Library (NAL) was established as part of the Department of Agriculture in 1862 under legislation signed by President Abraham Lincoln. Part of the Agricultural Research Service (ARS) of the U.S. Department of Agriculture, NAL is the largest agricultural library in the world with a collection of over 3.3 million items.

It is the mission of the National Agricultural Library to serve as the chief agricultural information resource of the United States, ensuring and enhancing access to agricultural information for a better quality of life.

The library serves national and international customers, including researchers, farmers, educators, policymakers, agricultural producers, and the general public. A key NAL goal is to become a "library without walls," a library whose collection and services are available electronically throughout the world. By adapting electronic information technology to its needs, the library is well on its way to meeting this goal with worldwide accessibility over the Internet.

Over 48 miles of bookshelves hold the NAL collection. Materials in the collection include the latest electronic resources as well as books, journals, reports, photographs, films, videotapes, maps, artwork, and historic materials dating to the 16th century. Tens of thousands of new items are added each year. The collection is international in scope and includes items in nearly 75 foreign languages.

The library is located in Beltsville, MD, on the grounds of the ARS Beltsville Agricultural Research Center. In addition to being the agricultural library for the Nation, NAL is also the departmental library for USDA, serving thousands of USDA employees around the globe. NAL is a key resource in USDA's scientific and research activities. About 170 people work at NAL, including librarians, computer specialists, information specialists, administrators, and clerical personnel. Volunteers ranging from college students to retired persons work on various programs at NAL too. The library has an active visiting scholar program as well, which allows professors, scientists, and librarians from universities worldwide to intern at NAL on projects of mutual interest.

AGRICOLA (AGRICultural OnLine Access) is NAL's bibliographic database providing access to the NAL collection. AGRICOLA contains nearly 3.5 million citations to agricultural literature and is available on the Internet through the NAL home page at *http://www.nal.usda.gov*.

NAL provides reference and document delivery services in all aspects of agriculture. It also includes specialized information centers that provide customized information services on topics such as alternative farming systems, animal welfare, food and nutrition, technology transfer, rural development, and water quality.

For walk-in visitors, the library is open from 8:30 a.m. to 4:30 p.m., eastern time, Monday through Friday, except Federal holidays. Many of NAL's services are available anytime through the NAL home page.

NAL can be contacted at:

The National Agricultural Library
Agricultural Research Service, USDA
10301 Baltimore Avenue
Beltsville, MD 20705-2351
(301) 504-5755
E-mail: agref@nal.usda.gov

NAL Selected Highlights:

- *NAL Websites Log Over 11 Million Hits*
  Recent records show that NAL's home page, AGRICOLA on the Internet, and Agricultural Network Information Center, received nearly 11.5 million hits from Internet users last year. This points to both the worldwide demand for electronic information on agriculture and NAL's role as the prime resource for this information.
- *Electronic Delivery of Documents Expands*
  Working toward its goal of becoming a "library without walls," NAL encourages its patrons to send requests and receive materials electronically. Requests submitted electronically to NAL account for about 80 percent of all document delivery requests received. NAL has also significantly increased its electronic delivery of materials to patrons. This number is approaching 40 percent.
- *Electronic Preservation Plans Developed*
  NAL has taken the lead in developing plans to preserve USDA electronic publications. USDA has made electronic formats the preferred method of releasing information to the public. Preservation and long-term access of these publications are an important issue due to the ephemeral nature of electronic formats.
- *Dietary Supplement Database Established*
  In its continuous effort to keep abreast of key issues affecting U.S. food and nutrition, NAL, working with the National Institutes of Health, has launched an Internet site on dietary supplements. The user-friendly database helps researchers and consumers find current information on the growing number of supplements available.

Cooperative State Research, Education, and Extension Service

The Cooperative State Research, Education, and Extension Service (CSREES) works with land-grant universities, historically black colleges and universities (HBCU's), Hispanic institutions, Native American institutions, as well as universities and other public and private organizations to advance research, extension, and higher education in the food and agricultural sciences and in related environmental and human sciences. Its programs increase and provide access to scientific knowledge, strengthen the capabilities of State universities, expand accessibility and use of improved communication and network systems, and promote informed decision-making.

CSREES links the research and education resources and activities of USDA, improving customer service and responsiveness to emerging issues and national priorities. CSREES programs focus on improving economic, environmental, and social conditions in the United States and globally. These conditions include

improved agricultural productivity and development of new products; safer food; cleaner water and air; enhanced stewardship and management of natural resources; healthier and more responsible individuals, families, and communities; and a stable, secure, diverse, and affordable food supply.

Partnerships

The CSREES domestic and international research, education, and extension networks are strengthened with partnerships that maximize resources and program impact. The array of CSREES partners includes other USDA agencies, Federal and State government departments, nonprofit organizations, and private-sector entities. Working closely with the nationwide land- grant university system is central to CSREES programs. CSREES partners include:

- More than 130 colleges of agriculture, including land-grant institutions in each State and territory
- 59 agricultural experiment stations
- 57 State or territorial cooperative extension services
- 63 schools of forestry
- 16 historically black land-grant colleges and universities (HBCU's), plus Tuskegee University
- 27 colleges of veterinary medicine
- 42 schools and colleges of family and consumer sciences
- 30 1994 Native American land-grant institutions
- 160 Hispanic-serving institutions
- Federal and State governments
- Nonprofit organizations
- the private sector

Programs

CSREES research, education, and extension leadership is provided through programs in:

- Plant and Animal Systems
- Natural Resources and Environment
- Economic and Community Systems
- Families, 4-H, and Nutrition
- Partnerships with State Universities
- Competitive Research Grants and Awards Management
- Science and Education Resources Development
- Communications, Technology, and Distance Education

What Is CSREES?

- Development of knowledge leading to advancement in agriculture, the environment, and community and individual well-being through problem-focused integrated research and education and targeted scientific efforts, including cutting-edge research programs on value-added product development, plant

and animal genome mapping and biotechnology, integrated pest management, water quality, human nutrition, food safety, and animal and plant systems

- Model education programs in sustainable agriculture, water quality, food safety, risk management, children and families, health, environmental stewardship, distance education, and community economic development
- Higher education programs to develop the scientific and professional expertise needed to advance the food, agricultural, and natural resource systems and maintain excellence in college and university teaching programs
- Cooperative partnerships involving:
  - —over 9,600 scientists engaged in research at 59 State agricultural experiment stations, 16 1890 historically black land-grant colleges and universities, and Tuskegee University
  - —over 9,600 local extension agents working in 3,150 counties
  - —3 million trained volunteers working with national outreach education programs
  - —6.5 million youth involved in 4-H programs that increase self-esteem and enhance problem-solving skills in a positive, supportive environment
- The National Research Initiative supporting research in the biological, physical, and social sciences to solve key agricultural and environmental problems
- A Small Business Innovation Research program to support high-quality research proposals containing advanced concepts related to important scientific problems and opportunities in agriculture that could lead to significant public benefit if the research is successful
- Immediate electronic access to vital information on safety and disaster recovery during time-critical disasters, such as hurricanes, wildfires, and floods

CSREES Highlights

The Cooperative State Research, Education, and Extension Service works in partnership with the land- grant university system and other organizations to further research, education, and extension in the food, agricultural, environmental, and human sciences. Below are examples of success stories reflecting this partnership:

Thinking Globally

To help combat a shortage of bilingual veterinarians, several veterinary students at Washington State learned Spanish, and several serve as interns in Central and South America each year. In Arkansas, students can earn a “trans-Atlantic” master’s degree through a program developed by Arkansas and Scottish Agricultural College agricultural economists. Students from the United States and the United Kingdom study at each university, working or interning in the host country.

Adding Value to New and Old Agricultural Products

Virginia scientists found that corn fiber, a byproduct of the milling industry, can be converted into Xylitol, a sugar alcohol sweetener that helps prevent tooth decay and ear infections in children and acts as a safe food sweetener for diabetics. These findings could raise the value of corn fiber from 5 cents per pound to nearly $2 per

pound. Research at Colorado found that a canola-based motor oil works just as well as the petroleum version, but without environmental drawbacks; the motor oil will be produced by a farmer-owned plant in Michigan. Wisconsin Extension provided assistance to food-grade soybean producers in one area to improve their harvest and postharvest management skills, which resulted in increased earnings.

Roadmaps to Better Crops and Animals

Iowa researchers identified two pig genes that influence litter size and developed methods to identify pigs carrying the genes. Herds improved with these pigs could help producers with 1,000-sow operations see a $20,000 annual increase in profits. In New York, researchers have completed genetic maps for wheat and oats that identify locations of key genes for resistance to insects and to diseases such as leaf rust and powdery mildew. These maps will cut the time and costs associated with breeding, saving U.S. cereal breeders up to $10 million per year.

Looking Out for the Small Farm

Five small farmers worked with North Carolina A&T extension specialists to add irrigation systems to their vegetable farms. The farmers then teamed up to buy irrigation equipment at a bargain rate and shared expenses and labor to install the systems. Each operation can expect increased sales of $2,000 to $3,000 per year from the collaboration. To beat the high cost of controlled atmospheric storage, Minnesota scientists developed the "Honeycrisp" apple variety, which keeps two to four times longer under normal refrigeration than other apples. Orchards are adopting the new variety at a record pace.

Safer Food

Louisiana researchers developed a method to pasteurize fresh oysters so that people can still eat them raw without fear of a naturally occurring bacterium that was linked to 69 deaths between 1992 and 1996. Under Florida's leadership, a national alliance of Federal, State, academic, and private organizations worked together to train nationwide more than 80 percent of the seafood industry and regulatory personnel in Hazard Analysis and Critical Control Point methods. In Washington, 90 cases of food poisoning were linked to a homemade cheese called queso fresco, traditionally made with unpasteurized milk. Scientists found they could easily modify the recipe so that cheesemakers could use pasteurized milk to ensure that the cheese is safe to eat. Mississippi researchers found that natural organic acids can extend the refrigerated shelf life of catfish fillets by six days and help control the spread of the foodborne pathogen *Listeria monocytogenes*.

Protecting Water Quality

New Mexico Extension personnel launched a homeowner education campaign about the dangers of pouring pesticides down the drain. As a result, no Diazinon contamination problems have been detected in the wastewater treatment facility in Las Cruces for the past year. Minnesota researchers have discovered a soil bacterium that can remove atrazine from municipal drinking water. Alabama A&M researchers, using remote sensing, geographic information systems, and global positioning sys-

tems, are monitoring and predicting excessive phosphorus and nitrogen levels in cotton that could adversely affect the water supply. California Extension personnel are helping reduce sediment that was trapping 1,300 pounds of pesticide residues in the ecosystem and harming river wildlife in the San Joaquin River and Sacramento Delta.

Healthier Lives Through Research and Education

In Georgia, participants in Extension's Teenage Mothers Nutrition Education Program completed a year with no infant deaths, compared to a statewide rate of 10 percent. Researchers in Ohio discovered that some cancers can be reduced or prevented by eating more canned, rather than fresh, vegetables such as carrots, spinach, and tomatoes. Apparently, effects of the canning process make it easier for the body to absorb the cancer-fighting carotenoids in these foods. Nebraska and Texas researchers found that putting hens on flax seed diets increases the ratio of good to bad cholesterol and reduces serum triglycerides, another heart disease risk factor, by 14 percent.

Pest Management

California researchers found that methyl iodide is an alternative for methyl bromide, an ozone-degrading soil fumigant that will be banned worldwide. Maine Extension helped potato growers adopt ecologically beneficial farming methods, resulting in a reduction of pesticide use by 50 percent.

Local Problem Solving

Guidance from Mississippi Extension enabled a catfish producer to build and expand a catfish processing facility that now employs 100 people and processes 75,000 pounds of fish a day. Eighty percent of businesses that involved Oklahoma Extension programs to help entrepreneurs start their own businesses are still in business after four years, while the national average is only 60 percent. Iowa Extension helped establish 85 child-care home businesses serving 2,250 children.

Managing Agricultural Waste

In Mississippi, research and extension faculty helped dairy farmers meet "no discharge" wastewater requirements by finding the most affordable, efficient, and environmentally sound ways to dispose of wastewater. North Carolina researchers helped the processed egg industry recover protein and fat for use as a feed additive, potentially reducing city water-treatment costs by $1 million per year.

Economic Research Service

Are you a congressional staffer who wants to know how U.S. agriculture would be affected if China joined the World Trade Organizaiton? Are you a reporter seeking insights on future patterns of adoption of genetically engineered crops? Are you an industry analyst who has heard the meatpacking industry has fewer and fewer firms and wonders why this increasing concentration occurred and what it means? Are you looking for farm income and farm program payment information to use in

designing a new safety net program for small or limited resource farmers? Are you a nutrition educator who wonders what Americans eat and why they make the food choices they do?

If so, you are in luck. These are just a few of the many timely issues addressed by the Economic Research Service (ERS) — USDA's premier source of social science information and research — just this last year.

ERS conducts social science research for a purpose. That purpose is to build the knowledge base for informed and effective decisionmaking on economic issues related to agriculture, food, natural resources, and rural economies.

ERS publications are easy to find. They are posted in their entirety, and summarized for easy access to the main ideas, on the ERS web site (*http://www.ers.usda.gov*). Copies are also available from the USDA Order Desk (1-800-999-6779 or 703-605-6220). For assistance in locating specific publications, periodicals, or data products, please call the ERS Information Center at (202) 694-5050 or email service@ers.usda.gov.

Finding the Facts

Commodity Markets. What's up and what's down in the crop and livestock markets? The ERS commodity situation and outlook series includes monthly and quarterly reports containing current and prospective information on commodity supply, demand, and price conditions. Annual situation and outlook yearbooks that include historical data series on acreage, yield, supply, domestic use, foreign trade, and price, as well as topical articles pertinent to understanding the U.S. and global markets, are also available. From the ERS Web site, you will find links to situation and outlook reports for cotton and wool, feed, fruit and tree nuts; livestock, dairy and poultry; aquaculture; oil crops, rice, sugar and sweeteners; tobacco, vegetable and specialty crops, and wheat. *Commodity briefing rooms* can also be found on the ERS web site. These sites provide one-stop-shopping entrees into commodity data from all USDA agencies.

Agricultural Trade. Are prospects bright or dim for U.S. agricultural trade? To find out, visit the ERS web site where you will find the *Outlook for U.S. Agricultural Trade*, which offers the latest value and volume of U.S. farm exports by commodity and region, and also the agricultural trade balance, import commodities, and export outlook. Or take a look at the *Trade Briefing Room*, which will hook you directly into the *Foreign Agricultural Trade of the United States*—a trade data base that you can search according to the commodity, country or region, and time period that interests you.

Farm Income and Finance. Are farmers doing better or worse economically than in the past? How many farmers make a living "just farming" these days? What percentage of farm income comes from government payments? You can find the answer to these questions in the ERS periodical *Agricultural Income and Finance*. Issued 3 times a year, this report provides historical estimates and forecasts of farm sector financial information that will allow you to gauge the financial wellbeing of the nation's farmers and ranchers. It includes farm sector receipts, expenses, debt,

assets, and costs of producing crops and livestock. Or visit the *Farm Sector Performance Briefing Room*, where you will find links to the latest farm income forecasts, other farm financial data, and related research reports.

Food Consumption and Prices. How much of their personal income do Americans spend on food these days? (Answer: 10 percent) How much of their food expenditures are on "food away from home"? (Answer: 47.5 percent) For direct access to data on retail food prices, food expenditures and food costs, and access to numerous publications on America's eating habits, visit the *Food Markets Briefing Room* on the ERS web site.

Resource Trends and Indicators. How much cropland is being lost to urban uses? The answer—it turns out that acres in cropland have remained quite stable over time, varying from 440-460 million acres since 1945—can be found in the ERS *Land Use and Value Briefing Room*. Are farmers using more or fewer chemicals today than in the past? For the answer to this and many other questions about how natural resources (land and water) and commercial inputs (energy, nutrients, pesticides, and machinery) are used in the agricultural sector, see the *Agricultural Resources and Environmental Indicators* report, which is posted on our web site.

Rural Economic Indicators. Which rural counties are experiencing population growth? What is the median household income in your county? What proportion of your State's rural jobs are in farm and farm related industries? Does commercial bank restructuring impair local rural economic growth? The *Rural Development Briefing Room* provides a rich source of information about rural population dynamics, employment change, jobs by industry, and credit and finance. You can also learn about Federal funds going to rural America simply by going to the ERS web site.

ERS Periodicals: Get the Big Picture in a Short Story

ERS publishes several nationally recognized magazines designed to deliver the findings of economic analysis in concise, readable articles to commodity and trade associations, the media, public interest groups, Congressional and Executive Branch policymakers and their staffs, foreign embassies, and any interested member of the general public.

You can subscribe to ERS periodicals by calling the order desk (1-800-999-6779). Or you can access the PDF versions of these magazines free of charge on the ERS web site (*http://www.ers.usda.gov*).

Agricultural Outlook Magazine. *Ag Outlook* is published 10 times a year. It highlights the short-term outlook for all major areas of the agricultural economy and each month includes a "spotlight" on the commodities currently at critical stages in the marketing year. This magazine also presents syntheses of longer term analyses of commodity and natural resource policies, international trade issues and agreements, and farm financial conditions and institutions. A recent issue, for example, included an analysis of whether persistent low commodity prices preclude a "fair income" for all U.S. farmers.

FoodReview. In ERS' *FoodReview* magazine, trends in food consumption, food assistance, nutrition, food product development, food safety, and food product trade are analyzed in depth for those who manage, monitor, or have other interests in the food system. *FoodReview*, which is published three times a year, also includes key indicators of the food sector and updates on Federal policies and programs affecting food. The January-April 2000 issue, for example, contains a series of articles on how American cuisine evolved during the 20th century. It may not surprise you to find out that America's cooking trends have echoed the changing roles of women in the U.S. economy.

RuralAmerica. ERS' newest periodical demonstrates the practical application of research in rural banking, the changing demographics of the American population, housing, the nonmetro labor force, poverty, and the effect of farm policies on rural areas. Using succinct text and sharp graphics *Rural America* gives an overview of current rural economic and social trends. The January 2000 issue, for example, contains an article showing that child poverty in the 1990s remains higher in nonmetro areas than in metro areas.

Staying on Top of Special Topics

At ERS you can get more than just the economic facts. ERS' unique contribution in USDA is to bring the perspective of economic analysis to many critical issues facing farmers, agribusinesses, consumers, and policy makers. For example, ERS can tell you the economic benefits to society and the costs to the food industry of implementing food safety protections. Or ERS can tell you which sectors of the economy have gained the most economically, and by how much, from implementation of the North American Free Trade Agreement.

Many special topics are highlighted on the ERS Web Site Briefing Rooms. Among the topics covered are:

Domestic Conservation and Environmental Policies. Find out what policy instruments are available to encourage farmers to adopt conservation and environmental practices, and how effective they have been.

Food Safety. Learn that foodborne illnesses from a few selected pathogens cost society from $6.6 to $37.1 billion annually in medical costs and lost productivity. Foodborne illnesses from just meat and poultry account for $5.2 to $28.3 billion of these costs.

Food Security and Hunger. Find out that although most households in the United States are food secure, during the period 1996-98 some 10 million U.S. households (9.7 percent of total) were food insecure—that is, they did not always have access to enough food to meet basic needs.

World Trade Organization. Find discussions of the three pillars of agricultural trade negotiations: export subsidies, domestic support, and tariffs as well as other trade negotiation issues. The web site also contains analysis of China's potential membership in the WTO; for example, did you predict that the largest increases in China's agricultural imports after full accession are likely to be for corn ($587 million), wheat ($543 million), and cotton ($359 million)?

Research Reports: In-depth Understanding of Complex Issues

ERS underpins its contributions to understanding the topics of the day with peer-reviewed social science research. The results of many research projects are published as ERS research reports as well in professional journals. All ERS reports are available in PDF format on the ERS web site at *http://www.ers.usda.gov*.

The following is a selection of in-depth research reports published in 2000:

Genetically Engineered Crops for Pest Management in U.S. Agriculture. Agricultural Economic Report (AER-786). April 2000. Adoption of genetically engineered crops with traits for pest management has risen dramatically since their commercial introduction in the mid-1990's. The farm-level impacts of such crops on pesticide use, yields, and net returns vary with the crop and technology examined.

WIC and the Nutrient Intake of Children. Food Assistance and Nutrition Research Report (FANRR-5). March 2000. After controlling for self-selection bias, participation in the WIC program (Special Supplemental Nutrition Program for Women, Infants, and Children) has a significant positive effect on children's intakes of iron, folate, and vitamin B-6.

Consolidation in U.S. Meatpacking. Agricultural Economic Report No. 785 (AER-785). February 2000. Meatpacking consolidated rapidly in the last two decades: slaughter plants became much larger, and concentration increased as smaller firms left the industry. Establishment-based data from the U.S. Census Bureau is used to describe consolidation and to identify the roles of scale economies and technological change in driving consolidation.

The International Financial Crisis and Agriculture. International Agriculture and Trade Report (WRS-99-3). March 2000. The international financial upheaval that began in Thailand in July 1997 and subsequently spread to other countries set back economic growth and trade worldwide. The international financial crises led to depreciated currencies, reduced growth, and higher interest rates in Indonesia, Thailand, South Korea, Russia, Brazil, and other Latin American countries. Currency depreciation helped agricultural producers, but hurt consumers in the crisis countries.

Changes in the Older Population and Implications for Rural Areas. Rural Development Research Report (RDRR-90). January 2000. This analysis presents data on changes in the age distribution and socioeconomic status of the older population by rural-urban residence and examines the implications for resources, services, and programs in rural areas.

What Does ERS Look Like?

Located in Washington, D.C., ERS has approximately 500 employees. The agency's work is structured among three program divisions:

- Food and Rural Economics (Betsey Kuhn, Director)
- Market and Trade Economics (Neil Conklin, Director)
- Resource Economics (Kitty Smith, Director)

For more information about ERS, contact:
Susan E. Offutt, Administrator
Economic Research Service
1800 M St. NW
Washington, DC 20036
202-694-5000
For locating specific publications, periodicals, or data series, contact:
The ERS Information Center
202-694-5050

National Agricultural Statistics Service

The National Agricultural Statistics Service (NASS), "*The Fact Finders for U.S. Agriculture*," is the official source of comprehensive agricultural statistics in the U.S. Department of Agriculture. The only way to "tell the story" of the phenomenal success of "American agriculture" is by having data available that measure productivity. Having accurate, timely information available is not only important to tell the success story of American agriculture, but it is vital to support the efficient handling of commodities in today's global market.

The NASS mission is to serve the basic agricultural and rural data needs of the people of the United States, those working in agriculture, and those living in rural communities by objectively providing important, usable, and accurate statistical information and services needed to make informed decisions.

The NASS program has successfully met many challenges over the last 137 years to provide data to meet the changing demands from a growing multitude of data users. These data are geared toward producers to help them plan planting, feeding, breeding, and marketing programs. Other major uses of these statistical data include the following:

- Timely, accurate data are essential for a market place where price is determined by real facts rather than speculation and rumors.
- Sound data are needed to resolve environmental issues, rather than basing decisions on worst case scenarios.
- Exports of American farm products rely on accurate supply information.
- Our transportation-storage industry relies on the statistics to efficiently move agricultural products to market.
- Suppliers use the data to allocate the necessary inputs farmers need to grow their crops or raise livestock.

- Government policymakers rely on accurate data to address natural disasters, crop insurance, and depressed farm prices.
- Other USDA agencies use the statistical data to accomplish important programs for the Department, whether it be carrying out agricultural policy concerning farm program legislation, commodity programs, agricultural research, or rural development.

NASS headquarters is located in Washington, DC, and 45 State Statistical Offices cover 120 crops and 45 livestock items annually in the 50 States, and are complemented by additional State reports. In 1999, NASS also established an office in Puerto Rico, in cooperation with the Puerto Rico Department of Agriculture. Current and historical information is published in approximately 400 reports which feature:

- Crop acreage, yield, production, and grain stocks;
- Livestock , dairy, and poultry production and prospects;
- Chemical use in agriculture, including post-harvest applications on selected crops;
- Labor use and wage rates;
- Farms and land in farms; and
- Prices, costs, and returns.

The NASS network of 45 field offices, plus Puerto Rico, operate through cooperative agreements with State departments of agriculture or universities. This enables NASS to be responsive to "grassroots" data needs, while eliminating duplication of effort and ensuring statistical products are consistent with national-level standards.

An abundance of agricultural information is available through NASS programs. In addition to the information above, statistics on more specialized commodities, including hop stocks, mink, cherries, cranberries, lentils, and peppermint oil, are also available. Enhanced statistics for the nursery, equine, and aquaculture industries have been enthusiastically received by data users. Most estimates are based on information gathered from producers surveyed through personal and telephone interviews or through mailed questionnaires. Other estimates are based on surveys of grain elevators, hatcheries, and other agribusinesses, and on administrative data such as slaughter records. Their cooperation is absolutely vital to a workable and meaningful statistical program; NASS relies on survey respondents to voluntarily supply data for the reports. The success of this cooperative relationship can be attributed to producers' recognition of the importance of the survey results and to the confidential treatment NASS accords all reported information. Other estaimates are based on surveys of grain elevators, hatcheries, and other agribusinesses, and on administrative data such as slaughter records. In addition, NASS relies on actual field counts and measurements for some crop forecasts.

Data collected from these varied sources are summarized by the NASS State Statistical Offices and then sent to the Agency's Agricultural Statistics Board in Washington, DC, whose members determine and issue State and national official statistics. Reports are released to the public according to a published calendar.

Census of Agriculture

The census of agriculture conducted by NASS every 5 years is a complete accounting of U.S. agricultural production and the only source of uniform, comprehensive agricultural data for every county in the Nation. The 1997 Census of Agriculture results provide data on the number of farms and land in farms, land use and ownership, operator characteristics, crops, machinery and equipment, livestock, fertilizer, poultry, chemicals, market value of products, energy expenditures, irrigated land, production expenses, type of organization, farm programs, and corporate structure. Data are also published for Puerto Rico, Guam, the Virgin Islands, and the Norther Mariana Islands. Information is available in print, CD-Rom format, and on the Internet. The next census of agriculture will be conducted in 2002.

How To Get More Information

NASS reports are released at scheduled times in a variety of formats. The NASS table shows how to obtain information from NASS.

For More Information

Agricultural Research Service

Director, Information Staff
Sandy Miller Hays
Rm 2251
5601 Sunnyside Ave., Bldg. 1
Beltsville, MD 20705- 5128
301-504-1638
FAX 301-504-1648
shays@asrr.arsusda.gov

Current Info Branch Chief
Sean Adams
Rm 2210
5601 Sunnyside Ave., Bldg. 1
Beltsville, MD 20705-5129
301-504-1622
FAX 301-504-1641
sadams@asrr.arsusda.gov

Chief, Information Products and Services Branch
Ruth Coy
Rm 2234
5601 Sunnyside Ave., Bldg. 1
Beltsville, MD 20705- 5130
301-504-1660
FAX 301-504-1641
rcoy@asrr.arsusda.gov

Nat'l Visitor Center Head
John Kucharski
Bldg 302, BARC-E,
Beltsville, MD 20705
301-504-9403
FAX 301-504-8069
nvc@asrr.arsusda.gov

Freedom of Info Act Officers
Valerie Herberger
5601 Sunnyside Ave., Bldg. 1
Rm 2248b
Beltsville, MD 20705-5128
301-504-1640
FAX 301-504-1648
vherberg@asrr.arsusda.gov

Stasia Hutchison
Rm 2248a
5601 Sunnyside Ave., Bldg. 1
Beltsville, MD 20705-5128
301-504-1655
FAX 301-504-1648
hutchisn@asrr.arsusda.gov

Field Offices

ARS Information, USDA-ARS Nat'l Center for Agricultural Utilization
1815 N. University St.
Peoria, IL 61604
FAX 309-681-6690
309-681-6530
510-559-6069

ARS Information, USDA-ARS
Western Regional Research Center
800 Buchanan St.
Albany, CA 94710
FAX 510-559-5882

National Agricultural Library Public Affairs Officer
Brian Norris
204-NAL
Beltsville, MD 20705
301-504-6778
FAX 301-504-5472
bnorris@nal.usda.gov

Library Services
1st Fl.-NAL
Beltsville, MD 20705
(reference, lending, etc.)
301-504-5755

Freedom of Info Act Officers
Valerie Herberger
5601Sunnyside Ave., Bldg. 1
Rm 2248b
Beltsville MD 20705
301-504-1640
FAX 301-504-1648
vherberg@asrr.arsusda.gov

Stasia Hutchison
5601 Sunnyside Ave., Bldg. 1
Rm 2248a
Beltsville, MD 20705
301-504-1655
FAX 301-504-1641
hutchisn@asrr.arsusda.gov

NAL TDD/TTY
DCRC TDD/TTY
301-504-6856
202-720-3434

Information Research Services Branch
Alvetta S. Pindell
304-NAL
Beltsville, MD 20705
30l-504-5204
FAX 301-504-6409
apindell@nal.usda.gov

Alternative Farming Systems Information Center
Jane Gates
304-NAL
Beltsville, MD 20705
301-504-5724
FAX 301-504-6409
jgates@nal.usda.gov

Animal Welfare Information Center
Jean Larson
304-NAL
Beltsville, MD 20705
301-504-6212
FAX 301-504-7125
jlarson@nal.usda.gov

Food and Nutrition Information Center
Shirley Evans
304-NAL
Beltsville, MD 20705
301-504-5719
FAX 301-504-6409
sevans@nal.usda.gov

Rural Information Center
Patricia John
304-NAL
Beltsville, MD 20705
301-504-5372
FAX 301-504-5181
pjohn@nal.usda.gov

Rural Information Center
DC area and International
304-NAL Beltsville, MD 20705
301-504-5547
All other U.S. calls
304-NAL Beltsville, MD 20705
1-800-633-7701

Reference Section
Stan Kosecki
4th Fl.-NAL Beltsville, MD 20705
301-504-5204
FAX 301-504-6927
skosecki@nal.usda.gov

Reference Desk
Librarian on Duty
1Fl.-NAL Beltsville, MD 20705
301-504-5479
FAX 301-504-6927
agref@nal.usda.gov

Russian Wheat Aphids Project
Wayne Olson
100-NAL Beltsville, MD 20705
301-504-5204
FAX 301-504-6927
wolson@nal.usda.gov

Special Collections Program
Susan Fugate
3Flr-NAL Beltsville, MD 20705
301-504-6503
FAX 301-504-5675
speccoll@nal.usda.gov

Technology Transfer Information Center
Kathleen Hayes
4Flr-NAL
Beltsville, MD 20705
301-504-5218
FAX 301-504-7098
khayes@nal.usda.gov

Water Quality Information Center
Joseph Makuch
4Flr-NAL
Beltsville, MD 20705
301-504-6077
FAX 301-504-7098
jmakuch@nal.usda.gov

D.C. Reference Center
Vacant
Rm 1052-S
Washington, DC 20250
202-720-3434
FAX 202-720-3200
dcrc@nal.usda.gov

Global Change
Roberta Rand
Rm 013 NAL
Beltsville, MD 20705
301-504-6684
FAX 301-504-7098
rrand@nal.usda.gov

Cooperative State Research, Education, and Extension Service

(CSREES is located at Waterfront Center, 800 9th Street, S.W.)

Director, Communication & Information Access
Terry Meisenbach
Rm 4306
Washington, DC 20250-2207
202-720-2677
FAX 202-690-0289
tmeisenbach@reeusda.gov

National Media Liaison
Marti Asner
Rm 4301
Washington, DC 20250-2207
202-720-8188
FAX 202- 690-0289
masner@reeusda.gov

Public Affairs Officer
Len Carey
Rm 4314
Washington, DC 20250-2207
202-720-1358
FAX 202-690-0289
lcarey@reeusda.gov

Public Inquiries
Joyce Tonigan
Rm 4000C
Washington, DC 20250-2207
202-690-1899
FAX 202-690-0289
jtonigan@reeusda.gov

Webmaster
202-720-4112
Rm 4302
Washington, DC 20250-2207
Joe Fulks
jfulks@reeusda.gov
FAX 202-690-0289

Freedom of Info Act Officers
Valerie Herberger
Rm 2248b
5601 Sunnyside Ave., Bldg. 1
Beltsville, MD 20705
301-504-1640
FAX 301-504-1648
vherberg@asrr.arsusda.gov

Stasia Hutchison
5601 Sunnyside Ave., Bldg. 1
Rm 2248a
Beltsville, MD 20705
301-504-1655
FAX 301-504-1641
hutchisn@asrr.arsusda.gov

Economic Research Service

Chief, Publishing & Communications
Adrie Custer
1800 M St., NW
Rm S2018
Washington, DC 20036-5831
202-694-5120
FAX 202-694-5638
acuster@ers.usda.gov

Media Services
John Snyder
1800 M St., NW
Rm S2010
Washington, DC 20036-5831
202-694-5138
FAX 202-694-5638
jsnyder@ers.usda.gov

Outlook
Diane Decker
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Rm S2043
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202-694-5116
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Valerie Herberger
5601 Sunnyside Ave., Bldg. 1
Rm 2248b
Beltsville, MD 20705
301-504-1640
FAX 301-504-1648
vherberg@asrr.arsusda.gov

Stasia Hutchison
5601 Sunnyside Ave., Bldg. 1
Rm 2248a
Greenbelt, MD 20770
301-504-1655
FAX 301-504-1641
hutchisn@asrr.arsusda.gov

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12. Marketing and Regulatory Programs

Agricultural Marketing Service

When you visit the grocery store, you know you'll find an abundance and variety of top-quality produce, meats, and dairy products. If you're like most people, you probably don't give a second thought to the marketing system that brings that food from the farm to your table. Yet, this state-of-the-art marketing system makes it possible to pick and choose from a variety of products, available all year around, tailored to meet the demands of today's lifestyles. Millions of people—from grower to retailer—make this marketing system work. Buyers, traders, scientists, factory workers, transportation experts, wholesalers, distributors, retailers, advertising firms—in addition to the Nation's farmers—all help create a marketing system that is unsurpassed by any in the world. And USDA's Agricultural Marketing Service (AMS) helps make sure the U.S. marketing system remains world-class.

Services to Promote Quality: Grading, Quality Standards, and Certification

Wherever or whenever you shop, you expect good, uniform quality and reasonable prices for the food you purchase. AMS quality grade standards, grading, certification, inspection, and laboratory analysis are voluntary tools that industry can use to help promote and communicate quality and wholesomeness to consumers. Industry pays for these services and since they are voluntary, their widespread use by industry indicates they are valuable tools in helping market their products.

USDA quality grade marks are usually seen on beef, lamb, chicken, turkey, butter, and eggs. For many other products, such as fresh and processed fruits and vegetables, the grade mark isn't always visible on the retail product. In these commodities, the grading service is used by wholesalers, and the final retail packaging may not include the grade mark. However, quality grades are widely used—even if they are not prominently displayed—as a "language" among traders. They make business transactions easier whether they are local or made over long distances. Consumers, as well as those involved in the marketing of agricultural products, benefit from the greater efficiency permitted by the availability and application of grade standards.

Grading is based on standards, and standards are based on measurable attributes that describe the value and utility of the product. Beef quality standards, for instance, are based on attributes such as marbling (the amount of fat interspersed with lean meat), color, firmness, texture, and age of the animal, for each grade. In turn, these factors are a good indication of tenderness, juiciness, and flavor of the meat—all

characteristics important to consumers. Prime, Choice, and Select are all grades familiar to consumers of beef.

Standards for each product describe the entire range of quality for a product, and the number of grades varies by commodity. There are eight grades for beef, and three each for chickens, eggs, and turkeys. On the other hand, there are 45 grades for cotton, 26 grade standards or specifications for dairy products, and more than 312 fruit, vegetable, and specialty product standards.

■ ***Facts about grading:***
From October 1998 through September 1999, USDA graded 33 percent of the shell eggs and 95 percent of the butter produced in the United States. Nearly 83 billion pounds of fresh fruits and vegetables and more than 11 billion pounds of processed fruits and vegetables received a USDA grade mark. Nearly all of the meat industry requests AMS grading services: USDA grades were applied to 83 percent of all beef, 91 percent of all lambs, 23 percent of all veal and calves, 64 percent of all turkeys, and 39 percent of all chickens and other poultry marketed in this country. USDA also graded more than 98 percent of the cotton and 97 percent of the tobacco produced in the United States. In addition 88 percent of the butter sold in consumer size packages is marketed bearing the USDA grade shield.

The food testing side of the AMS program has 9 user-funded laboratories performing numerous microbiological, chemical, and physical analyses on a host of food and fiber commodities, including processed dairy products, meat, poultry, egg products, and fruits and vegetables. This testing supports AMS purchases for the National School Lunch Program and other domestic feeding programs, troop ration specifications for the Department of Defense, export of U.S. food to foreign countries, laboratory quality control and assurance programs, and testing for aflatoxin in peanut products.

In addition to grading and laboratory services, USDA provides certification services, for a fee, that facilitate ordering and purchase of products used by large-volume buyers. Certification assures buyers that the products they purchase will meet the terms of their contracts—with respect to quality, processing, size, packaging, and delivery. If a large buyer—such as a school district, hospital, or prison—orders huge volumes of a particular product such as catsup or processed turkey or chicken, it wants to be sure that the delivered product meets certain needs. Graders review and accept agricultural products to make sure they meet contract requirements and specifications set by private-sector purchasers. They also certify food items purchased for Federal feeding programs.

AMS has developed quality assurance (QA)services that include Hazard Analysis Critical Control Point (HACCP) and International Organization for Standardization (ISO)-based programs. These programs ensure and document that companies' operations are in compliance with provisions of contracts and/or their own standards and procedures. QA services are voluntary, hourly-fee-based, and

value-added. HACCP concepts and procedures have been recommended by the National Academy of Sciences for application in the food industry, and ISO procedures are becoming an international norm for some processes. Another Quality Assurance activity performed by AMS is the accreditation or certification of laboratories whose customers need the testing service of these laboratories to facilitate the export or marketing of U.S. products. In addition, AMS' laboratories are currently pursuing accreditation under ISO Standard 17025, an internationally recognized standard for quality systems in laboratory operations.

AMS' Dairy programs conducts comprehensive evaluations of dairy and related products manufacturing plant facilities and equipment to assure their eligibility to receive grading service and display the grade shield on products. Associated with this service is a sanitary design evaluation service for processing equipment. Under this service, processors can have the sanitary aspects of the design and the cleanability of a machine or process evaluated prior to installation in their facility. A similar service is being developed by AMS for the meat and poultry industry.

Spreading the News

Farmers, shippers, wholesalers, and retailers across the country rely on AMS Market News for up-to-the-minute information on commodity prices and shipments. Market News helps industry make the daily critical decisions about where and when to sell, and what price to expect. Because this information is made so widely available, farmers and those who market agricultural products are better able to compete, ensuring consumers a stable and reasonably priced food supply.

AMS Market News reporters generate approximately 700 reports each day, collected from more than 100 U.S. locations. Reports cover local, regional, national, and international markets for dairy, livestock, meat, poultry, grain, fruit, vegetables, tobacco, cotton, and specialty products. Weekly, bi-weekly, monthly, and annual reports track the longer-range performance of cotton, dairy products, poultry and eggs, fruits, vegetables, specialty crops, livestock, meat, grain, floral products, feeds, wool, and tobacco. Periodically, AMS issues special reports on such commodities as olive oil, pecans, peanuts, and honey.

USDA's commodity market information in Market News is easily accessible—via newspapers, television, and radio; printed reports mailed or faxed directly to the user; telephone recorders; electronic access through the Market News Communication System and the Internet; through electronic mail; and by direct contact with USDA reporters.

Buying Food: Helping Farmers, School Children, and Needy Persons

AMS serves both farmers and those in need of nutrition assistance through its commodity procurement programs. By purchasing wholesome, high-quality food products that are in abundance, AMS helps provide stable markets for producers. The Nation's food assistance programs benefit from these purchases, because these foods go to low-income individuals who might otherwise be unable to afford them.

Some of the programs and groups that typically receive USDA-purchased food include: children in the National School Lunch, Summer Camp, and School Breakfast Programs; Native Americans participating in the Food Distribution Program on Indian Reservations; older Americans through the Nutrition Program for the Elderly; and low income and homeless persons through the Commodity Supplemental Food Program and the Emergency Food Assistance Program. In addition, USDA helps provide disaster relief by making emergency purchases of commodities for distribution to disaster victims.

Once USDA determines that a purchase is appropriate, AMS publicly invites bids, and makes sure that the food it purchases meets quality and nutrition standards. Often, AMS specifies that foods be low in fat, sugar, and sodium. Compliance with specification requirements is ensured through in-plant USDA certification agents and testing in AMS-approved laboratories. AMS only purchases products that are 100 percent domestic in origin.

Pesticides: Information and Records

The U.S. food supply is one of the safest in the world, but the public is still concerned about the effects of agricultural pesticides on human health and environmental quality. The Pesticide Data Program (PDP) which is administered by AMS, provides statistically reliable information on chemical residues found on agricultural commodities such as fresh and processed fruits and vegetables, grain, and milk. PDP is a Federal-State partnership where 10 participating States using uniform procedures collect and test these commodities. The information gained helps form the basis for conducting realistic dietary risk assessments and evaluating pesticide tolerances as required by the Food Quality Protection Act of 1996. The Environmental Protection Agency uses PDP data to address reregistration of pesticides. Other Federal agencies use the data to respond more quickly and effectively to food safety issues. PDP's data are also used to support the export of American commodities in the competitive global marketplace and to assess integrated pest management activities.

AMS also administers the Federal Pesticide Recordkeeping Program, which requires certified private applicators to keep records of their restricted use pesticide applications for a period of two years. These records support collection of pesticide use data to help analyze agricultural pesticide use and are used by health care professionals when treating individuals who may have been exposed to a restricted use pesticide. AMS works with State pesticide regulatory agencies and Cooperative Extension Services to provide the regulatory and education aspects of the program.

Helping Farmers Promote Their Products

"The Touch...the Feel of Cotton...the Fabric of Our Lives," "Got Milk?," "Pork...the Other White Meat," "Beef...It's What's for Dinner." If you've watched television or read magazines lately, you've probably heard or read these slogans and others for a host of agricultural commodities. All of these promotional campaigns are part of the research and promotion programs that AMS oversees.

Federal research and promotion programs are designed to strengthen the industry's position in the marketplace and to maintain and expand domestic and foreign markets. The programs are all fully funded by industry assessments. Board members are nominated by industry and appointed officially by the Secretary of Agriculture. AMS oversees the activities of the boards or councils and approves budgets, in order to assure compliance with the legislation.

Currently, there are research and promotion programs for beef, pork, cotton, fluid milk, dairy products, eggs, honey, mushrooms, potatoes, soybeans, watermelons, popcorn, and peanuts.

But, while advertising is one part of these programs, product research and development is also a major focus. Wrinkle-resistant cotton and low-fat dairy products are just two examples of how these programs benefit consumers and help expand markets for producers.

Marketing Orders: Solving Producers' Marketing Problems

Marketing agreements and orders help dairy, fruit, vegetable, and peanut producers come together to work at solving marketing problems they cannot solve individually. Marketing orders are flexible tools that can be tailored to the needs of local market conditions for producing and selling. But they are also legal instruments that have the force of law, with USDA ensuring an appropriate balance between the interests of producers looking for a fair price and consumers who expect an adequate, quality supply at a reasonable price.

Federal milk marketing orders, for example, establish minimum prices that milk handlers or dealers must pay to producers for milk, depending on how that milk is used—whether fluid milk, ice cream, cheese, or other storable product. Federal milk orders help build more stable marketing conditions by operating at the first level of trade, where milk leaves the farm and enters the marketing system. They are flexible in order to cope with market changes. They assure that consumers will have a steady supply of fresh milk at all times.

Marketing agreements and orders also help provide stable markets for fruit, vegetable, and specialty crops like nuts and raisins, to the benefit of producers and consumers. They help farmers produce for a market, rather than having to market whatever happens to be produced. A marketing order may help an industry smooth the flow of crops moving to market, to alleviate seasonal shortages and surpluses. In addition, marketing orders help maintain the quality of produce being marketed; standardize packages or containers; and authorize advertising, research, and market development. Each program is tailored to the individual industry's marketing needs.

Ensuring Fair Trade in the Market

AMS also administers several programs that ensure fair trade practices among buyers and sellers of agricultural products.

The Perishable Agricultural Commodities Act (PACA) program promotes fair trading in the fresh and frozen fruit and vegetable industry. Through PACA, buyers and sellers are required to live up to the terms of their contracts, and procedures are available for resolving disputes outside the civil court system.

Fruit and vegetable buyers and sellers need this assurance because of the highly perishable nature of their products. Trading in produce is considerably different than trading for a car, a computer, or even grain. When a vegetable grower doesn't get paid, the product usually can't be reclaimed before it spoils—or before it has already been consumed.

Although PACA was initiated to protect producers, it benefits consumers and the entire produce industry. Over the past decade, AMS has handled nearly 40,000 PACA complaints, not just from growers, but also from grower-agents, grower-shippers, brokers, wholesalers, retailers, and processors. PACA is funded by license fees paid by industry, but the bottom line is that fair trade and resolved disputes mean businesses of any size can operate in a better trade environment and consumers can get a wider choice of reasonably priced, high-quality fruits and vegetables.

The Federal Seed Act (FSA) protects everyone who buys seed by prohibiting false labeling and advertising of seed in interstate commerce. The FSA also complements State seed laws by prohibiting the shipment of seed containing excessive noxious weed seeds. Labels for agricultural seed must state such information as the kinds and percentage of seed in the container, percentages of foreign matter and weed seeds, germination percentage and the date tested, and the name and address of the shipper. USDA also tests seed for seed growers and seed buyers on a fee-for-service basis to determine quality.

The Plant Variety Protection Act provides intellectual property rights protection to breeders of plants that reproduce both sexually, that is, through seeds, and through tubers. Developers of new plant varieties can apply for certificates of protection. This protection enables the breeder to market the variety exclusively for 20 years and, in so doing, creates an incentive for investment in the development of new plant varieties. Since 1970, AMS' Plant Variety Protection Office has issued more than 4,200 certificates of protection.

The Agricultural Fair Practices Act allows farmers to file complaints with USDA if a processor refuses to deal with them because they are members of a producers' bargaining or marketing association. The act makes it unlawful for handlers to coerce, intimidate, or discriminate against producers because they belong to such groups. USDA helps to institute court proceedings when farmers' rights are found to be so violated.

The Shell Egg Surveillance Program protects consumers and producers from those who would pack eggs for consumers with more low-quality shell eggs, such as dirty, cracked, and leaking eggs, than permitted by U.S. Consumer Grade B standards. Producers that would do so, intentionally or otherwise, are able to gain a financial advantage over other producers who do not. When mixed in with high-quality eggs, these low-quality eggs can be sold at a higher price, instead of being diverted for production of liquid and frozen egg products. Also consumers suffer by receiving lower quality eggs at high-quality prices.

Organic Certification

AMS is responsible for developing and implementing an organic certification program, which was authorized by the Organic Foods Production Act as part of the 1990 Farm Bill.

The goals of the organic certification program are to:

- Establish national standards governing the marketing of certain products as organically produced,
- Assure consumers that organically grown products meet consistent standards, and
- Facilitate interstate commerce in fresh and processed food that is organically produced.

Under the act, a National Organic Standards Board was appointed in January 1992. Its job is to help develop standards and recommend substances to be used in organic production and handling.

In December 1997, USDA issued a proposed rule with a comment period that closed at the end of April 1998. USDA received more than 275,000 comments on the proposal. AMS published three additional issue papers October 1998, and received more than 10,000 comments. A revised proposal was published March 13, 2000 for further comment. AMS expects to publish a final rule in 2000.

Direct Marketing and Wholesale Market Development

AMS continually seeks ways to help farmers and marketers improve the U.S. food marketing system. For example, AMS' Federal-State Marketing Improvement Program (FSMIP) provides matching funds to State Departments of Agriculture or other State agencies for marketing research or marketing service projects to improve marketing systems. The aim of the program is to reduce costs or identify new market opportunities for producers, ultimately benefitting consumers through lower food costs and more food choices. Projects include research on innovative marketing techniques, taking those research findings into the marketplace to "test market" the results, and developing State expertise in providing service to marketers of agricultural products. In FY 1999, the FSMIP program funded 25 projects in 20 States for $1.2 million dollars.

The Wholesale and Alternatives Program conducts research studies and provides technical assistance to develop alternative marketing strategies and facilitate expansion of direct marketing opportunities for small farmers. The program also works to improve the handling, processing, packaging, storage, and distribution of agricultural products. AMS researchers work with local governments and food industry groups to develop modern, efficient, wholesale food distribution centers and farmers markets.

- ***Fact about farmers markets:***
  USDA defines a farmers market as a group of farmers and vendors leasing or renting space in a common facility on a temporary basis, with an emphasis on the sale of fresh farm products, crafts, and other locally produced items. USDA estimates there are currently more than 2,700 farmers markets in the United States.

Efficient Transportation for Agriculture

An efficient transportation system allows consumers access to a wide variety of agricultural products and commodities produced beyond their own localities.

AMS, through its Transportation and Marketing Programs, conducts research on the logistical requirements and constraints involved in transporting and distributing U.S. agricultural products to destination markets by railroads, trucks, inland barges, and ocean vessels, and monitors the adequacy of existing infrastructure to support efficient commerce. The research reports and technical assistance provided by AMS transportation and marketing specialists are designed to help agricultural growers, processors, shippers, and exporters respond more effectively to emerging changes in both the domestic and international marketplace and are specifically targeted to help the smaller grower, processor, shipper, or exporter who may lack easy access to relevant market research. AMS also provides seed money to academic institutions and nonprofit organizations, in the form of cooperative agreements, for the purpose of investigating alternative marketing channels for agricultural items produced by limited-resource farmers and processors. Agricultural producers, producer groups, shippers, exporters, rural communities, carriers, and consumers all benefit from the analyses, technical assistance, and information provided by AMS.

Produce Locally, Think Globally

To remain competitive in today's world, American agriculture has become more global, and AMS has striven to be a strong partner in expanding markets for U.S. agricultural products.

The AMS role in the international marketing of U.S. commodities centers on its quality grading and certification programs, which are user-funded. Grading involves determining whether a product meets a set of quality standards. Certification ensures that contract specifications have been met—in other words, that the buyer receives the product in the condition and quantity described by the terms of the contract. AMS commodity graders frequently support other USDA agencies involved in export assistance, including the Farm Service Agency and the Foreign Agricultural Service.

U.S. companies often request certification services when exporting to a country that has specific import requirements. Certification services provided by AMS help avoid rejection of shipments or delay in delivery once the product reaches its foreign destination. Delays lead to product deterioration and, ultimately, affect the image of U.S. quality. AMS' Quality Systems Verification Program, a user-funded service for the meat industry, provides independent, third-party verification of a supplier's documented quality management system. The program was developed to promote world-class quality and to improve the international competitiveness of U.S. livestock and meat. AMS also certifies that all dairy products exported to the European Union meet specified requirements.

AMS also provides laboratory testing for exporters of domestic food commodities on a fee basis in keeping with sanitary and phytosanitary requirements of foreign countries. To date, this service has been requested by exporters of products destined for Japan, South Korea, and other Pacific Rim countries, South Africa, European Union member countries, and countries of the former Soviet Union.

For selected fruits, vegetables, nuts (including peanuts), and specialty crops, the grading of imports is mandatory. For the most part, however, firms importing agricultural products into the United States use grading services voluntarily. AMS graders are also often asked to demonstrate commodity quality to foreign firms and governments.

In addition to export grading and certification services, AMS market news offices provide information on sales and prices of both imports and exports. Today, U.S. market participants can receive market information on livestock and meat from Venezuela, Japan, Poland, Mexico, Canada, Australia, New Zealand, and other Pacific Rim markets; poultry from Canada, Mexico, Japan, Germany, and the Netherlands; fruits and vegetables from France, Great Britain, Bulgaria, Poland, Mexico, New Zealand, and Canada; ornamentals from Germany, France, and Mexico; dairy products from Eastern and Western Europe and Oceania; and a host of products from Ukraine, Kazakhstan, and Russia.

AMS participates in a number of international forums that aim to facilitate world agricultural trade and avoid potential trade barriers. Technical assistance has been provided to countries in Eastern and Central Europe, and elsewhere around the globe, to improve their marketing systems. With improved transportation, distribution, and marketing information systems, these countries will become better customers for U.S. food and fiber products.

Whether at home or abroad, AMS strives to help U.S. agriculture market its abundant, high-quality products. And AMS will continue to work to help U.S. agriculture market its products in growing world markets, while assuring U.S. consumers an abundant supply of high-quality, wholesome food at reasonable prices.

Animal and Plant Health Inspection Service: Protecting Agricultural Health and Productivity

Why are the farmers and ranchers of the United States able to produce so much food for the tables of America's consumers?

Of course, there's no simple answer. But one key to this plentiful supply of food can be summed up in a single phrase: "Healthy crops and livestock."

And this is no accident. America's agricultural health is a result of a team effort—good husbandry by farmers and ranchers plus an organized effort to control and eradicate pests and disease and to prevent the entry of devastating foreign plagues.

Just like frosts, floods, and droughts, pests and diseases can wreak havoc on agricultural productivity, depressing farm incomes and driving up food costs for consumers in the process. While we may not be able to prevent weather-related disasters, USDA plays a vital role in protecting our country's agricultural health. The result is a more abundant, higher quality, and cheaper food supply than is found anywhere else in the world.

If agriculture is the foundation of manufacture and commerce, there is perhaps no greater mission than making sure that foundation remains healthy and strong. With the advent of free trade initiatives, a global network of countries has agreed that valid agricultural health concerns—not politics nor economics—are the only acceptable basis for trade restrictions. In this environment, our country's agricultural health infrastructure will be our farmers' greatest ally in seeking new export markets.

Excluding Invasive Species

Agriculture, America's biggest industry and its largest employer, is under constant threat of attack by invasive species. Invasive species are countless and often microscopic, and they gain access to our country in surprising ways. Their potential allies are every traveler entering the United States and every American business importing agricultural products from other countries.

Invasive species are nonindigenous organisms that cause, or are likely to cause, harm to the economy, the environment, plant and animal health, or public health if introduced into the country. Organisms considered to be invasive species can include terrestrial or aquatic plants, animals, and disease agents. The estimated economic harm to the United States from these biological invaders runs in the tens of billions of dollars and may exceed $120 billion annually.

Problems associated with invasive species are national in scope and are becoming more and more widespread. For instance, conservation experts have found that invasive plant infestations cover about 100 million acres of land throughout the United States. An average of 3 million acres are estimated to be lost to invasive plants each year. This constitutes an area twice the size of Delaware.

While the United States faces an ever-increasing challenge in managing invasive species that are currently thriving across our Nation, preventing the introduction of new invasive species also has become more challenging in today's global environment. Worldwide opportunities for international commerce and travel have reached unprecedented levels. Unfortunately, this global activity has increased greatly the number of pathways for the movement and introduction of foreign, invasive agricultural pests and diseases.

APHIS historically has worked hard to safeguard American agricultural resources and prevent damage to our natural ecosystems from the introduction and establishment of those invasive species that threaten the health and vitality of domestic plants and animals. In fact, as reflected by the Agency's name, this is APHIS' core mission.

In fulfilling this mission, APHIS ensures that U.S. agricultural resources remain healthy and productive. In addition, APHIS facilitates trade by ensuring that both U.S. agricultural products exported throughout the world and foreign agricultural imports are free of plant and animal pests and diseases. This is a mission that benefits farmers and consumers at home and abroad.

Through its Plant Protection and Quarantine (PPQ), Veterinary Services (VS), International Services (IS), and Wildlife Services (WS) programs, APHIS is one of about 20 Federal agencies that deal with invasive species. These units, and their activities, contribute to APHIS' overall strategy to protect the United States from these invaders.

Agricultural Quarantine Inspection

Many passengers entering the United States do not realize that one piece of fruit packed in a suitcase has the potential to cause millions of dollars in damage to U.S. agriculture. Forbidden fruits and vegetables can carry a whole range of invasive plant diseases and pests. Oranges, for example, can introduce diseases like citrus canker or pests like the Mediterranean fruit fly (Medfly).

Similarly, sausages and other meat products from many countries can contain animal disease organisms that can live for many months and even survive processing. Meat scraps from abroad could end up in garbage that is fed to swine. If the meat came from animals infected with a disease, such as African swine fever or hog cholera, it could easily be passed to domestic swine, and a serious epidemic could result. An outbreak of African swine fever in U.S. hogs would drive up the price of pork to consumers, cost hundreds of millions of dollars to eradicate, and close many U.S. export markets.

APHIS safeguards U.S. borders against the entry of foreign agricultural pests and diseases. At all airport terminals, seaports, and border stations, about 1,600 PPQ employees inspect international conveyances and the baggage of passengers for plant and animal products that could harbor pests or disease organisms. At international airports, detector dogs in APHIS' Beagle Brigade help find prohibited agricultural materials. PPQ officers also inspect ship and air cargoes, rail and truck freight, and package mail from foreign countries. At animal import centers, APHIS veterinarians check animals in quarantine to make sure they are not infected with any foreign pests or diseases before being allowed into the country.

The following table provides selected inspection and interception data:

Fiscal Year (FY)	*1995*	*1996*	*1997*	*1998*	*1999**
Ships Inspected	52,661	52,974	52,348	50,778	53,978
Aircraft Inspected	401,741	410,318	461,927	422,735	442,500
Passengers and Crew Inspected	65,645,734	66,119,960	68,448,289	72,191,992	69,000,720
Interceptions of Plant Material	1,583,687	1,567,886	1,609,370	1,480,773	1,582,890
Interceptions of Pests	58,032	48,483	62,830	52,761	57,039
Interceptions of Meat/Poultry Products	223,392	264,001	294,674	331,616	287,351
Baggage Civil Penalties-Number	21,813	20,716	21,498	19,302	21,732
Baggage Civil Penalties-Amount of Fines	$1,098,220	$1,080,000	$1,107,670	$1,004,725	$1,128,247

*Note: 1999 data is based on a projected 3-percent increase. Projections were required due to data gaps attributable to administrative confusion during the 1999 consolidation of PPQ's Northeast and Southeast Regions.

From high-tech to a keen nose, APHIS uses a variety of means to safeguard American agriculture. PPQ officers augment visual inspection with some 85 x-ray units that help check passenger baggage and mail for prohibited agricultural materials. They also have enlisted trained detector dogs and their keen sense of smell to help sniff out prohibited fruit and meat. On leashes and under the constant supervision of their handlers, the friendly beagles in USDA's Beagle Brigade have checked the baggage of passengers arriving from overseas since 1984. Currently, APHIS has about 57 canine teams at 20 airports and 5 land-border crossings.

Preclearance - Checking at the Source

In addition to domestic exclusion efforts, APHIS has a corps of experts stationed overseas, sometimes with the help of APHIS officers on temporary duty, that bolsters the Nation's defenses against exotic pests and diseases. Often it is more practical and effective to check and monitor commodities for pests or diseases at the source through preclearance programs. APHIS has special arrangements with a number of countries for preclearance programs, which are summarized in the following table.

Country	*Commodities*
Argentina	Apples, pears
Belgium	Flower bulbs
Brazil	Mangoes
Chile	Stonefruit, berries, grapes, cut flowers, cherimoya, kiwifruit, other fruits and vegetables
Costa Rica	Mangoes
Ecuador	Mangoes, melons (free zone)
Great Britain	Flower bulbs
Guatemala	Mangoes
Haiti	Mangoes
Ireland	Flower bulbs
Jamaica	Ugli fruit, cut flowers, papaya, 46 other commodities
Japan	Sand pears, Unshu oranges, Fuji apples
Korea	Sand pears, mandarin oranges
Mexico	Mangoes, citrus (fumigation or from Sonora free zone), apples, apricots, peaches, persimmons, pomegranates (Sonora free zone)
New Zealand	apples, pears, Nashi pears
The Netherlands	Flower bulbs
Nicaragua	Mangoes
Peru	Mangoes
Scotland	Flower bulbs
South Africa	Apples, pears, plums, grapes, peaches, nectarines, citrus
Spain	Lemons, clementines, Valencia oranges
Turkey	Flowers bulbs
Venezuela	Mangoes

International Programs

Through direct overseas contacts, IS employees gather and exchange information on plant and animal health; work to strengthen national, regional, and international agricultural health organizations; and cooperate in international programs against certain pests and diseases that directly threaten American agriculture. Two of the latter are the MOSCAMED program—which combats Medfly infestations in Mexico and Guatemala—and a program to eradicate screwworms, a parasitic insect of warm-blooded animals. Screwworm flies lay their eggs on the edge of open wounds, and the developing larvae feed on the living flesh of the host. Left untreated, the infestation can be fatal.

Screwworms were eradicated from the United States through the use of the sterile insect technique. With this method, millions of screwworm flies are reared in captivity, sterilized, and then released over infested areas to mate with native fertile flies. Eggs produced through such matings do not hatch, and the insect literally breeds itself out of existence.

To provide further protection to U.S. livestock, starting in 1972, eradication efforts were moved southward from the U.S.-Mexican border, with the eventual goal of establishing a barrier of sterile flies across the Isthmus of Panama. To date, screwworms have been eradicated from Mexico, Guatemala, Belize, Honduras, El Salvador, and Nicaragua. Eradication is well advanced in Costa Rica; and as of June 1999, no new cases had been reported since March 18, 1999. Eradication in Panama began in 1998, and a new rearing facility is planned. Currently, the production plant at Tuxtla Gutierrez, Chiapas, in Mexico is producing 143 million sterile flies weekly. The plant has the capacity to produce 500 million sterile flies weekly.

IS also works to prevent foot-and-mouth disease (FMD) from entering Mexico, Central America, and Panama and works with Colombia to eliminate FMD from the northern part of that country.

Coping With Invasions

If, despite our best efforts, foreign pests or diseases do manage to slip past our phytosanitary defenses, APHIS establishes appropriate quarantine and eradication programs. Current examples include: 1) citrus canker eradication in Florida; 2) plum pox eradication in Pennsylvania, and 3) Asian longhorned beetle eradication in metropolitan Chicago and New York City.

APHIS PPQ has a special cadre of people who deal with introductions of exotic, invasive plant pests. Known as “rapid response teams,” these groups have been mobilized on several occasions to combat costly infestations of Medflies and to perform other tasks.

Early detection of exotic animal diseases by alert livestock producers and practicing veterinarians who contact specially trained State and Federal veterinarians is the key to their quick detection and elimination. More than 300 such trained veterinarians are located throughout the United States to investigate suspected foreign diseases. Within 24 hours of diagnosis, one of two specially trained task forces in VS can be mobilized at the site of an outbreak to implement the measures necessary to eradicate the disease.

Currently, APHIS officials are actively working to prevent the entry of bovine spongiform encephalopathy (BSE)—sometimes referred to as "mad cow disease." This disease has had a serious impact on the British livestock industry. BSE has never been diagnosed in the United States. Since 1989, APHIS has restricted the importation of live ruminants and ruminant products—including animal feed made with ruminant protein—from Great Britain and other countries where BSE is known to exist. In addition, APHIS has conducted a BSE surveillance program since 1989. Specialists have examined brain specimens from more than 10,062 cattle and have found no evidence of BSE.

In an effort to evaluate and ultimately improve pest exclusion efforts, APHIS contracted with the National Plant Board to conduct a thorough review of all components of the Agency's safeguarding system. The review group, which was comprised of State, industry, and university representatives, reviewed APHIS' pest exclusion efforts, international pest information systems, pest permits, and detection and response efforts. After concluding its review, the group made approximately 300 recommendations, published in a safeguarding report, that they believe will assist APHIS in adapting its safeguarding efforts to better manage drastic increases in trade and international travel.

APHIS' PPQ program has already formed a leadership group to assess the safeguarding report's recommendations and develop strategies for their implementation. PPQ leadership group formed committees to address the specific recommendations. These committees plan to have implementation strategies ready for Agency consideration by the summer of 2000.

Import-Export Regulations

APHIS is responsible for enforcing regulations governing the import and export of animals and plants and certain agricultural products.

Importation requirements depend on both the product and the country of origin. Certain restrictions, ranging from processing to total import prohibition, are placed on both animals and animal products—such as meats and hides—if they originate in countries that have a different disease status from the United States. Livestock and poultry must be accompanied by a health certificate issued by an official of the exporting country.

Imports of livestock and poultry from most countries must enter the United States through APHIS-approved quarantine facilities. Animals from Mexico and Canada may cross at land ports along the borders as long as they have met certain specified requirements and are accompanied by the appropriate paperwork.

Personally owned pet birds can enter through one of four USDA-operated bird quarantine facilities: New York, NY; Miami, FL; San Ysidro, CA; and Hidalgo, TX. Those that qualify as U.S.-origin birds may return through any port of entry when arrangements have been made for an APHIS-VS veterinarian to inspect their bird.

Pet birds from Canada can enter without quarantine because Canada's animal disease programs and import rules are similar to those of the United States. Commercial shipments of pet birds can enter through one of the privately owned, APHIS-supervised quarantine facilities. APHIS cooperates with the U.S. Department of the Interior in carrying out provisions of the Endangered Species Act that deal with

imports and exports of endangered plant, animal, or bird species. APHIS inspectors at ports of entry look out for and identify these species and notify Interior of Convention on International Trade in Endangered Species (CITES)-protected species found during inspection. Also, at many ports, APHIS officials inspect and sample seed imported from foreign countries to ensure that it is accurately labeled and free of noxious weeds.

Imported plants must be accompanied by a phytosanitary certificate issued by an official of the exporting country. APHIS maintains 16 plant inspection stations, the largest of which is in Miami, FL, for commercial importation of plant materials. Smaller stations are at Orlando, FL; San Juan, PR; John F. Kennedy International Airport, Jamaica, NY; Linden, NJ; Houston, El Paso, and Los Indios (Brownsville), TX; Nogales, AZ; San Diego, Los Angeles, and San Francisco, CA; Seattle, WA; Honolulu, HI; Beltsville, MD (used strictly for importations of plants for research purposes); and New Orleans, LA.

To facilitate agricultural exports, APHIS officials certify the health of both plants and animals that are shipped to foreign countries. APHIS PPQ provides assurance that U.S. plants and plant products meet the plant quarantine import requirements of foreign countries. This assurance is in the form of a phytosanitary certificate issued by PPQ or its State cooperators. During FY 1999, more than 313,000 phytosanitary certificates were issued for exports of plants and plant products.

VS officials and the National Center for Import and Export negotiate animal health requirements for export of livestock, germplasm, poultry and animal products with the importing countries. These requirements are maintained in the International Regulations Retrieval System (IRRS). VS area offices and major exporters have access to the system. IRRS is also available on the World Wide Web.

USDA accredited veterinarians issue health certificates in order to meet U.S. requirements and the requirements of the recipient country. These health certificates are endorsed by VS area veterinarians in the State of origin. The final inspection of livestock is conducted by a VS port veterinarian at the port of embarkation. This inspection is not required for livestock shipped to Canada and Mexico if they are shipped through land border ports.

It is in the area of foreign health requirements that APHIS is of greatest help to the U.S. livestock industry. Through direct negotiations with foreign governments, APHIS has established approximately 450 livestock, semen, embryo, and poultry health agreements with more than 100 countries in the world. These negotiations are a continuous process wherever APHIS finds opportunities to open new markets and to reduce unnecessary impediments or changing disease conditions require adjustments. In 1996, APHIS averted a ban of U.S. poultry meat to Russia and China worth more than $2 billion.

In addition to certifying the health of agricultural exports, APHIS officials mount a proactive approach to the marketing of U.S. crops and livestock overseas. For instance, APHIS and Food Safety and Inspection Service officials coordinated negotiations to avert a Russian embargo on U.S. poultry exports worth $600 million a year. On the plant side, efforts by APHIS and Foreign Agricultural Service (FAS) officials helped maintain U.S. wheat exports after the March 1996 discovery of an outbreak of

Karnal bunt, a fungal disease of wheat, in Arizona. The United States is the world's leading wheat exporter, accounting for 27 percent of world wheat exports in 1999. U.S. wheat exports in calendar 1999 were valued at $3.5 billion.

APHIS and FAS officials also helped to achieve an agreement with China in April 1999 that lifted that country's ban on the importation of U.S. citrus from the citrus-producing States of Arizona, California, Florida, and Texas. As a result, in March 2000, the first shipments of U.S. citrus to China departed from California. Citrus will now be exported from Arizona, California, Florida, and Texas because APHIS was able to demonstrate the effectiveness of U.S. phytosanitary security measures. Industry experts predict that citrus exports to China will exceed $500 million annually by the year 2004.

Domestic Plant Health Programs

In most cases, plant pest problems are handled by individual farmers, ranchers, and other property owners and their State or local governments. However, when an insect, weed, or disease poses a particularly serious threat to a major crop, the Nation's forests, or other plant resources, APHIS may join in the control work.

Most pests and weeds that are targets of APHIS-PPQ programs are not native to America. They gained entry into this country through commercial trade channels, international travelers, or other means.

When invasive pests are new to this country, control techniques may not be available. In any case, PPQ applies interstate quarantines and takes other steps to prevent spread until effective control measures can be developed.

In many cases, foreign pests are only minor problems in their native lands because they are kept in check by native parasites, predators, and diseases. Since many of these natural enemies may not exist in the United States, one of PPQ's control techniques—in cooperation with USDA's Agricultural Research Service—is the importation, rearing, and release of parasites and other biological control organisms.

Biocontrol—Nature's Way

In its classical sense, biological control means using predators, parasites, and pathogens to combat invasive pests. Predators and parasites include insects, mites, and nematodes that naturally attack a target pest. Pathogens include bacteria, viruses, or fungi that cause diseases specifically injurious to a target pest.

Biological control was first put to broad, practical use in the United States in the 1880's. At that time, California citrus groves were being devastated by an exotic insect, the cottony-cushion scale. A USDA scout working in Australia found the vedalia beetle feeding on the scale insect. The beetle, part of the lady beetle family, was successfully introduced into California and other citrus-growing regions and has kept the scale insect from causing economic damage ever since.

To coordinate the important search for new and better biocontrol opportunities, a National Biological Control Institute was established in APHIS in 1989. The

Institute's mission is to promote, facilitate, and provide leadership for biological control. Its main work is to compile and release technical information and coordinate the work needed to find, identify, and augment or distribute new biological control agents.

The Institute relies on scientists from USDA's Agricultural Research Service (ARS) and elsewhere to identify potentially useful biological control agents. These agents are carefully screened at quarantine centers before being put to use.

Various agencies have successfully cooperated on biocontrol projects. For example, several decades ago, ARS scientists found six species of stingless wasps in Europe that keep alfalfa weevils in check. In 1980, APHIS took on the job of establishing these beneficial wasps across the land. Between 1980 and 1989, APHIS and its cooperators raised and distributed about 17 million wasps, and today there are beneficial wasps within reach of virtually every alfalfa field in the country. It is estimated that the benefits of the alfalfa weevil biocontrol program amount to about $88 million per year, representing a return of about $87 for each $1 spent on the project.

Other APHIS biocontrol programs currently underway in cooperation with State agencies include efforts against the cereal leaf beetle, sweet potato whitefly, Colorado potato beetle, brown citrus aphid, pink hibiscus mealybug, gypsy moth, imported fire ant, leafy spurge, purple loosestrife, Russian knapweed, dalmatian and yellow toadflax, and diffuse and spotted knapweed. Promising biocontrol agents for other pests are being tested at PPQ biocontrol labs located at Mission, TX; Niles, MI; and Bozeman, MT.

"Deliver Us From Weevil"—Boll Weevil Eradication

One major domestic program PPQ is coordinating is the effort to eradicate boll weevils from the United States. The boll weevil entered this country from Mexico in the late 1890's and soon became a major pest of cotton. It has caused an estimated $12 billion in losses to the Nation's economy. In 1973, it was estimated that insecticides applied to control boll weevils accounted for about one-third of the total applied to agricultural crops in the United States.

The success of a 1971-73 cooperative boll weevil eradication experiment in portions of Mississippi, Louisiana, and Alabama involving Federal and State agencies and grower associations led to two 3-year demonstration projects. One was an eradication trial in North Carolina and Virginia; the second was an optimum pest management trial in Mississippi. The eradication trial was a success in 1980, and the program has undergone regular, incremental expansion since that time.

The current boll weevil eradication effort judiciously applies pesticides based on the number of adult weevils trapped around cotton fields. The traps contain a pheromone (insect attractant) and a small amount of insecticide that kills all captured weevils. In eradication program areas, traps are placed at a rate of one trap per 1 to 3 acres and are checked weekly. Pesticide is applied only to fields that reach a predetermined number of trapped weevils. This selective use of pesticides results in fields requiring minimal pesticide applications—sometimes none—during the growing season. After several seasons, the weevils are eradicated within the defined program area, eliminating any further need to spray for this pest. As an indirect benefit of eliminating the boll weevil, growers are able to maintain beneficial insects that help

control many secondary pests. This further reduces the amount of pesticide used each season to produce the cotton crop.

The table below shows the progress in eradicating boll weevils from U.S. cotton-growing areas.

	States Involved	*Eradication* Acres	*Weevil-free* Acres
1983	VA/NC/SC	160,000	35,000
1985	+CA/AZ	1,400,000	1,100,000
1987	+GA/FL/AL	450,000	1,500,000
1994	+MS/TN/TX	50,000	2,000,000
1996	Same	1,300,000	4,600,000
1997	+LA	1,600,000	4,600,000
1998	+OK	2,000,000	4,600,000
2000	+AR/NM	7,200,000	4,700,000

In the cooperative boll weevil eradication program, APHIS provides technical support, a portion of program funds, and some capital equipment and administrative support. Grower assessments and/or State appropriations will provide 96 percent of total program costs in 2000, with APHIS providing the remaining 4 percent.

The economic benefits-to-cost ratio for the program has been projected to be 21 to 1 nationwide, and as high as 40 to 1 in specific areas of the Cotton Belt. The success of the program has brought a resurgence of cotton production and related industries. Acreage in the Southeast has increased nearly fourfold since the weevil's eradication. Cotton growers in eradicated areas are better able to withstand difficult economic times, such as the low market prices of 1998-2000, because their production costs–without the weevil–are much lower than those in the infested areas.

Witchweed—A Success Story

Witchweed is a parasitic invasive plant that attaches itself to the roots of crops such as corn, sorghum, sugar cane, and other members of the grass family, robbing them of water and vital nutrients. Each plant can produce up to 500,000 seeds per year, and the seeds can remain viable in the soil for up to 15 years, germinating when they come into contact with the root of a host plant.

Witchweed was introduced into the Carolinas from Africa in the mid-1950's. When the parasite first struck, corn plants mysteriously withered and died. A student visiting from India recognized the weed and told U.S. agricultural experts what it was.

Over the course of an eradication effort that began in 1974, some 450,000 acres have been infested. The eradication program was based on surveillance to locate infested fields, quarantines to prevent spread, and a combination of herbicides and germination stimulants to actually eradicate the weed.

At the beginning of FY 1995, with fewer than 28,000 infested acres remaining, APHIS turned operation of the program over to North Carolina to complete eradication there, but continues to help finish the eradication effort in South Carolina. In the spring of 2000, infested areas have been reduced to 5,416 acres in North Carolina and 943 acres in South Carolina.

Grasshoppers and IPM

APHIS was the lead agency in a cooperative Integrated Pest Management (IPM) initiative for grasshopper control in the Western United States. This IPM project, which began in 1987 and closed down in 1994, was aimed at finding better and more acceptable ways of preventing grasshopper damage, while protecting the environment. Activities included developing means to predict and manage grasshopper outbreaks, developing biological control alternatives that minimize the use of chemicals, and integrating proven control techniques into guidelines for APHIS rangeland grasshopper programs.

All this information was integrated into a computer-based decision support system program called "HOPPER." HOPPER is a user-friendly software package that facilitates grasshopper predictions, time and selection of control options, compilation of weather data, and analysis of the economics of range management practices. An example of how HOPPER is used was provided by a Logan County, CO, official in August 1996. He wrote: "I was recently asked to utilize the district's resources to help ranchers save grass pasture obviously threatened by grasshoppers." Using the HOPPER computer model (previously downloaded from the Internet) he estimated the return and decided on the best treatment method.

"We discovered that we would spend $4 per acre in an effort to save $1.50 per acre of grass. The ranchers quickly realized they could purchase hay to replace lost forage and save money. The program showed us we would also have very little effect on next year's population. It also showed us that we should initiate any control effort sooner in the year than we have done in the past."

APHIS is conducting surveys in order to assess how extensive crop protection activities must be to prevent the migration of grasshoppers from public to private lands and the subsequent destruction of high value crops. APHIS officials estimate that crop protection activities in the Western States—including Utah, Idaho, North Dakota, and Oregon—could cost as much as $1.3 million. APHIS officials are working with Bureau of Land Management and USDA's Forest Service to prepare appropriate environmental documentation that will allow Federal officials to deal with any high grasshopper populations that may develop in the spring or summer of 2000. Such documentation will supplement a 1987 environmental impact statement and allow officials to use all available and appropriate technologies—such as Dimilin, an insecticide—during periods of elevated grasshopper populations.

Other domestic PPQ programs include a quarantine program to prevent the artificial spread of the European gypsy moth from infested areas in the Northeastern United States through movement of outdoor household goods and other articles; quarantines to prevent the spread of imported fire ants through movement of plant nursery material from infested areas; and releasing irradiated sterile pink bollworm moths to keep this insect out of cotton in California's San Joaquin Valley.

Asian Longhorned Beetle (ALB)

Since 1996, infestations of the ALB, a destructive pest of hardwood, have been detected in and around five areas of New York, including Amityville, Brooklyn, Long Island, Manhattan, and Queens. There have also been several finds in the vicinity and

city of Chicago, Illinois. The most significant recent find in New York occurred on August 19, 1999. A dead adult ALB was found in a New York City playground approximately 1 mile from the east side of Central Park and 2 miles from the site of the Brooklyn infestation. Since that time, 23 infested trees have been removed and destroyed in this area, and APHIS officials continue surveillance activities.

In Chicago, Illinois, APHIS and its city, State, and USDA cooperators continue with the ALB eradication program in Ravenswood, Addison, Summit, and Park Ridge to prevent the pest's spread. On February 2, 2000, APHIS published an interim rule amending the ALB quarantine areas in Chicago and added two new areas in Cook County, Illinois. To date, approximately 1,200 infested trees have been identified and removed from the four ALB infested areas; of these, slightly more than 1,100 were from the Ravenswood area, 51 from Addison, 25 from Summit, and 4 from Park Ridge. Public relations and education efforts via television, newspapers, and radio have greatly assisted the cooperative ALB eradication program. For example, local residents were responsible for the ALB identifications in Summit and Addison.

In other efforts to address this invasive pest, Secretary Glickman signed a declaration of emergency in March 1999 and transferred $5.5 million from the Commodity Credit Corporation (CCC) to APHIS for ALB eradication programs in Illinois and New York. In March 2000, $14.1 million in CCC funds was provided for USDA efforts to eradicate the pest and replace damaged trees.

In September 1998, APHIS published an interim rule in the Federal Register banning entry into the United States of untreated solid wood packing materials from the Peoples' Republic of China—the probable source of the ALB introductions—and Hong Kong. In January 1999 APHIS officials published an advance notice of proposed rulemaking to solicit public suggestions regarding additional regulatory action concerning solid wood packing materials. APHIS is also helping coordinate ALB research programs. In addition, APHIS initiated a pilot control program using imidacloprid, a systemic insecticide applied by soil or trunk injection, in the late spring of 2000.

Citrus Canker

Citrus canker is a devastating bacterial disease that greatly reduces production in citrus trees by causing fruit and leaves to drop prematurely. It was first detected in residential trees in Florida's Dade County in 1995; since then, it has been detected in commercial and residential trees in five other counties: Manatee, Collier, Broward, Hendry, and Hillsborough. APHIS officials have worked with Florida officials since 1995 to conduct an eradication program in quarantined areas now totaling nearly 600 square miles.

The most recent detections of citrus canker have occurred in lime groves in the Florida City area of Dade County. This is the first detection of the disease in limes in the United States. The Florida City area accounts for nearly all the limes grown in the United States—about 3,500 acres—and provides approximately 10 percent of the limes used in this country. To date, 710 of the 803 acres of lime groves surveyed have been found positive for citrus canker. This will significantly impact lime producers

and packers in the area. APHIS is working with the State to revise the quarantine boundaries; in addition to affecting lime producers, the quarantines will also affect numerous area nurseries.

Effective March 15, 1999, Secretary Glickman issued a declaration of emergency enabling the release of Federal emergency funding for citrus canker eradication and control efforts in Florida. $25 million was made available for control efforts in FY 1999.

Additionally, on February 11, 2000, Florida Governor Jeb Bush declared a citrus canker state of emergency in Collier, Broward, Hendry, Hillsborough, Manatee, and Miami-Dade Counties. Recent scientific information has caused both Federal and State officials to consider more intensive disease efforts. Accordingly, APHIS worked with the State to develop an eradication program estimated to cost $170.9 million.

On February 22, USDA officials, along with Deputy Secretary Richard E. Rominger, met in Orlando, Florida, with State and citrus industry representatives to consider the appropriate response to the spread of citrus canker in Florida. In particular, it was resolved that Florida would take full responsibility for tree removal, implementing a recommended 1,900 foot buffer area. Tree removal will begin at the north and south borders of the infestation, working toward the center. The plan is to accomplish this exhaustive tree removal program within 1 year. In addition, APHIS and affected industry representatives continue work on an agreeable operational plan for tree removal.

Domestic Animal Health Programs

Protecting the health of the Nation's livestock and poultry industries is the responsibility of APHIS-VS.

VS veterinary medical officers and animal health technicians work with their counterparts in the States and with livestock producers to carry out cooperative programs to control and eradicate certain animal diseases. The decision to begin a nationwide campaign against a domestic animal disease is based on a number of factors, the most important of which is: "Are producers and the livestock industry a leading force in the campaign?"

This organized effort against livestock diseases began in 1884 when Congress created a special agency within USDA to combat bovine pleuropneumonia—a dreaded cattle disease that was crippling exports as well as taking a heavy toll on domestic cattle. Within 8 years, contagious bovine pleuropneumonia had been eradicated and this campaign set the pattern for subsequent animal disease control and eradication programs.

To date, 13 serious livestock and poultry diseases have been eradicated from the United States. They are:

Diseases Eradicated from the United States

Year	*Disease*
1892	Contagious bovine pleuropneumonia
1929	Foot-and-mouth disease
1929	Fowl plague
1934	Glanders
1942	Dourine
1943	Texas cattle fever
1959	Vesicular exanthema
1959 & 66	Screwworms (Southeast & Southwest)
1971	Venezuelan equine encephalitis
1973	Sheep scabies
1974	Exotic Newcastle disease
1978	Hog cholera
1985	Lethal avian influenza

Current VS disease eradication programs include cooperative State-Federal efforts directed at cattle and swine brucellosis, bovine tuberculosis, and pseudorabies in swine. The following table shows the status of States in these programs.

State	*Cattle* Brucellosis*	*Swine* Brucellosis**	*Cattle* TB***	*Swine* Pseudorabies****
AL	FREE	FREE	FREE	FREE
AK	FREE	FREE	FREE	FREE
AZ	FREE	FREE	FREE	FREE
AR	FREE	STAGE 2	FREE	FREE
CA	FREE	FREE	FREE	STAGE 4
CO	FREE	FREE	FREE	FREE
CT	FREE	FREE	FREE	FREE
DE	FREE	FREE	FREE	FREE
FL	CLASS A	STAGE 2	FREE	STAGE 3
GA	FREE	FREE	FREE	FREE
HI	FREE	FREE	FREE	FREE
ID	FREE	FREE	FREE	FREE
IL	FREE	FREE	FREE	A = STAGE 3/4
IN	FREE	FREE	FREE	STAGE 3
IA	FREE	FREE	FREE	STAGE 2/3
KS	FREE	FREE	FREE	FREE
KY	FREE	FREE	FREE	FREE
LA	CLASS A	STAGE 2	FREE	STAGE 3
ME	FREE	FREE	FREE	FREE
MD	FREE	FREE	FREE	FREE
MA	FREE	FREE	FREE	STAGE 3
MI	FREE	FREE	FREE & M-A	STAGE 4
MN	FREE	FREE	FREE	STAGE 3

MS	FREE	FREE	FREE	FREE
MO	CLASS A	FREE	FREE	FREE
MT	FREE	FREE	FREE	FREE
NE	FREE	FREE	FREE	STAGE 3
NV	FREE	FREE	FREE	FREE
NH	FREE	FREE	FREE	FREE
NJ	FREE	FREE	FREE	STAGE 3/4
NM	FREE	FREE	M-A	FREE
NY	FREE	FREE	FREE	FREE
NC	FREE	FREE	FREE	STAGE 4
ND	FREE	FREE	FREE	FREE
OH	FREE	FREE	FREE	STAGE 4
OK	CLASS A	FREE	FREE	FREE
OR	FREE	FREE	FREE	FREE
PA	FREE	FREE	FREE	STAGE 4
PR	FREE	FREE	FREE	FREE
RI	FREE	FREE	FREE	FREE
SC	FREE	FREE	FREE	FREE
SD	CLASS A	FREE	FREE	STAGE 4
TN	FREE	FREE	FREE	FREE
TX	CLASS A	STAGE 2	M-A	STAGE 3
UT	FREE	FREE	FREE	FREE
VT	FREE	FREE	FREE	FREE
VI	FREE	FREE	FREE	FREE
VA	FREE	FREE	FREE	FREE
WA	FREE	FREE	FREE	FREE
WV	FREE	FREE	FREE	FREE
WI	FREE	FREE	FREE	STAGE 4
WY	FREE	FREE	FREE	FREE

* Class A (less than 0.25 percent herd infection rate) or Class Free

** Stage 2 (infected herds/State has met eradication program requirements established by United States Animal Health Association), or Free (no infected herds)

*** Modified Accredited (M-A) (confirmed tuberculosis in two or more herds within the last 5 years) or Accredited Free (not had tuberculosis within at least a 5-year period). Split State status in MI includes Accredited Free zone and M-A zone

**** Stage 2 (eradication program initiated, more than 1 percent of herds in State infected), Stage 3 (eradication program initiated, less than 1 percent of herds in State infected), Stage 4 (no known infections in State for at least 1 year), or Free (no known infections for 1 year or more)

Disease control and eradication measures include quarantines to stop the movement of possibly infected or exposed animals, testing and examination to detect infection, destruction of infected (sometimes exposed) animals to prevent further disease spread, treatment to eliminate parasites, vaccination in some cases, and cleaning and disinfection of contaminated premises. In addition to the programs listed above, APHIS also cooperates with States in a voluntary Flock Certification program to combat scrapie in sheep and goats. By April 1998, 260 sheep and goat flocks had been enrolled in the certification program. A current listing of enrolled flocks, by State and by breed, is available on the World Wide Web: *http://www.aphis.usda.gov/vs/scrapie/status.html*.

APHIS animal health programs are carried out by a field force of about 250 veterinarians and 360 lay inspectors working out of area offices (usually located in State capitals). Laboratory support for these programs is supplied by APHIS' National Veterinary Services Laboratories (NVSL) at Ames, IA, and Plum Island, NY, which are centers of excellence in the diagnostic sciences and an integral part of APHIS' animal health programs.

Under the Virus-Serum-Toxin Act of 1913, APHIS enforces regulations to assure that animal vaccines and other veterinary biologics are safe, pure, potent, and effective. Veterinary biologics are products designed to diagnose, prevent, or treat animal diseases. They are used to protect or diagnose disease in a variety of domestic animals, including farm animals, household pets, poultry, fish, and fur bearers.

In contrast to animal medicines, drugs, or chemicals—all of which are regulated by the U.S. Food and Drug Administration—veterinary biologics are derivatives of living organisms. Unlike some pharmaceutical products, most biologics leave no chemical residues in animals. Furthermore, most disease organisms do not develop resistance to the immune response produced by a veterinary biologic.

Veterinarians and other professionals in the APHIS VS Center for Veterinary Biologics regulate and license all veterinary biologics as well as the facilities where they are produced. They also inspect and monitor the production of veterinary biologics, including both genetically engineered products and products produced by conventional means. Necessary tests of veterinary biologics are conducted at NVSL.

APHIS also regulates the licensing and production of genetically engineered vaccines and other veterinary biologics. These products range from diagnostic kits for feline leukemia virus to genetically engineered vaccines to prevent pseudorabies, a serious disease affecting swine. With the pseudorabies vaccines, tests kits have been developed to distinguish between infected animals and those vaccinated with genetically engineered vaccines.

Since the first vaccine was licensed in 1979, a total of 79 genetically engineered biologics have been licensed; all but 20 are still being produced.

More than a half-century ago, there were perhaps half a dozen animal vaccines and other biologics available to farmers. Now there are 2,379 active product licenses and 110 licensed manufacturers.

Monitoring Plant and Animal Pests and Diseases

In order to combat invasive plant pests and animal diseases, APHIS PPQ works with the States in a project called the Cooperative Agricultural Pest Survey, which started in 1982 as a pilot project. Survey data on invasive species such as weeds, insects, and plant diseases and pests are entered into a nationwide database, the National Agricultural Pest Information System (NAPIS). This database can be accessed from anywhere in the country by persons with an authorized account.

By accessing NAPIS, users can retrieve the latest data on pests. NAPIS data can assist pest forecasting, early pest warning, quicker and more precise delimiting efforts, and better planning for plant pest eradication or control efforts. Survey data—which can reflect the absence as well as the presence of pests—also help U.S. exports, assuring foreign countries that our commodities are free of specific invasive pests and diseases.

There are more than a million records in the NAPIS database. Approximately 200 Federal and State agencies use NAPIS, which contains survey data files as well as text and graphics files. The data can be downloaded and analyzed with geographic information systems to provide graphic representation of information. For example, locations of pine shoot beetle detections can be shown graphically as well as where and how often surveys have been conducted for the beetle. This information is used by the State and Federal agencies regulating this pest.

Describing animal health and management in the United States is the goal of the APHIS National Animal Health Monitoring System (NAHMS). This program, which is conducted by VS, began in 1983.

NAHMS compiles statistics and information from existing data bases and gathers new data through short- and long-term targeted studies to present a baseline picture of animal agriculture. This information then can be used to predict trends and improve animal production efficiency and food quality. NAHMS provides statistically sound data concerning U.S. livestock and poultry diseases and disease conditions, along with their costs and associated production practices. By the end of 1999, NAHMS had conducted 11 national studies on U.S. animal populations: swine (2), dairy (2), beef cow/calf (2) , beef feedlot (2), sheep (1), table egg layer chickens (1), and catfish (1). Sentinel monitoring of morbidity and mortality in beef feedlots is an ongoing monitoring project, as is bulk tank somatic cell count, the National Animal Health Reporting System, and the National Antimicrobial Resistance Monitoring System.

Information from NAHMS aids a broad group of users throughout agriculture. For instance, baseline animal health and management data from NAHMS national studies are helping analysts identify associations between Salmonella and cattle management. NAHMS data are also helping researchers evaluate management practices that contribute to the occurrence of Johne's disease and digital dermatitis in cattle. State and national officials, industry groups, and producers apply NAHMS data and information in educational programs and in setting research priorities.

NAHMS information is available through the World Wide Web (*http://www.aphis.usda.gov/vs/ceah*); see the Center for Animal Health Monitoring.

Regulating Biotechnology in Agriculture

Scientists use agricultural biotechnology with a variety of laboratory techniques, such as genetic engineering, to improve plants, animals, and micro-organisms. Recent discoveries have led to virus-resistant crops such as cucumbers, tomatoes, and potatoes; to better vaccines and diagnostic kits used for diseases of horses, chickens, and swine; and even to new and improved varieties of commercial flowers.

Since 1987, APHIS' role in agricultural biotechnology has been to manage and oversee regulations to ensure the safe and rapid development of the products of biotechnology. Applicants under APHIS' effective regulations and practical guidelines can safely test—outside of the physical containment of the laboratory—genetically engineered organisms.

APHIS officials issue permits or acknowledge notification for the importation, interstate movement, or field testing of genetically engineered plants, microorganisms, and invertebrates that are developed from components of plant pathogenic material.

Since 1987, APHIS has issued more than 5,400 release permits and notifications at more than 24,000 sites in the United States. The biotechnology regulations also provide for an exemption process once it has been established that a genetically engineered product does not present a plant pest risk. Under this process, applicants can petition APHIS for a determination of nonregulated status for specific genetically engineered products. Over 2-1/2 years, 20 new engineered plant lines in 11 crops have been proven safe and no longer need to be regulated by APHIS. One was the first genetically engineered sugar beet, which is herbicide tolerant.

Recent deregulated commodities include:

- tomato line with insect resistance
- rapeseed (canola) line with herbicide tolerance
- corn line with herbicide tolerance
- flax line tolerant to herbicide residues in soils.

APHIS biotechnology personnel meet with regulatory officials from other nations on a regular basis to foster regulatory harmonization. These discussions are intended to help ensure that requirements imposed by other countries are as consistent as possible with U.S. requirements and that our trading partners are kept informed of biotechnology regulatory developments.

Controlling Wildlife Damage

The mission of APHIS' Wildlife Services (WS) program is to provide Federal leadership in managing problems caused by wildlife. Wildlife is a significant public resource that is greatly valued by the American public. But by its very nature, wildlife also can damage agricultural and industrial resources, pose risks to human health and safety, and affect other natural resources. WS helps solve problems that occur when human activity and wildlife are in conflict with one another. In doing so, WS attempts to develop and use wildlife management strategies that are biologically, environmentally, and socially sound.

The need for effective and environmentally sound wildlife damage management is rising dramatically. There are several reasons for this. Increased suburban development is intruding upon traditional wildlife habitats. Population explosions among some adaptable wildlife species—such as coyotes, deer, and geese—pose increasing risks to human activities. At the same time, advances in science and technology are providing alternative methods for solving wildlife problems.

More than half of U.S. farmers experience economic loss from damage caused by wildlife. WS plays a leadership role in cooperative efforts with the States and agriculture producers across the country to protect farm crops, livestock, aquaculture, and forest resources from damage caused by wildlife. Annual wildlife depredation losses to selected agricultural commodities in the United States have been documented by the National Agricultural Statistics Service (NASS). The losses include predator

losses of cattle, sheep, and goats estimated at more than $65 million; over $110 million for corn, blueberries, and sunflowers; and more than $14 million for farm-raised catfish and trout. Wildlife damage to U.S. agriculture excluding forest resources is estimated at between $600 million and $1.6 billion annually.

WS has a long history of supporting rural America by providing assistance to thousands of small farm and property owners. Small farms, many struggling under a nationwide small farm crisis, depend on the vital service WS provides to protect their livelihood. By providing assistance through cooperative agreements, WS helps minimize the negative impacts wildlife cause on agriculture, property, and natural resources.

APHIS deals with a wide variety of wildlife problems, ranging from reducing the threat of wildlife-borne diseases such as rabies to managing hazards caused by wildlife to aviation safety at airports, to protecting endangered species from predation by other wildlife. Here are a few examples of WS efforts in 1999:

- Livestock herds in Michigan were placed at great risk from an outbreak of bovine tuberculosis. The disease was confirmed in a deer herd on a private ranch. The Michigan Department of Agriculture issued a depopulation order to help slow the spread of the disease to cattle and free-ranging deer. WS developed a depopulation plan and completed the depopulation in March, 1999, a year and a half ahead of schedule.
- In Utah, livestock sales totaled 75 percent of all agricultural cash receipts. WS provides protection from predator losses for approximately 95 percent of the State's domestic sheep and 20 percent of the newborn calves. Increasingly, WS is providing protection for domestic turkey flocks, goats, and exotic livestock including ostrich and emu in Utah. Major predators include coyotes, mountain lions, and black bears. In 1999, the Utah WS program was able to keep cooperator predation loss for sheep below 5 percent for lambs and below 3 percent for adult sheep. WS monitors the predator management methods practiced by Utah livestock production and provides technical assistance to producers regarding nonlethal management strategies.
- WS coordinated a cooperative cormorant roost dispersal program across the primary catfish production region of the Mississippi Delta designed to reduce cormorant depredation at catfish farms. Beginning in November, several hundred aquaculture producers, Federal and State employees, sportsmen, and interested citizens participated in monitoring and dispersing 75 cormorant night roosts away from fish production areas. This nonlethal management strategy developed by WS and used for the past several years has been effective in reducing damage and is well accepted by producers. Cormorant populations were reduced in the region by as much as 75 percent.
- As wolf populations continue to expand their range in Montana, Wyoming, Idaho, Minnesota, Wisconsin, and Michigan, management of wolf predation continues to be a concern for livestock producers. In Minnesota, WS responded to 78 requests for assistance that were verified to be wolf damage and captured 106 wolves in 1999. WS also continues to play an important role in gray wolf recovery in the northern Rocky Mountains. Since the reintroduction of 66 wolves in Idaho and Yellowstone National Park in 1995 and 1996,

wolf numbers increased to 340 animals by August 1999. Wolf-human conflicts have verified wolf predation, captured problem wolves, helped to mediate conflicts between agencies and livestock owners, and disseminated information about predator damage management to producers and the general public. APHIS contingency funds were again required to accomplish damage management activities in 1999. Many wolves are expected to disperse from both the Idaho and Yellowstone recovery areas in 2000 and cause further discontent among ranchers in surrounding areas. As a result, demands on WS are expected to continue to increase.

- The U.S. Fish and Wildlife Service, National Park Service (NPS), Florida Department of Environmental Protection, and several private conservation organizations relied on WS to protect 10 endangered and threatened species including sea turtles, endemic beach mice, shorebirds, and one fish species from other wildlife on public lands in the Florida panhandle. WS efforts to protect endangered sea turtles in one area resulted in an all-time low in nest depredation. In FY 1999, 170 sea turtle nests were laid with only one nest predation incident.
- In Ohio, New York, and Vermont, WS assisted in the distribution of more than 1,786,320 oral raccoon rabies vaccine baits in FY 1999 distributed over more than 4,519 square miles. This program was designed to stop the westward spread of the racoon strain of rabies by creating buffer zones where the rabies virus will die out and prevent the westward movement of the virus. Cooperative monitoring and surveillance has shown good uptake of the vaccine baits by raccoons, resulting in a significant reduction in the number of rabies-positive raccoons in the treated areas.
- During 1999, cooperative funding was provided to WS by the Federal Aviation Administration (FAA), Department of Defense, airports, counties, municipalities, and waste-handing facilities to conduct direct assistance activities on civil and military airports. Technical assistance provided by WS to airport managers and military airbase commanders in 1999 included 210 initial consultations and the development of 42 wildlife hazards assessments, 17 wildlife hazard management plans, and 7 environmental assessments. WS provided direct hazard management assistance to 110 airports and technical assistance to 316 airports and military air bases in 47 States and Guam. On airports and military airfields where WS operational projects were conducted, the presence of wildlife was reduced by up to 95 percent. WS also provided training to 410 airport personnel in recognizing and managing wildlife hazards to air traffic safety, and with the FAA, WS co-authored a wildlife hazard management manual for airport personnel. The partnership formed by WS and FAA to improve aviation safety provides an outstanding model of cooperation and efficiency between Federal agencies.

APHIS' National Wildlife Research Center (NWRC), the world's only research facility devoted entirely to the development of methods for managing wildlife damage, accounts for about one-fourth of WS's budget. In existence since the 1940's, NWRC has an integrated, multi-disciplinary research program that is uniquely suited to provide scientific information and solutions to wildlife damage problems.

A few examples of current NWRC projects include:

- developing chemosensory repellants and attractants for birds and mammals
- finding methods to reduce threats to human safety, such as bird collisions with airplanes
- finding ways to control the brown tree snake on Guam
- engineering immunocontraceptive vaccines and delivery systems to help resolve problems caused by wildlife overpopulation
- reducing bird damage to fish hatcheries and cereal crops
- studying coyote biology and behavior to develop techniques for protecting livestock from these predators
- looking at ways to solve wildlife problems in urban areas—such as deer in backyards and geese on golf courses—and reducing beaver damage
- developing methods to reduce wildlife damage to forest resources
- finding effective methods for reducing rodent damage to agricultural crops

Humane Care of Animals

APHIS administers two laws that seek to ensure the humane handling of animals: the Animal Welfare Act (AWA) and the Horse Protection Act (HPA).

For more than a quarter century, USDA has enforced the AWA and its standards and regulations to prevent trafficking in lost and stolen pets and protect covered animals from inhumane treatment and neglect. Congress passed the AWA in 1966 and strengthened the law through amendments in 1970, 1976, 1985, and 1990.

The AWA prohibits staged dogfights, bear and raccoon baiting, and similar animal fighting ventures. It also requires that minimum standards of care and treatment be provided for most warmblooded animals bred for commercial sale, used in research, transported commercially, or exhibited to the public. This includes animals exhibited in zoos, circuses, and marine mammal facilities as well as pets transported on commercial airlines.

Individuals who operate regulated businesses must be licensed or registered with USDA and provide their animals with adequate care and treatment in the areas of housing, handling, sanitation, nutrition, water, veterinary care, and protection from extremes of weather and temperature. They must also keep accurate acquisition and disposition records and a description of every animal that comes into their possession. In addition:

- Dealers must hold the animals they acquire for a period of 5 to 10 days to verify the animals' origin and allow pet owners an opportunity to locate a missing pet.
- Research facilities must provide dogs with the opportunity for exercise; promote the psychological well-being of primates used in laboratories; and give all regulated animals anesthesia or pain-relieving medication to minimize any pain or distress caused by research if the experiment allows.
- Research facilities must establish an institutional animal care and use committee to oversee the use of animals in experiments. This committee reviews research protocols and facilities to ensure they are in compliance with the AWA. It also ensures that researchers explore alternatives to painful experiments and ways to reduce the numbers of animals used. The committee

must be composed of at least three members, including one veterinarian and one person who is not affiliated with the facility in any way.

- Exhibitors, such as circuses and zoos, must enforce handling requirements designed, among other things, to prevent mistreatment of animals during training and performances. In general, a handler is expected to have at least 2 years of experience or training involving the species being exhibited.

In enforcing the AWA, APHIS conducts prelicensing inspections of licensees. Before issuing a license, applicants must be in compliance with all standards and regulations under the AWA.

APHIS also conducts randomly scheduled unannounced inspections to ensure that all regulated facilities continue to comply with the Act. If an inspection reveals minor deficiencies in meeting the AWA standards and regulations, the inspector instructs the licensee or registrant to correct the problems within a given timeframe. If there are serious deficiencies, or if minor deficiencies remain uncorrected at the followup inspection, APHIS documents the facility's deficiencies and considers possible legal action. Such action could include fines and/or license suspensions or revocations.

In FY 1998, APHIS pursued numerous cases against individuals who were not in compliance with the AWA. The tables below provide data on APHIS' inspection and enforcement efforts for FY 1996-98.

Compliance Inspections, FY 1996–98

FY	*Total facilities (sites)*	*Total compliance inspections*
1998	7,773	
	(10,393)	10,709
1997	7,789	
	(10,534)	12,056
1996	7,837	
	(10,336)	12,635

Sanctions Imposed, FY 1996–98

FY	*Fines Imposed*	*Revocations, suspensions, and disqualifications*
1998	$378,900	34
1997	$868,440	43
1996	$1,052,225	29

USDA also enforces the HPA, which prohibits horses subjected to a process called soring from participating in exhibitions, sales, shows, or auctions. In addition, the Act prohibits drivers from hauling sored horses across State lines to compete in shows. The law was first passed in 1970 and amended in 1976.

Soring—a painful practice used to accentuate a horse's gait—is accomplished by irritating a horse's forelegs through the injection or application of chemicals or mechanical irritants. When a sored horse walks, it responds by quickly lifting its front legs to relieve the pain. Although the HPA covers all horse breeds, Tennessee Walking horses and other high-stepping breeds are the most frequent victims of soring.

To facilitate enforcement of the HPA, APHIS has established the Designated Qualified Person (DQP) program. DQP's are trained and licensed by USDA-certified horse industry organizations or association to detect sored horses. DQP's are APHIS-accredited veterinarians with equine experience, or they are farriers, horse trainers, or other knowledgeable equestrians.

DQP's are responsible for barring from shows horses that do not meet Federal regulations under the HPA. Without DQP's, show management assumes full legal responsibility for disqualifying sored horses before awarding prizes and before customers view horses at sales or auctions. Horse organizations can revoke the license of DQP's if their inspections do not meet HPA standards.

To ensure DQP's continue to adhere to HPA standards, APHIS personnel conduct randomly scheduled unannounced inspections. The APHIS inspection team includes veterinarians and investigators. The veterinarians observe horses during a show and can examine any horse for signs of soring or violation of the regulations.

For those who violate the HPA, APHIS can impose criminal or civil charges. If convicted, violators can spend up to 2 years in prison, receive penalties of up to $5,000, and be disqualified for 1 or more years from the right to show, exhibit, or sell horses through auction sales. Trainers can be disqualified for life.

In addition to the AWA and HPA, many State and local governments have passed additional animal welfare legislation. The public is encouraged to work with Federal, State, and local officials as well as local humane organizations to help eliminate inhumane treatment of animals.

Aquaculture

APHIS provides services to the aquaculture industry in a number of areas. Aquaculture is the fastest growing segment of U.S. agriculture, surpassing in value most domestic fruit, vegetable, and nut crops. Between 1980 and 1990, the industry experienced a 400-percent increase in growth; it is now estimated to be worth approximately $1.5 billion. The aquaculture industry provides about 300,000 jobs nationwide.

Current APHIS services include licensing of fish vaccines and other biologics under the Virus-Serum-Toxin Act; managing bird and mammal depredation to commercial fish stocks; and providing health certification services for exports. We are currently working to expand our aquatic animal health activities and underlying authority to support industry efforts to increase exports of aquacultural products around the world, for coordinating interstate regulation, and for protection from the entry of animal pests and diseases. Examples include:

- European Union (EU) animal health negotiators have been extremely concerned that U.S. aquatic health regulations are not equivalent to those of the EU, with the main concern centering around the fact that the United States does not have a single Federal agency with legal authority to monitor, prevent, and control outbreaks of aquatic animal disease. Currently, U.S. responsibility in this area is divided among four Federal departments (Agriculture, Interior, Commerce, and Health and Human Services) and the 50 States. APHIS is working with the Joint Subcommittee on Aquaculture's Task Force

on Aquatic Animal Health to clarify Federal agency roles, avoid duplication of authority, and achieve adequate protection of U.S. aquatic animals, both wild and cultivated.

- APHIS has produced a video about health certification procedures for the export of aquacultural products. The goal of the video—which uses the example of exporting trout eggs from Washington State to Chile—is to provide animal health and natural resources officials and aquacultural producers with a model of how to implement an aquatic health protocol for exportation of products to a foreign country.
- In the catfish-production region of the Mississippi delta, APHIS continued its cooperative cormorant roost-dispersal program to reduce depredation to commercial fish stocks. Beginning in November 1999, several hundred aquaculture producers, Federal, State employees, sportsman, and interested citizens organized to monitor cormorant night roosts and disperse the birds away from fish-production areas. The roosts were moved to natural water areas with abundant native fish available for forage. Through this nonlethal management strategy, cormorant populations have been reduced in the region by as much as 75 percent.
- Predation on commercial catfish stocks by wading birds, primarily great blue herons and great egrets, is perceived to be a major constraint on production. Surveys of these species have shown that their populations have at least tripled in the last 5 years. Recent field investigations by NWRC scientists, however, revealed that only 8 percent of the diet of great egrets was comprised of live catfish, and heron predation had a negligible impact on catfish populations. The research concluded that herons were inefficient foragers on healthy catfish, and that most live catfish captured by herons from commercial catfish farms are diseased.
- APHIS' VS Centers for Epidemiology and Animal Health (CEAH) completed an overview of the U.S. aquaculture industry, including an analysis of focus on trends in farm size, geographic distribution of aquatic species, and a description of the industry's diversity. During 1997, CEAH worked with USDA's National Agricultural Statistics Service on a comprehensive national study of the U.S. catfish industry.

Grain Inspection, Packers and Stockyards Administration

The Grain Inspection, Packers and Stockyards Administration (GIPSA) facilitates the marketing of livestock, poultry, meat, cereals, oilseeds, and related agricultural products and promotes fair and competitive trading practices for the overall benefit of consumers and American agriculture.

GIPSA, like its sister agencies in USDA's Marketing and Regulatory Programs mission area, is working to ensure a productive and competitive global marketplace for U.S. agricultural products. The agency's Federal Grain Inspection Service (FGIS)

provides the U.S. grain market with Federal quality standards and a uniform system for applying them. GIPSA's Packers and Stockyards Programs ensure open and competitive markets for livestock, meat, and poultry.

Federal Grain Inspection Program

Through its Federal Grain Inspection Program, GIPSA facilitates the marketing of grain, oilseeds, pulses, rice, and related commodities. This program serves American agriculture by providing descriptions (grades) and testing methodologies for measuring the quality and quantity of grain, rice, edible beans, and related commodities. GIPSA also provides a wide range of inspection and weighing services, on a fee basis, through the official grain inspection and weighing system, a unique partnership of Federal, State, and private agencies. In FY 1999, the official system performed over 2 million inspections on 228 million metric tons of grain and related commodities.

Specifically, under the U.S. Grain Standards Act, and those provisions of the Agricultural Marketing Act of 1946 (AMA) that relate to inspection of rice, pulses, lentils, and processed grain products, the Federal Grain Inspection Service:

- Establishes official U.S. grading standards and testing procedures for eight grains (barley, corn, oats, rye, sorghum, triticale, wheat, and mixed grain), for oilseeds (canola, flaxseed, soybeans, and sunflower seed), rice, lentils, dry peas, and a variety of edible beans.
- Provides American agriculture and customers of U.S. grain around the world with a national inspection and weighing system that applies the official grading and testing standards and procedures in a uniform, accurate, and impartial manner.
- Inspects and weighs exported grain and oilseeds. Domestic and imported grain and oilseed shipments, and crops with standards under the AMA, are inspected and weighed upon request.
- Monitors grain handling practices to prevent the deceptive use of the grading standards and official inspection and weighing results, and the degradation of grain quality through the introduction of foreign material, dockage, or other nongrain material to grain.

By serving as an impartial third party, and by ensuring that the Official U.S. Standards for Grain are applied and that weights are recorded fairly and accurately, GIPSA and the official grain inspection and weighing system advance the orderly and efficient marketing and effective distribution of U.S. grain and other assigned commodities from the Nation's farms to destinations around the world. GIPSA is working on establishing a biotechnology reference library and commodity standards testing procedures to identify traits desirable for new markets.

Packers and Stockyards Programs

GIPSA's Packers and Stockyards Programs administers the Packers and Stockyards (P&S) Act of 1921. The purpose of the P&S Act is to ensure fair competition and fair trade practices, safeguard producers and ranchers, and protect

consumers and members of the livestock, meat, and poultry industries from unfair business practices that can affect meat and poultry distribution and prices.

Payment Protection

The P&S Act requires prompt payment for livestock purchased by dealers, market agencies, and packers whose operations are subject to the Act. Pursuant to this requirement, subject firms must pay for livestock before the close of the next business day following the purchase and transfer of possession. In addition, the Act establishes specific payment deliver requirements for livestock purchased for slaughter. Also, packers, market agencies, and dealers operating in commerce are required to maintain and file a surety bond or its equivalent. At the beginning of FY 1998, bonds totaling $631 million were in place to cover the livestock purchases of packers, market agencies, and dealers.

GIPSA also emphasizes custodial account investigations as a means of payment protection for consignors of livestock. All market agencies selling on a commission basis are required to establish and maintain a separate bank account designated as Custodial Account for Shippers Proceeds to be used for deposits from livestock purchasers and disbursements to consignors of livestock. The custodial audit program has been very successful in protecting funds due livestock sellers.

Packer and Poultry Trust Activities

If a meat packer fails to pay for livestock in a cash sale, or a live poultry dealer fails to pay for live poultry from a poultry growing arrangement, then receivables, inventories, and proceeds held by the packer or poultry dealer become trust assets. These assets are held by the meat packer or live poultry dealer for the benefit of all unpaid cash sellers and/or poultry growers. Cash sellers of livestock and poultry growers receive priority payment in bankruptcy or in claims against trust assets in the event of business failure.

Fair Competition

GIPSA works to eliminate unfair, unjustly discriminatory, or deceptive practices in the meat and poultry industries, with special emphasis on investigation of anticompetitive activities. Practices such as apportioning of territories, price manipulation, and arrangements not to compete are potential violations of the Packers and Stockyards Act. GIPSA deploys a rapid response team to immediately investigate any practice that could constitute unfair, unjustly discriminatory or deceptive practice under the act. A number of new regulatory measures will be proposed in the *Federal Register* to address certain trade and anticompetitive practices in the livestock and poultry sectors.

Scales and Weighing Activities

GIPSA is concerned with two different elements that affect the integrity of weights: (1) the accuracy of scales used for weighing livestock, meat, and poultry, and (2) the proper and honest operation of scales to assure that the weight on which a transaction is based is accurate.

The major emphasis is on detecting improper and fraudulent use of scales. An investigative program uses several different procedures to determine whether weighing activity is proper and honest. Agency investigators routinely visit livestock auction markets, buying stations, and packing plants for the purpose of checkweighing livestock, carcasses, and live poultry, and examining weight records and equipment.

Trade Practices

Fraudulent trade practices, such as price manipulations, weight manipulation of livestock or carcasses, manipulation of carcass grades, misrepresentation of livestock as to origin and health, and other unfair and deceptive practicesBcontinue to be concerns within the industry. GIPSA investigates these practices when complaints are received or when such practices are uncovered during other investigations.

Fair Treatment for Poultry Growers

GIPSA carries out enforcement of the trade practice provisions of the P&S Act relating to live poultry dealers. Its investigative program extensively examines the records of poultry integrators to determine the existence of any unfair, unjustly discriminatory, or deceptive practices in its dealings with poultry growers and sellers. Complaints alleging unfair termination of growing contracts are investigated on a priority basis.

Analysis of Structural Change

GIPSA examines structural changes in the livestock, meat packing, and poultry industries, and analyzes the competitive implications of these structural changes. The analyses assist in enforcing the P&S Act and in addressing public policy issues relating to the livestock and meat industries.

Clear Title

The Clear Title provisions of the Food Security Act of 1985 permit States to establish central filing systems to inform parties about liens on farm products. The purpose of this program is to remove an obstruction to interstate commerce in farm products. GIPSA certifies that a State's central filing system complies with the Act.

Violation Hotline

GIPSA has instituted a hotline where callers can report potential violations and abuses in the grain, livestock, meat and poultry industries. GIPSA's toll-free telephone number is 1-800-998-3447.

Home Page

For further details about GIPSA, visit our home page at *http://www.usda.gov/gipsa*.

For More Information

Agricultural Marketing Service

Director, Public Affairs
Billy Cox
Rm 3510-S
Washington, DC 20250
202-720-8998
FAX 202-720-7135ˆ
billy.cox@usda.gov

Public Affairs Specialist
Demaris Kogut
Rm 3510-S
Washington, DC 20250
202-720-8998
FAX 202-720-7135
demaris.kogut@usda.gov

Public Affairs Specialist
Becky Unkenholz
Rm 3510-S
Washington, DC 20250
202-720-8998
FAX 202-720-7135
becky.unkenholz@usda.gov

Freedom of Info Act Officer
Sharon Kerr
Rm 3510-S
Washington, DC 20250
202-720-2498
FAX 202-690-3767
sharonl.kerr@usda.gov

Animal and Plant Health Inspection Service

Director, Legislative & Public Affairs
Ralph Harding
Rm 1147-S
Washington, DC 20250
202-720-2511
FAX 202-720- 3982
ralph.r.harding@aphis.usda.gov

Deputy Director, Legislative & Public Affairs
Lynn Quarles
Washington, DC 20250
202-720-2511 Rm 1147-S
FAX 202-720-3982
lynn.t.quarles@aphis.usda.gov

Asst. Dir., Public Affairs
Richard McNaney
4B21
Riverdale, MD 20782
301-734-7799
FAX 301-734-5221
rmcnaney@aphis.usda.gov

Asst. Dir., Exec Corresp. & FOIA Office
Michael Marquis
4A81
Riverdale, MD 20782
301-734-5267
FAX 301-734-5941
mmarquis@aphis.usda.gov

APHIS Regional Information Offices
Mountain/Western
Stuart McDonald
Suite 204
12345 W. Alameda Parkway
Lakewood, CO 80228
303-969-6560
FAX 303-969-6973
smcdonald@aphis.usda.gov

West Coast/Southern Border
Larry Hawkins
606 Alamo Pintado, Suite 267
Solvang, CA 73463
805-693-0676
FAX 805-693-0676
lhawkins@aphis.usda.gov

Grain Inspection, Packers and Stockyards Administration

Public Affairs Officer
Dana Stewart
Rm 1094-S
Washington, DC 20250
202-720-5091
FAX 202-205-9237
dstewart@fgis.usda.gov

Freedom of Info Act Officer
Bruce Boor
Rm 3406-S
Washington, DC 20250
202-690-3842
FAX 202-205-3941
bruce_m.boor@usda.gov

Appendix

How To Get Information From USDA's Office of Communications

The Office of Communications (OC) is integral to USDA's historical and current mission. This office coordinates and assists with the flow of public information from USDA program agencies, reviewing all publications and audiovisuals and evaluating new information technology. It offers current information from the Office of the Secretary on programs and policy. This office ensures that adequate and appropriate channels are used to disseminate information to the public, and provides public access to USDA information through the news media.

OC administers USDA's home page on the Internet World Wide Web and the AgNewsFax service. The Internet address for USDA's home page is *http://www.usda.gov*. From this page, you can access information about the Department and also about programs in all mission areas.

OC also offers an automated information line to answer questions from the public. The number for this service is 202-720-2791.

In addition, OC coordinates departmental responses under the Freedom of Information Act, the Privacy Act, and its amendment, the Computer Matching Act.

The following list of key Office of Communications staff is offered for your convenience:

Office of the Director

Director of Communications
Sedelta Verble
Rm 402-A
Washington, DC 20250-1301
202-720-4623
FAX 202-720-5043
sedelta.verble@usda.gov

Press Secretary and Director of Public Affairs
Andy Solomon
Rm 402-A
Washington, DC 20250-1305
202-720-4623
FAX 202-720-5043
andy.solomon@usda.gov

Adm. Asst. to OC Director
Tamika Powell
Rm 402-A
Washington, DC 20250-1330
202-720-4623
FAX 202-690-2164
tamika.powell@usda.gov

Deputy Director
Jody Jaeger
Rm 412-A
Washington, DC 20250-1330
202-720-4623
FAX 202-690-2164
jody.jaeger@usda.gov

Deputy Press Secretary
Susan McAvoy
Rm 405-A
Washington, DC 20250-1305
202-720-4623
FAX 202-720-5403
susan.mcavoy@usda.gov

Deputy Press Secretary
Mary Beth Schultheis
Rm 402-A
Washington, DC 20250-1305
202-720-4623
FAX 202-720-5043
mary_beth.schultheis@usda.gov

Speech Writers:
Bart Acocella
Rm 425-A
Washington, DC 20250-1340
202-720-7819
FAX 202-690-1378
bart.acocella@usda.gov

Cheryl Normile
Rm 423-A
Washington, DC 20250-1340
202-720-4239
FAX 202-690-1378
cheryl.normile@usda.gov

Richard Ades
Rm 422-A
Washington, DC 20250-1340
202-720-9091
FAX 202-690-1378
richard.ades@usda.gov

Communications Coordination and Review Center

Director
Johna Pierce
Rm 440-A
Washington, DC 20250-1350
202-720-5555
FAX 202-690-3611
johna.pierce@usda.gov

Communications Coordinator for Administration, IG, CFO, CIO
Janet Sledge
Rm 446-A
Washington, DC 20250-1350
202-720-2065
FAX 202-690-3611
janet.sledge@usda.gov

Communications Coordinator for Farm and Foreign Agricultural Services
Wayne Baggett
Rm 444-A
Washington, DC 20250-1350
202-720-2032
FAX 202-690-3611
wayne.baggett@usda.gov

Communications Coordinator for Food, Nutrition, and Consumer Services
vacant
Rm 444-A
Washington, DC 20250-1350
202-690-0469
FAX 202-690-3611

Communications Coordinator for Food Safety, and Marketing & Regulatory Programs
Jerry Redding
Rm 432-A
Washington, DC 20250-1350
202-720-6959
FAX 202-690-3611
jerry.redding@usda.gov

Communications Coordinator for Natural Resources and Environment
Martha Cashion Abrams
Rm 442-A
Washington, DC 20250-1350
202-720-3310
FAX 202-690-3611
martha.abrams@usda.gov

Communications Coordinator for Research, Education, and Economics
Maria Bynum
Rm 448-A
Washington, DC 20250-1350
202-720-5192
FAX 202-690-3611
maria.bynum@usda.gov

Communications Coordinator for Rural Development
Jim Brownlee
Rm 436-A
Washington, DC 20250-1350
202-720-2091
FAX 202-690-3611
jim.brownlee@usda.gov

"USDA NEWS" Coord/Editor
Ron Hall
Rm 430-A
Washington, DC 20250-1350
202-720-5747
FAX 202-690-3611
ron.hall@usda.gov

Coord & Rev Asst/HTGI Editor
Shirley E. Adams
Rm 440-A
Washington, DC 20250-1350
202-720-2882
FAX 202-690-3611
shirley.adams@usda.gov

Webmaster
Victor Powell
Rm 528-A
Washington, DC 20250-1350
202-720-7762
FAX 202-690-3611
vic.powell@usda.gov

Electronic Info. Coordinator
Charles Hobbs
Rm 456-A
Washington, DC 20250-1350
202-720-9045
FAX 202-690-3611
charles.hobbs@usda.gov

"AgNews" Editor
Phil Shanholtzer
Rm 457-A
Washington, DC 20250-1350
202-720-8138
FAX 202-720-5575
phil.shanholtzer@usda.gov

Public Affairs Specialist
Marci Hilt
Rm 421-A
Washington, DC 20250-1350
202-720-3088
FAX 202-690-3611
marci.hilt@usda.gov

Public Affairs Specialist
Deborah Smith
Rm 410-A
Washington, DC 20250-1350
202-720-2914
FAX 202-690-3611
debbie.smith@usda.gov

Public Affairs Specialist
Katherine Gibney
Rm 428-A
Washington, DC 20250-1350
202-720-9173
FAX 202-690-3611
katherine.gibney@usda.gov

Publishing & Info. Svs. Coord.
Ed Poe
Rm 426-A
Washington, DC 20250-1350
202-720-9081
FAX 202-720-4948
ed.poe@usda.gov

Senior Pubs. Clearance Editor
Dennis Carroll
Rm 428-A
Washington, DC 20250-1350
202-720-3298
FAX 202-690-3611
dennis.carroll@usda.gov

Publications Clearance Editor
Carrie Pollard
Rm 419-A
Washington, DC 20250-1350
202-720-6046
FAX 202-690-3611
carrie.pollard@usda.gov

Exec. Corres./FOIA Asst.
Sandie Stasiak
Rm 541-A
Washington, DC 20250-1350
202-720-4105
FAX 202-690-3611
sandie.stasiak@usda.gov

Information Response Team
Barbara Robinson
Rm 506-A
Washington, DC 20250-1350
202-690-4069
FAX 202-690-0228
barbara.robinson@usda.gov

Joyce Tyler
Rm 506-A
Washington, DC 20250-1350
202-720-3365
FAX 202-690-0228
joyce.person@usda.gov

General Information Hotline
202-720-2791

Freedom of Info. Act Officer
Andrea Fowler
Rm 532-A
Washington, DC 20250-1350
202-720-8164
FAX 202-720-7808
andrea.fowler@usda.gov

Public Liaison Center

Director
Meg Evans
Rm 412-A
Washington, DC 20250-1330
meg.evans@usda.gov
202-720-4623
FAX 202-690-2164

Public Liaison Coordinator
Kathryn Hill
Rm 415-A
Washington, DC 20250-1330
202-690-4750
FAX 202-690-2164
ocnet.oc-post.kathryn.hill@usda.gov

Public Liaison Analyst
Mocile Trotter
Rm 418-A
Washington, DC 20250-1330
202-720-5505
FAX 202-690-2164
Mocile.trotter@usda.gov

Public Affairs Specialist
Robert Miranda-Acevedo
Rm 417-A
Washington, DC 20250-1330
202-720-0494
FAX202-690-2164
robert.miranda@usda.gov

Admin. Support Specialist
Sandy Odom
Rm 416-A
Washington, DC 20250-1330
202-720-8891
FAX 202-690-2164
sandy.odom@usda.gov

News Distribution
Gayle Turner
Rm 460-A
Washington, DC 20250-1330
202-720-9035
FAX 202-690-2164
gayle.turner@usda.gov

AgNewsFax Service
Use FAX telephone to call
202-690-3944

Internet News Service
news@usda.gov WWW URL
http://www.usda.gov

Video, Teleconference, and Radio Center

Director
Larry A. Quinn
Rm 1618-S
Washington, DC 20250-1360
larry.quinn@usda.gov
202-720-6072
FAX 202-720-5773

Dep Dir/ Broadcasting Coord
Garth Clark
Rm 1614-S
Washington, DC 20250-1360
202-720-5376
FAX 202-720-5773
garth.clark@usda.gov

Senior Television Producer
Patrick O'Leary
Rm 0095-S
Washington, DC 20250-1360
202-720-7039
FAX 202-720-5773
patrick.oleary@usda.gov

Senior Radio Producer
Gary Crawford
Rm 1623-S
Washington, DC 20250-1360
202-720-7068
FAX 202-690-2165
gary.crawford@usda.gov

Senior Radio Producer
Brenda Curtis-Heiken
Rm 1623-S
Washington, DC 20250-1360
202-720-7079
FAX 202-690-2165
brenda.curtis@usda.gov

Video Production Coord
David Black
Rm 1614-S
Washington, DC 20250-1360
202-720-3068
FAX 202-720-5773
david.black@usda.gov

Senior Production Spec
Bob Stobaugh
Rm 0097-S
Washington, DC 20250-1360
202-720-4753
FAX 202-720-5773
bob.stobaugh@usda.gov

Studio Mgr./Tech Dir
Larry Holmes
Rm 1623-S
Washington, DC 20250-1360
202-720-4001
FAX 202-720-5773
larry.holmes@usda.gov

Duplic./Off Air Recording
Evangeline Minor
Rm 1604-S
Washington, DC 20250-1360
202-720-7501
FAX 202-720-5773
evangline.minor@usda.gov

Teleconference Coordinator
David Vennell
Rm 1617-S
Washington, DC 20250-1360
202-720-5368
FAX 202-720-5773
david.vennell@usda.gov

Teleconference Assistant
Mansy Pullen
Rm 1615-S
Washington, DC 20250-1360
202-720-2029
FAX 202-720-5773
mansy.pullen@usda.gov

Teleconference Scheduling
Anita Booth (Audio)
Rm 1611-S
Washington, DC 20250-1360
202-720-6143
FAX 202-690-2042
anita.booth@usda.gov

Liz Conley (Compressed video)
Rm 1611-S
Washington, DC 20250-1360
202-720-8690
FAX 202-720-2042
liz.conley@usda.gov

Training Center Scheduling
Michael Johnson
Rm 1623-S
Washington, DC 20250-1360
202-720-2822
FAX 202-690-2704
ocnet.oc-post.mike.xjohnson@usda.gov

Design Center

Director
Eva Cuevas
Rm 517-A
Washington, DC 20250-1380
202-720-6641
FAX 202-720-8197
eva.cuevas@usda.gov

Deputy Director
David Sutton
Rm 518-A
Washington, DC 20250-1380
202-720-6281
FAX 202-720-8197
david.sutton@usda.gov

Electronic Graphic Design Coordinator
Julie Olson
Rm 524-A
Washington, DC 20250-1380
202-720-4339
FAX 202-720-8197
julie.olson@usda.gov

Exhibit Fabrication Coord.
Larry Sullivan
Rm S-310
Washington, DC 20250-1380
202-720-3393
FAX 202-690-1799
larry.sullivan@usda.gov

Exhibit Shipping Coordinator
Cindy Haydon
Rm 517-A
Washington, DC 20250-1380
202-720-6641
FAX 202-720-8197
cindy.haydon@usda.gov

Photography Center

Director
Bill Tarpenning
Rm 4404-S
Washington, DC 20250-1390
202-720-6633
FAX 202-720-0902
bill.tarpenning@usda.gov

Photojournalists
Ken Hammond
Rm 4415-S
Washington, DC 20250-1390
202-720-8929
FAX 202-720-0902
ken.hammond@usda.gov

Robert Nichols
Rm 4415-S
Washington, DC 20250-1390
202-720-8903
FAX 202-720-0902
bob.nichols@usda.gov

Photo Reproduction/Review
Alice Welch
Rm 4423-S
Washington, DC 20250-1390
202-720-4022
FAX 202-720-0902
alice.welch@usda.gov

Eartha Harried
Rm 4423-S
Washington, DC 20250-1390
202-720-4022
FAX 202-720-0902
eartha.harried@usda.gov

Photo Library
Anson Eaglin
Rm 4409-S
Washington, DC 20250-1390
202-720-0909
FAX 202-720-0902
anson.eaglin@usda.gov

Stanley Harrison
Rm 4409-S
Washington, DC 20250-1390
202-720-8905
FAX 202-720-0902
stan.harrison@usda.gov

Photo Assignments
Vivian Thomas
Rm 4404-S
Washington, DC 20250-1390
202-720-6633
FAX 202-720-0902
vivian.thomas@usda.gov

Printing Management Center

Director
Al Senter
Rm 501-A
Washington, D.C. 20250-1370
202-720-7175
FAX 202-720-8939
al.senter@usda.gov

Forms
Ed McVerry
Rm 501-A
Washington, D.C. 20250-1370
202-720-8137
FAX 202-720-8939
ed.mcverry@usda.gov

Gail Merriman
Rm 501-A
Washington, D.C. 20250-1370
202-720-8146
FAX 202-720-8939
gail.merriman@usda.gov

Publications
Lonnie Thomas
Rm 501-A
Washington, D.C. 20250-1370
202-720-8180
FAX 202-720-8939
lonnie.thomas@usda.gov

Mark Emery
Rm 501-A
Washington, D.C. 20250-1370
202-720-8194
FAX 202-720-8939
mark.emery@usda.gov

Cynthia McNeill
Rm 501-A
Washington, D.C. 20250-1370
202-720-8189
FAX 202-720-8939
cynthia.mcneill@usda.gov

Composite/Rider Orders
Mary Hill
Rm 501-A
Washington, D.C. 20250-1370
202-720-5983
FAX 202-720-8939
mary.hill@usda.gov

Conversion Chart

Metric Conversions

To convert this	*multiply by*	*to this (rounded to hundredths)*
Length		
inches	millimeters (mm)	25.4
feet	centimeters (cm)	30.48
yards	meters (m)	0.91
miles	kilometers (km)	1.61
millimeters	inches	0.04
centimeters	inches	0.39
meters	inches	39.37
meters	yards	1.09
kilometers	miles	0.62
Weight		
ounces	grams(g)	28.35
pounds	kilograms (kg)	0.45
short tons	metric tons	0.91
kilograms	pounds	2.20
metric tons	pounds	2,204.6
metric tons	short tons	1.10
Area		
square inches	square centimeters	6.45
square feet	square meters	0.09
square miles	square kilometers	2.59
acres	hectares	0.40
square centimeters	square inches	0.16
square meters	square yards	1.20
square kilometers	square miles	0.39
hectares	acres	2.47
Volume		
teaspoons	milliliters	4.93
tablespoons	milliliters	14.79
fluid ounces	milliliters	29.58
cups	liters	0.24
pints	liters	0.47
quarts	liters	0.95
gallons	liters	3.79
cubic feet	cubic meters	0.03
cubic yards	cubic meters	0.76

To convert this	*to this*	*multiply by (rounded to hundredths)*
milliliters	fluid ounces	0.03
liters	pints	2.11
liters	quarts	1.06
liters	gallons	0.26
cubic meters	cubic feet	35.31
cubic meters	cubic yards	1.31
Temperature		
Fahrenheit	Celsius	.56 (after subtracting 31)
Celsius	Fahrenheit	1.82 (then add 32)
Farm products		
pounds per acre	kilograms per hectare	1.12
short tons per acre	kilograms per hectare	2.24
kilograms per hectare	metric tons per hectare	.001
kilograms per hectare	pounds per acre	0.89
tons per hectare	short tons per acre	0.45
tons per hectare	kilograms per hectare	1,000

Bushel/Weight Conversions

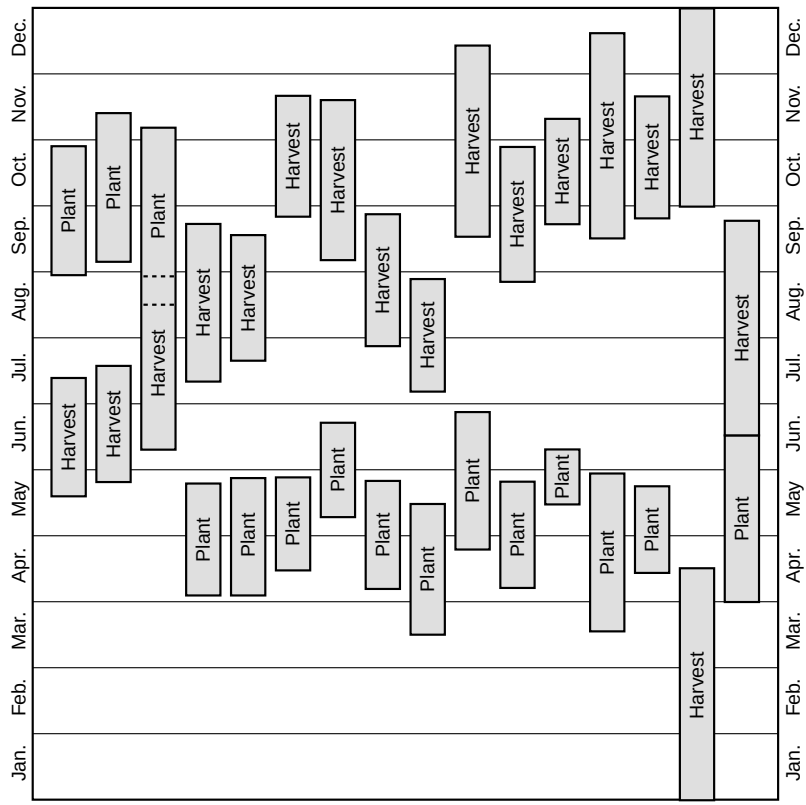
1 bushel of:	*weight in pounds*	*weight in kilograms*
wheat, soybeans, potatoes	60	27
corn, grain sorghum, rye, flaxseed	56	25
beets, carrots	50	23
barley, buckwheat, peaches	48	22
oats, cottonseed	32	14

1 metric ton of:	*weight in pounds*	*number of bushels*
wheat, soybeans, potatoes	2,204.6	36.74
corn, grain sorghum, rye, flaxseed	2,204.6	39.37
beets, carrots	2,204.6	44.09
barley, buckwheat, peaches	2,204.6	45.93
oats, cottonseed	2,204.6	68.89

Prepared by USDA, National Agricultural Statistics Service

Figure A-1.

Planting and Harvesting Calendar for Most Major U.S. Crop Areas[1]



*Planting coincides with harvesting.

[1]Represents areas where production is concentrated, but not full spectrum of planting and harvesting periods for each crop.

Glossary of Agricultural Terms

Acid soil. Soil with a pH of less than 7.0.

Acreage reporting date. The date by which insureds must report their planted acreage to their agent. These reports are essential because they help determine premium and liability. Reporting dates vary and are printed in crop insurance policies.

Actual production history (APH). An APH yield is a producer-certified report of the planted acreage and harvested production for each insured crop. MPCI coverage is based on at least 4 years of APH yields. If records are lacking, transitional yields (T-yields—a percentage of local yield averages) are used to help calculate coverage.

Actuarial table. The forms and related material for the crop year, which are available for public inspection in the crop insurance agent's office, show the amounts of insurance or production guarantees, coverage levels, premium rates, prices for computing indemnities, practices, insurable acreage, and other related information regarding crop insurance in the county.

Agricultural Adjustment Act of 1933 (P.L. 73-10). Signed May 12, 1933, this law introduced the price support programs, including production adjustments, and the incorporation of the Commodity Credit Corporation (CCC), under the laws of the State of Delaware on October 17, 1933. The program benefits were financed mostly by processing taxes on the specific commodity. The Act also made price support loans by the CCC mandatory for the designated "basic" (storable) commodities: corn, wheat, and cotton. Support for other commodities was authorized upon the recommendation by the Secretary of Agriculture with the President's approval.

Agricultural Adjustment Act of 1938 (P.L. 75-430). Signed February 16, 1938, this law was the first to make price support mandatory for corn, cotton, and wheat to help maintain a sufficient supply for low production times along with marketing quotas to keep supply in line with market demand. The 1938 Act is considered part of permanent agriculture legislation. Provisions of this law are often superseded by more current legislation. However, if the current legislation expires and new legislation is not enacted, the law reverts back to the permanent provisions of the 1938 Act, along with the Agricultural Act of 1949.

Agronomy. The science of crop production and soil management.

Alfalfa. A valuable leguminous crop for forage or hay used in livestock feeding.

Alkaline soil. Soil with a pH of more than 7.0.

Alternative farming. Production methods other than energy- and chemical intensive one-crop (monoculture) farming. Alternatives include using animal and green manure rather than chemical fertilizers, integrated pest management instead of chemical pesticides, reduced tillage, crop rotation (especially with legumes to add nitrogen), alternative crops, or diversification of the farm enterprise.

Animal unit. A standard measure based on feed requirements, used to combine various classes of livestock according to size, weight, age, and use.

Aquaculture. The production of aquatic plants or animals in a controlled environment, such as ponds, raceways, tanks, or cages, for all or part of their life cycle. In the United States, baitfish, catfish, clams, crawfish, freshwater prawns, mussels, oysters, salmon, shrimp, tropical (or ornamental) fish, and trout account for most of the aquacultural production. Less widely established but growing species include alligator, hybrid striped bass, carp, eel, red fish, northern pike, sturgeon, and tilapia.

Arid climate. A dry climate with an annual precipitation usually less than 10 inches. Not suitable for crop production without irrigation.

Artificial insemination (AI). The mechanical injection of semen into the womb of the female animal with a syringe-like apparatus.

Back hoe. A shovel mounted on the rear of a tractor, hydraulically operated to dig trenches or pits in soil.

Base acreage. A farm's crop-specific acreage of wheat, feed grains, upland cotton, or rice eligible to enroll in commodity programs under legislation prior to the 1996 Farm Bill. Base acreage equalled land planted for harvest to the crop, plus any land enrolled in acreage reduction programs, plus land considered planted to the crop in 0,50/85-92 or under permitted normal flex or optional flex acreage shifts during a specified period of time. A farmer's crop acreage base is reduced by the portion of land placed in the Conservation Reserve Program, but is increased by CRP base acreage leaving the CRP.

Basic commodities. Six crops (corn, cotton, peanuts, rice, tobacco, and wheat) that are covered by parity-based price support provisions, provisions which have been suspended for the 1996 through 2002 crops of each of these commodities.

Biological control of pests. Control, but not total eradication, of insect pests achieved by using natural enemies, either indigenous or imported, or diseases to which the pest is susceptible. It includes such nontoxic pesticides as Bacillus thuringiensis (Bt).

Biologics. Immunization materials made from living or "killed" organisms and their products used for the detection and prevention of diseases; includes serums, vaccines, bacterins, antigens, and antitoxins.

Biotechnology. The use of technology, based on living systems, to develop processes and products for commercial, scientific, or other purposes. These include specific techniques of plant regeneration and gene manipulation and transfer (see also genetic engineering).

Blended credit. A form of export subsidy which combines direct Government export credit and credit guarantees to reduce the effective interest rate.

Brucellosis. A contagious disease in beef and dairy cattle, which causes abortion. Same disease in humans is known as undulant fever.

BST (bovine somatotropin) (also called BGH, for bovine growth hormone). A protein hormone produced naturally in the pituitary gland of cattle. Recombinant BST, or rBST, is BST produced using recombinant DNA biotechnology. BST controls the amount of milk produced by cows.

Cargo preference. A law that requires a certain portion of goods or commodities financed by the U.S. Government to be shipped on U.S. flag ships. The law has traditionally applied to P.L. 480 and other concessional financing or donations programs.

Carryover. Existing supplies of a farm commodity not used at the end of a marketing year, and remaining to be carried over into the next year. Marketing years generally start at the beginning of a new harvest for a commodity, and extend to the same time in the following year.

Cash grain farm. A farm on which corn, grain sorghum, small grains, soybeans, or field beans and peas account for at least 50 percent of value of products sold.

Catastrophic risk protection (CAT). The lowest level of Federal crop insurance coverage. It provides a coverage level at 50 percent of the actual yields at 55 percent of the expected market price. Coverage is provided for an administrative fee.

Census of Agriculture. A count taken every 5 years of the number of farms, land in farms, crop acreage and production, livestock numbers and production, farm expenses, farm

facilities and equipment, farm tenure, value of farm products sold, farm size, type of farm, farm operator characteristics (age, race, sex), etc. Data are obtained for States and counties. USDA now administers the Census of Agriculture, which was previously done by the U.S. Bureau of the Census.

Checkoff programs. Research and promotion programs authorized by law and financed by assessments. The programs are paid for by specified industry members such as producers, importers, and handlers.

Combine. A self-propelled machine for harvesting grain and other seed crops. In one operation, it cuts, threshes, separates, and cleans the grain and scatters the straw.

Commodity certificates. Payments issued by the Commodity Credit Corporation (CCC) in lieu of cash payments to program participants. Holders of the certificates may exchange them with the CCC for CCC-owned commodities. With the exception of the upland cotton loan program, CCC authority to issue such certificates in lieu of cash payments was suspended for the 1996 through 2002 crops by the Federal Agriculture Improvement and Reform Act of 1996. Under the “special marketing loan provisions” for the upland cotton loan program, however, cotton user marketing certificates may be paid by CCC with commodity certificates.

Commodity Credit Corporation (CCC). A federally owned and operated corporation within USDA created to stabilize, support, and protect agricultural prices and farm income through loans, purchases, payments, and other operations. All money transactions for agricultural price and income support and related programs are handled through the CCC.

Commodity loan rates. Price per unit (pound, bushel, bale, or hundredweight) at which the CCC provides nonrecourse loans to farmers to enable them to hold program crops for later sale. Commodity loans under the 1996 Act can be recourse for sugar and will become recourse for dairy in 2000.

Complementary imports. Agricultural import items not produced in appreciable commercial volume in the United States, such as bananas, coffee, rubber, cocoa, tea, spices, and cordage fiber (see also supplementary imports).

Compost. Organic residues, or a mixture of organic residues and soil, which have been piled, moistened, and allowed to undergo biological decomposition for use as a fertilizer.

Concessional sales. Credit sales of a commodity in which the buyer is allowed more favorable payment terms than those on the open market. For example, Title I of the Food for Peace Program (P.L. 480) provides for financing sales of U.S. commodities with low-interest, long-term credit.

Conservation compliance. This represents a portion of the Highly Erodible Land Conservation provisions of the Food Security Act of 1985 that is designed to encourage the use of conservation practices on highly erodible cropland. To remain eligible for many USDA program benefits, farmers are required to crop highly erodible land under an approved conservation plan. Also see "Sodbuster."

Conservation district. Any unit of local government formed to carry out a local soil and water conservation program.

Conservation plan. A combination of land uses and practices to protect and improve soil productivity and to prevent soil deterioration. A conservation plan must be approved by the local conservation district for acreage offered in the Conservation Reserve Program. The plan sets forth the conservation measures and maintenance that the owner or operator will carry out during the term of the contract.

Conservation practices. Methods which reduce soil erosion and retain soil moisture. Major conservation practices include conservation tillage, crop rotation, contour farming, strip cropping, terraces, diversions, and grassed waterways.

Conservation Reserve Program (CRP). A major provision of the Food Security Act of 1985 designed to reduce erosion and protect water quality on millions of acres of farmland. Under the program, enrolled landowners agree to convert environmentally sensitive land to approved conserving uses for 10-15 years. In exchange, the landowner receives an annual rental payment as well as an initial cost-share payment for up to 50 percent of the cost of establishing permanent vegetative cover.

Conservation tillage. Any of several farming methods that provide for seed germination, plant growth, and weed control yet maintain effective ground cover throughout the year and disturb the soil as little as possible. The aim is to reduce soil loss and energy use while maintaining crop yields and quality. No-till is the most restrictive (soil-conserving) form of conservation tillage. Other practices include ridge-till, strip-till, and mulch-till.

Contour farming. Field operations such as plowing, planting, cultivating, and harvesting on the contour, or at right angles to the natural slope, to reduce soil erosion, protect soil fertility, and use water more efficiently.

Contract acreage. Enrolled 1996 commodity base acreage under the 1996 Farm Act for wheat, feed grains, upland cotton, and rice, generally fixed for 1996 through 2002. A farmer may voluntarily choose to reduce contract acreage in subsequent years. Land leaving the CRP may be entered into a production flexibility contract if the land had an acreage base.

Contract crops. Crops eligible for production flexibility payments: wheat, corn, sorghum, barley, oats, rice, and upland cotton.

Cooperative. An organization formed for the purpose of producing and marketing goods or products owned collectively by members who share in the benefits.

Cooperative Extension System. A national, publicly funded, nonformal education network that links the educational and research resources and activities of USDA with land-grant universities in every State, territory, and the District of Columbia. The Federal partner is the Cooperative State Research, Education, and Extension Service. This unique Federal, State, and local partnership focuses on practical solutions to critical issues affecting people's daily lives.

Cost of production. The sum, measured in dollars, of all purchased inputs and other expenses necessary to produce farm products. Cost of production statistics may be expressed as an average per animal, per acre, or per unit of production (bushel, pound, or hundredweight) for all farms in an area or in the country.

County extension agent. An educator employed by a county and/or a State cooperative extension service to bring research-based agriculture and quality of life education to local people to help them address farm, home, and community problems at the local level.

Cover crop. A close-growing crop grown to protect and improve soils between periods of regular crops or between trees and vines in orchards and vineyards.

Crop rotation. The practice of growing different crops in recurring succession on the same land. Crop rotation plans are usually followed for the purpose of increasing soil fertility and maintaining good yields.

Crop year. Generally, the 12-month period from the beginning of harvest of a particular crop.

Custom work. Specific farm operations performed under contract between the farmer and the contractor. The contractor furnishes labor, equipment, and materials to perform the operation. Custom harvesting of grain, spraying and picking of fruit, and sheep shearing are examples of custom work.

Dairy Export Incentive Program. A program that offers subsidies to exporters of U.S. dairy products to assist in competition with

other nations. Under the DEIP, exporters are awarded bonuses, enabling them to compete for sales in specified countries. The program was originally authorized by the 1985 Farm Act and reauthorized by the 1990 Farm Act. The 1996 Farm Act extends the program through 2002.

Disaster payments. Federal payments made to farmers because of a natural disaster when (1) planting is prevented or (2) crop yields are abnormally low because of adverse weather and related conditions. Disaster payments may be provided under existing legislation or under special legislation enacted after an extensive natural disaster.

Distance Education. Delivery of instructional material over a wide geographical area via one or more technologies, including video, computer, and laser.

DNA. Deoxyribonucleic acid, a polymeric chromosomal constituent of living cell nuclei, composed of deoxyribose (a sugar), phosphoric acid, and four nitrogen bases--adenine, cytosine, guanine, and thymine. It contains the genetic information for living organisms, and consists of two strands in the shape of a double helix. A gene is a piece of DNA.

Double crop. Two different crops grown on the same area in one growing season.

Dryland farming. A system of producing crops in semiarid regions (usually with less than 20 inches of annual rainfall) without the use of irrigation. Frequently, part of the land will lie fallow in alternate years to conserve moisture.

Erosion. The process in which water or wind moves soil from one location to another. Types of erosion are (1) sheet and rill—a general washing away of a thin uniform sheet of soil, or removal of soil in many small channels or incisions caused by rainfall or irrigation runoff; (2) gully—channels or incisions cut by concentrated water runoff after heavy rains; (3) ephemeral—a water-worn, short-lived or seasonal incision, wider, deeper and longer than a rill, but shallower and smaller than a gully; and (4) wind—the carrying away of dust and sediment by wind in areas of high prevailing winds or low annual rainfall.

Ethanol. An alcohol fuel that may be produced from an agricultural foodstock such as corn, sugarcane, or wood, and may be blended with gasoline to enhance octane, reduce automotive exhaust pollution, and reduce reliance on petroleum-based fuels.

Export Enhancement Program (EEP). Started in May 1985 under the Commodity Credit Corporation Charter Act to help U.S. exporters meet competitors' prices in subsidized markets. Under the EEP, exporters are awarded bonuses, enabling them to compete for sales in specified countries.

Extra-long staple (ELS) cotton. Cottons having a staple length of 1-3/8 inches or more, characterized by fineness and high-fiber strength. American types include American Pima and Sea Island cotton.

Family Farm. An agricultural business which (1) produces agricultural commodities for sale in such quantities so as to be recognized as a farm rather than a rural residence; (2) produces enough income (including off farm employment) to pay family and farm operating expenses, to pay debts, and to maintain the property; (3) is managed by the operator; (4) has a substantial amount of labor provided by the operator and family; and (5) may use seasonal labor during peak periods and a reasonable amount of full-time hired labor.

Farm. USDA defines a farm in 1997 as any place from which $1,000 or more of agricultural products were produced and sold or normally would have been sold during the year.

Farm Credit System. The system made up of cooperatively owned financial institutions in districts covering the United States and Puerto Rico that finance farm and farm-related mortgages and operating loans. Institutions within each district specialize in farmland loans and operating credit, or lending to farmer-owned supply, marketing, and

processing cooperatives. FCS institutions rely on the bond market as a source of funds.

Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act) (P.L.104-127). The omnibus food and agriculture legislation signed into law on April 4, 1996, that provided a 7-year framework (1996-2002) for the Secretary of Agriculture to administer various agricultural and food programs. The 1996 Act fundamentally redesigns income support and supply management programs for producers of wheat, corn, grain sorghum, barley, oats, rice, and upland cotton. The 1996 Farm Act also makes program changes for dairy, sugar, and peanuts. Additionally, trade programs are more targeted and environmental programs are consolidated and extended in the 1996 Farm Act.

Feed grain. Any of several grains most commonly used for livestock or poultry feed, including corn, grain sorghum, oats, rye, and barley.

Fertilizer. Any organic or inorganic material of natural or synthetic origin which is added to soil to provide nutrients, including nitrogen, phosphorus, and potassium, necessary to sustain plant growth.

FFA. An organization for high school students studying vocational agriculture.

Flood plains. Lowland and relatively flat areas adjoining inland and coastal waters, including floodprone areas of islands. This land includes, at a minimum, those areas that are subject to a 1 percent or greater chance of flooding in any given year.

Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Farm Act) (P.L. 101-624). Signed November 28, 1990, this 5-year farm bill applied to the 1991-95 crop programs. This Act continued the transition, started by the Food Security Act of 1985, toward greater market orientation of domestic commodity programs, the most notable changes being frozen minimum target prices and greater planting flexibility. Most of the commodity program provisions of this Act were superseded by the Federal Agriculture Improvement and Reform Act of 1996.

Food grain. Cereal seeds most commonly used for human food, chiefly wheat and rice.

Food Security Act of 1985 (1985 Farm Act) (P.L. 99-198). The omnibus food and agriculture legislation signed into law on December 23, 1985, that provided a 5-year framework (1986-90) for the Secretary of Agriculture to administer various agricultural and food programs.

Forage. Vegetable matter, fresh or preserved, that is gathered and fed to animals as roughage; includes alfalfa hay, corn silage, and other hay crops.

Forward contracting. A method of selling crops before harvest by which the buyer agrees to pay a specified price to a grower for a portion, or all, of the grower's crops.

Fungicide. A chemical substance used as a spray, dust, or disinfectant to kill fungi infesting plants or seeds.

Futures contract. An agreement between two people, one who sells and agrees to deliver and one who buys and agrees to receive a certain kind, quality, and quantity of product to be delivered during a specified delivery month at a specified price.

General Agreement on Tariffs and Trade (GATT). An agreement originally negotiated in 1947 to increase international trade by reducing tariffs and other trade barriers. The agreement provides a code of conduct for international commerce and a framework for periodic multilateral negotiations on trade liberalization and expansion. The Uruguay Round Agreement established the World Trade Organization (WTO) to replace the GATT. The WTO officially replaced the GATT on January 1, 1995.

Genetic engineering. Genetic modification of organisms by recombinant DNA, recombinant RNA, or other specific molecular gene transfer or exchange techniques.

Genome. All the genetic material in the chromosomes of a particular organism.

Gleaning. Collecting of unharvested crops from the fields, or obtaining agricultural products from farmers, processors, or retailers without charge.

Gopher. The Internet Gopher client/server is a distributed information delivery system around which a campuswide information system can readily be constructed. While providing a delivery vehicle for local information, Gopher facilitates access to other Gopher and information servers throughout the world.

Grade A milk. Milk, also referred to as fluid grade, produced under sanitary conditions that qualify it for fluid (beverage) consumption. Only Grade A milk is regulated under Federal milk marketing orders.

Grade B milk. Milk, also referred to as manufacturing grade, not meeting Grade A standards. Less stringent standards generally apply.

Grafting. The process of inserting a scion of a specified variety into a stem, root, or branch of another plant so that a permanent union is achieved.

Great Plains. A level to gently sloping region of the United States that lies between the Rockies and approximately the 98th meridian. The area is subject to recurring droughts and high winds. It consists of parts of North Dakota, South Dakota, Montana, Nebraska, Wyoming, Kansas, Colorado, Oklahoma, Texas, and New Mexico.

Green manure. Any crop or plant grown and plowed under to improve the soil, by adding organic matter and subsequently releasing plant nutrients, especially nitrogen.

Ground water. Water beneath the Earth's surface between saturated soil and rock, which supplies wells and springs.

Group Risk Plan (GRP). A crop insurance plan that uses an index—the expected county yield—as the basis for protection. When the yield for the insured crop in the county falls below the yield level chosen by the farmer, an indemnity is paid. GRP protection involves less paperwork and costs less than the farm-level coverage described above. However, individual crop losses may not be covered if the county yield does not suffer a similar level of loss.

Hedgerow. Trees or shrubs grown closely together so that branches intertwine to form a continuous row.

Herbicide. Any agent or chemical used to destroy plants, especially weeds.

Humus. The well decomposed, relatively stable portion of the partly or wholly decayed organic matter in a soil, which provides nutrients and helps the soil retain moisture.

Hydroponics. Growing of plants in water containing dissolved nutrients, rather than in soil. This process is being used in greenhouses for intensive off-season production of vegetables.

Infrastructure. The transportation network, communications systems, financial institutions, and other public and private services necessary for economic activity.

Integrated crop management. An agriculture management system that integrates all controllable agricultural production factors for long-term sustained productivity, profitability, and ecological soundness.

Integrated pest management (IPM). The control of pests or diseases by using an array of crop production strategies, combined with careful monitoring of insect pests or weed populations and other methods. Some approaches include selection of resistant varieties, timing of cultivation, biological control methods, and minimal use of chemical pesticides so that natural enemies of pests are not destroyed. These approaches are used to anticipate and prevent pests and diseases from reaching economically damaging levels.

International trade barriers. Regulations used by governments to restrict imports from

other countries. Examples include tariffs, embargoes, import quotas, and unnecessary sanitary restrictions.

Internet. The global connection of interconnected local, mid-level, and wide-area automated information/communications networks.

Land-grant universities. Institutions, including State colleges and universities and Tuskegee University, eligible to receive funds under the Morrill Acts of 1862 and 1890. The Federal Government granted land to each State and territory to encourage practical education in agriculture, homemaking, and mechanical arts.

Land-use planning. Decisionmaking process to determine present and future uses of land. The resulting plan is the key element of a comprehensive plan describing recommended location and intensity of development of public and private land uses such as residential, commercial, industrial, recreational, and agricultural.

Leaching. The process of removal of soluble materials by the passage of water through soil.

Legumes. A family of plants that includes many valuable food and forage species such as peas, beans, soybeans, peanuts, clovers, alfalfas, and sweet clovers. Legumes can convert nitrogen from the air to nitrates in the soil through a process known as nitrogen fixation. Many of these species are used as cover crops and are plowed under for soil improvement.

Lint. Cotton fiber remaining after the seeds have been ginned out.

Loan deficiency payments. A provision begun in the 1985 Farm Act to provide direct payments to producers who, although eligible to obtain price support loans for wheat, feed grains, upland cotton, rice, or oilseeds and thereby receive marketing loan gains, agree not to obtain loans.

Loan rate. The price per unit (bushel, bale, pound, or hundredweight) at which the Commodity Credit Corporation will provide loans to farmers enabling them to hold their crops for later sale.

Market Access Program (MAP). Formerly the Market Promotion Program. Participating organizations include nonprofit trade associations, State and regional trade groups, and private companies. Fund authority is capped at $90 million annually for FY 1996-2002.

Market basket of farm foods. Average quantities of U.S. farm foods purchased annually per household in a given period. Retail cost of these foods used as a basis for computing an index of retail prices for domestically produced farm foods. Excluded are fishery products, imported foods, and meals eaten away from home.

Marketing allotments. Provides each processor or producer of a particular commodity a specific limit on sales for the year, above which penalties would apply.

Marketing orders. Federal marketing orders authorize agricultural producers to promote orderly marketing by influencing such factors as supply and quality, and to pool funds for promotion and research. Marketing orders are initiated by the industry, and are approved by the Secretary of Agriculture and by a vote among producers. Once approved, a marketing order is mandatory.

Marketing spread. The difference between the retail price of a product and the farm value of the ingredients in the product. This farm-retail spread includes charges for assembling, storing, processing, transporting, and distributing the products.

Marketing year. Year beginning at harvest time during which a crop moves to market.

Metropolitan statistical area (MSA). A county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or twin cities with a combined population of at least 50,000. In addition, contiguous counties are included in an MSA if they

are socially and economically integrated with a central city.

Migrant farmworker. A person who travels across State or county boundaries to do agricultural work of a seasonal or other temporary nature, and who is required to be absent overnight from his or her permanent place of residence. Exceptions are immediate family members of an agricultural employer or a farm labor contractor, and temporary foreign workers.

Multiple-peril crop insurance (MPCI). Refers to the numerous perils (drought, excess moisture, cold and frost, wind, flood, and unavoidable damage from insects and disease) generally covered by a Federal crop insurance policy. Policies covering one peril, like hail, exist and are not federally subsidized.

National forest. A Federal reservation dedicated to protection and management of natural resources for a variety of benefits — including water, forage, wildlife habitat, wood, recreation, and minerals. National forests are administered by USDA's Forest Service, while national parks are administered by the Interior Department's National Park Service.

National grassland. Land, mainly grass and shrub cover, administered by the Forest Service as part of the National Forest System for promotion of grassland agriculture, watersheds, grazing wildlife, and recreation.

Nematode. Microscopic soil worm, which may attack root or other structures of plants and cause extensive damage.

Net farm income. A measurement of the profit or loss associated with a given year's production. It is an approximation of the net value of agricultural production, regardless of whether the commodities were sold, fed, or placed in inventory during the year. Net farm income equals the difference between gross farm income and total expenses. It includes nonmoney items such as depreciation, the consumption of farm-grown food, and the net imputed rental value of operator dwellings. Additions to inventory are treated as income.

Nitrogen. A chemical element essential to life and one of the primary plant nutrients. Animals get nitrogen from protein feeds; plants get it from soil; and some bacteria get it directly from air.

Nonfarm income. Includes all income from nonfarm sources (excluding money earned from working for other farmers) received by farm operator households.

Nonpoint source pollution. Pollutants that cannot be traced to a specific source, including stormwater runoff from urban and agricultural areas.

Nonprogram crops. Crops—such as potatoes, vegetables, fruits, and hay—that are not included in Federal price support programs.

Nonrecourse loan program. Provides operating capital to producers of wheat, feed grains, cotton, peanuts, tobacco, rice, and oilseeds. Sugar processors are also eligible for nonrecourse loans. Farmers or processors participating in government commodity programs may pledge a quantity of a commodity as collateral and obtain a loan from the CCC at a commodity-specific, per-unit loan rate. The borrower may repay the loan with interest within a specified period and regain control of the commodity, or forfeit the commodity to the CCC after the specified period as full settlement of the loan with no penalty. For those commodities eligible for marketing loan benefits, producers may repay the loan at the world price (rice and upland cotton) or posted county price (wheat, feed grains, and oilseeds).

Nutrient. A chemical element or compound that is essential for the metabolism and growth of an organism.

Off-farm income. Includes wages and salaries from working for other farmers, plus nonfarm income, for all owner operator families (whether they live on a farm or not).

Oilseed crops. Primarily soybeans, and other crops such as peanuts, cottonseed, sunflower seed, flaxseed, safflower seed, rapeseed, sesame seed, castor beans, canola, rapeseed, and mustard seeds used to produce edible and/or inedible oils, as well as high-protein animal meal.

Oilseed meal. The product obtained by grinding the cakes, chips, or flakes that remain after most of the oil is removed from oilseeds. Used as a feedstuff for livestock and poultry.

Organic farming. There is no universally accepted definition, but in general organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, and livestock feed additives. To the maximum extent feasible, organic farming systems rely on crop rotation, crop residues, animal manures, legumes, green manure, off-farm organic wastes, mechanical cultivation, mineral bearing rocks, and aspects of biological pest control to maintain soil productivity and tilth; to supply plant nutrients; and to control weeds, insects, and other pests.

Payment limitations. Limitations set by law on the amount of money any one person may receive in Federal farm program payments each year under the feed grain, wheat, cotton, rice, and other farm programs.

Percolation. The downward movement of water through soil under the influence of gravity.

Permanent legislation. Legislation that would be in effect in the absence of all temporary amendments (Farm Acts). The Agricultural Adjustment Act of 1938 and the Agricultural Act of 1949 serve as the basic laws authorizing the major commodity programs. Technically, each new Farm Act amends the permanent legislation for a specified period.

Plant germplasm. Living material such as seeds, rootstock, or leaf plant tissue from which new plants can grow.

Pomology. The science or study of growing fruit.

Price index. An indicator of average price change for a group of commodities that compares price for those same commodities in some other period, commonly called the base period.

Price support level. The price for a unit of a farm commodity (pound, ton) that the Government will support through price-support loans, purchases, and/or payments. Price support levels are determined by law and are set by the Secretary of Agriculture.

Price support programs. Government programs that aim to keep farm prices from falling below specific minimum levels. Price support programs for selected commodities (peanuts, tobacco, sugar, and milk) are carried out through loans or purchases. With price-support loans, producers (or processors in the case of sugar) use their production of a commodity as collateral for a loan with the Commodity Credit Corporation (CCC). Loans enable the loan taker to store the commodity during periods of low prices. The loans may be redeemed later if commodity prices rise sufficiently to make the sale of the commodity on the market profitable, or the loan taker may forfeit the commodity used as collateral for the loan to CCC in lieu of cash repayment. In the case of milk, CCC is authorized through December 31, 1999, to purchase manufactured dairy products in order to support the price of fluid milk at statutorily prescribed levels.

Production Credit Associations. Lending groups, owned by their farmer borrowers, that provide short and intermediate-term loans for up to 10 years from funds obtained from investors in money markets. These associations are an integral part of the Farm Credit System.

Production flexibility contract payments. The payments to be made to farmers for contract crops in 1996 through 2002 under the 1996 Farm Act. Payments for each crop are allocated each fiscal year based on budgetary levels and crop-specific percentages in the 1996 Farm Act.

Production flexibility contract payment quantity. The quantity of production eligible for production flexibility contract payments under the 1996 Farm Act. Payment quantity is calculated as the farm's program yield (per acre) multiplied by 85 percent of the farm's contract acreage.

Production flexibility contract payment rate. The amount paid per unit of production to each participating farmer for eligible payment production under the 1996 Farm Act.

Productive capacity. The amount that could be produced within the next season if all the resources currently available were fully employed using the best available technology. Productive capacity increases whenever the available resources increase or the production of those resources increases.

Productivity. The relationship between the quantity of inputs (land, labor, tractors, feed, etc.) employed and the quantity of outputs produced. An increase in productivity means that more outputs can be produced from the same inputs or that the same outputs are produced with fewer inputs. Both single-factor and multifactor indexes are used to measure productivity. Single-factor productivity indexes measure the output per unit of one input at the same time other inputs may be changing. Multifactor productivity indexes consider all productive resources as a whole, netting out the effects of substitution among inputs. Crop yield per acre, output per work hour, and livestock production per breeding animal are all single-factor productivity indicators. The Total Farm Output per Unit of Input Index is a multifactor measure.

Program crops. Crops for which Federal support programs are available to producers, including wheat, corn, barley, grain sorghum, oats, extra long staple and upland cotton, rice, oilseeds, tobacco, peanuts, and sugar.

Public Law 480 (P.L. 480). Common name for the Agricultural Trade Development and Assistance Act of 1954, which seeks to expand foreign markets for U.S. agricultural products, combat hunger, and encourage economic development in developing countries. Title I of P.L. 480, also called the Food for Peace Program, makes U.S. agricultural commodities available through long-term dollar credit sales at low interest rates for up to 30 years. Donations for humanitarian food needs are provided under Title II. Title III authorizes "food for development" grants.

Rangeland. Land which is predominantly grasses, grasslike plants, or shrubs suitable for grazing and browsing. Rangeland includes natural grasslands, savannahs, many wetlands, some deserts, tundra, and certain shrub communities. It also includes areas seeded to native or adapted and introduced species that are managed like native vegetation.

Renewable resources. Resources such as forests, rangeland, soil, and water that can be restored and improved.

Revenue insurance. RMA's three revenue insurance plans all provide a guaranteed level of revenue by different means. Generally, indemnities are paid when any combination of yield and price shortfalls results in revenue that is less than the revenue guarantee. Revenue is determined differently by the particular plans of insurance. All three plans provide traditional MPCI yield protection and include provisions to account for price variability.

Riparian rights. Legal water rights of a person owning land containing or bordering on a water course or other body of water in or to its banks, bed, or waters.

RNA (ribonucleic acid). A molecule similar to DNA that functions primarily to decode instructions for protein synthesis that are carried by genes.

Ruminant. Animal having a stomach with four compartments (rumen, reticulum, omasum, and abomasum). Their digestive process is more complex than that of animals having a true stomach. Ruminants include cattle, sheep, and goats, as well as deer, bison, buffalo, camels, and giraffes.

Rural. An area that has a population of fewer than 2,500 inhabitants and is outside an urban area. A rural area does not apply only to farm residences or to sparsely settled areas, since a small town is rural as long as it meets the above criteria.

Sales closing date. The final date that an application for crop insurance may be filed. This is the date for producers to make changes in their crop insurance coverage for the crop year.

Saline soil. A soil containing enough soluble salts to impair its productivity for plants.

Silage. Prepared by chopping green forage (grass, legumes, field corn, etc.) into an air-tight chamber, where it is compressed to exclude air and undergoes an acid fermentation that retards spoilage. Contains about 65 percent moisture.

Silviculture. A branch of forestry dealing with the development and care of forests.

Sodbuster. A portion of the Highly Erodible Land Conservation provision of the Food Security Act of 1985 that is designed to discourage the conversion of highly erodible land from extensive conserving uses, such as grasslands and woodlands, to intensive production of agricultural commodities. If highly erodible grasslands or woodlands are converted to intensive crop production without the application of appropriate conservation practices, producers may lose eligibility for many USDA program benefits. Also see "Conservation Compliance."

Staple. Term used to designate length of fiber in cotton, wool, or flax.

State Agricultural Experiment Station. State-operated institutions, established under the Hatch Act of 1887 and connected to land-grant universities in each State, which carry out research of local and regional importance in the areas of food, agriculture, and natural resources.

Stubble mulch. A protective cover provided by leaving plant residues of any previous crop as a mulch on the soil surface when preparing for the following crop.

Subsistence farm. A low-income farm where the emphasis is on production for use of the operator and the operator's family rather than for sale.

Supplementary imports. Farm products shipped into this country that add to the output of U.S. agriculture. Examples include cattle, meat, fruit, vegetables, and tobacco (see complementary imports).

Sustainable agriculture. An integrated system of plant and animal production practices having a site-specific application that will, over the long term, satisfy food and fiber needs, enhance environmental quality and natural resources, make the most efficient use of nonrenewable resources and on-farm resources, integrate natural biological cycles and controls, sustain the economic viability of farm operations, and enhance the quality of life.

Swampbuster. This provision was authorized by the Food Security Act of 1985; it discourages the conversion of natural wetlands to cropland use. With some exceptions, producers converting a wetland area to cropland may lose eligibility for many USDA program benefits.

Terminal market. A metropolitan market that handles agricultural commodities.

Tissue culture. The technique of growing a whole plant from a single engineered cell or piece of plant tissue.

Unit cost. The average cost to produce a single item. The total cost divided by the number of items produced.

Upland cotton. A fiber plant developed in the United States from stock native to Mexico and Central America. Includes all cotton grown in the continental United States except Sea Island and American Pima cotton. Staple length of upland cotton ranges from 3/4 inch to 1 1/4 inches.

Urban. A concept defining an area that has a population of 2,500 or more inhabitants.

Uruguay Round. The Uruguay Round of Multilateral Trade Negotiations (UR) under the auspices of the GATT; a trade agreement designed to open world agricultural markets. The UR agricultural agreement covers four areas: export subsidies, market access, internal supports, and sanitary and phytosanitary rules. The agreement is implemented over a 6-year period, 1995-2000.

Vegetative cover. Trees or perennial grasses, legumes, or shrubs with an expected lifespan of 5 years or more.

Viticulture. The science and practice of growing grapes.

Watershed. The total land area, regardless of size, above a given point on a waterway that contributes runoff water to the flow at that point. A major subdivision of a drainage basin. The United States is generally divided into 18 major drainage areas and 160 principal river drainage basins containing some 12,700 smaller watersheds.

Water table. The upper limit of the part of the soil or underlying rock material that is wholly saturated with water.

Wetlands. Land that is characterized by an abundance of moisture and that is inundated by surface or ground water often enough to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wholesale price index. Measure of average changes in prices of commodities sold in primary U.S. markets. "Wholesale" refers to sales in large quantities by producers, not to prices received by wholesalers, jobbers, or distributors. In agriculture, it is the average price received by farmers for their farm commodities at the first point of sale when the commodity leaves the farm.

Zoonotic diseases. Diseases that, under natural conditions, are communicable from animals to humans.

4-H. International youth organization that empowers young people 5-19 years old through programs and activities that foster agricultural, science, and technology literacy; citizenship; and other lifelong living skills, such as self-esteem, career and personal development. The national 4-H staff is located in the Families, 4-H, and Nutrition unit of the Cooperative State Research, Education, and Extension Service. The 4-H's stand for Head, Heart, Hands, and Health.

1890 Land-Grant Colleges and Universities and Tuskegee University. Historically Black land-grant colleges and universities. Through the Act of August 30, 1890, and several other authorities, these institutions may receive Federal funds for agricultural research, extension, and teaching.

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