

**2020 USDA EXPLANATORY NOTES – NATIONAL AGRICULTURAL STATISTICS SERVICE**

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## ***AGENCY-WIDE***

### **PURPOSE STATEMENT**

The National Agricultural Statistics Service (NASS) was established by Secretary's Memorandum No. 1446, Supplement 1, of April 3, 1961, under Reorganization Plan No. 2 of 1953 and other authorities. The mission of the agency is to provide timely, accurate, and useful statistics in service to U.S. agriculture.

The statistical data provided by NASS is essential to the public and private sectors for making effective policy, production, and marketing decisions on a wide range of agricultural commodities. Every 5 years the Census of Agriculture (COA) provides comprehensive national, State and county data as well as selected data for Puerto Rico, Guam, Virgin Islands, Northern Mariana Islands and American Samoa Islands. NASS' responsibilities are authorized under the Agricultural Marketing Act of 1946 (7 U.S.C. 1621 – 1627), and the Census of Agriculture Act of 1997, Public Law 105-113 (Title 7 U.S. Code 2204g).

### **Agricultural Estimates Programs (AEP)**

In the AEP, NASS annually publishes approximately 450 agricultural statistical national reports and thousands of additional agricultural statistical State reports, covering more than 120 crops, 45 livestock items, and 12 major economic and environmental categories. These releases are complemented by State agricultural statistical releases. These basic and objective data are critical to maintain an orderly association between the consumption, supply, marketing, expenses, and income sectors of agriculture. NASS uses scientifically designed surveys to provide the basis for developing estimates of production, supply price, and other aspects of the agricultural economy. Officially USDA national, State, and county estimates and statistical reports are issued relating to the number of farms and land in farms; acreage, types, and production of farm crops; number of livestock on farms and of livestock products; stocks of agricultural commodities; value and utilization of farm products; prices received and paid by farmers; agricultural chemical use; and on other subjects as needed. The regional offices forward the estimates to NASS headquarters where they are combined and released at preannounced scheduled times to the press and public through the Agricultural Statistics Board. The statistical data provided by NASS enhances the competitiveness and sustainability of rural farm economics by leveling the playing field. All parties have equal access to official statistics. NASS regularly surveys thousands of operators of farms, ranches, and agribusiness who provide information on a confidential basis. The necessity of protecting respondent confidentiality and ensuring the impartiality of official agricultural statistics and universal accessibility at predetermined and publicized dates and times are addressed by having the Federal government produce these statistics.

### **Census of Agriculture Programs (COA)**

The COA is taken every five years and provides comprehensive data on the agricultural economy, including data on the number of farms, land use, production expenses, value of land and buildings, farm size and characteristics of farm operators, market value of agricultural production sold, acreage of major crops; inventory of livestock and poultry, and farm irrigation practices. The COA data collection is conducted in close cooperation with the Nation's agricultural user group and farmer organizations. The COA ensures that the list frame used for sampling records for surveys is current and is also utilized for the Agricultural Estimates program as well as the reimbursable survey program. Results from the 2012 COA were released in May 2014. Under the COA appropriation in 2015, NASS started publishing the Current Agricultural Industrial Reports (CAIR). Results from the 2017 COA will be released in February 2019.

### **Work Performed for Others**

NASS lends technical expertise and conducts surveys for other Federal agencies, State governments, and private organizations on a reimbursable basis. Through the reimbursable program, NASS provides support and assistance with questionnaire and sample design, data collection and editing, analysis of survey results, and training. NASS also provides technical consultation, support and assistance for international programs under participating agency service agreements. The Census of Agriculture is essential to the reimbursable program and provides a current list frame to draw sampling records from which to do client work.

NASS maintains a central office in Washington, D.C., a National Operations Center in St. Louis, Missouri, and a network of 12 regional field offices that serve all 50 States operating through cooperative agreements with the National Association of State Departments of Agriculture (NASDA) or universities.

**AVAILABLE FUNDS AND STAFF YEARS***Table NASS-I. Available Funds and Staff Years (thousands of dollars, staff years (SY))*

Item	2017 Actual	SY	2018 Actual	SY	2019 Estimate	SY	2020 Budget	SY
Salaries and Expenses:								
Discretionary Appropriations .....	\$171,239	876	\$191,717	831	\$191,717	831	\$163,000	819
Balance Available, SOY .....	270	-	134	-	151	-	-	-
Other Adjustments (Net).....	11,415		5,151	-	-	-	-	-
Total Available .....	182,924	876	197,002	831	191,868	831	163,000	819
Balance Available, EOY.....	-134	-	-151	-	-	-	-	-
Subtotal Obligations, NASS .....	182,790	876	196,851	831	191,868	831	163,000	819
Ob. Under Other USDA Appr.:								
AMS, pesticide cert. and base month series .....	806	3	158	1	125	2	125	2
ARS, Nutrient Data Laboratory .....	-	-	450	1	-	-	-	-
APHIS-Health monitoring system .....	925	3	1,047	3	-	-	-	-
ERS, Ag Resource & small farms.....	7,104	37	8,266	37	6,641	37	6,641	37
Foreign Agricultural Service.....	1,220	5	1,288	5	1,015	6	1,015	6
FS, Grazing Fees & Woodland .....	114	1	124	1	117	1	117	1
FSA, Estimates & Surveys.....	6,424	34	6,445	34	2,615	34	2,615	34
NRCS & Farm Service .....	-	-	-	-	52	-	52	-
RMA, County Estimates .....	825	5	825	5	825	6	825	6
WAOB, Lock-up, Printing.....	28	-	23	-	23	-	23	-
Miscellaneous USDA Reimbursable .....	131	2	1,040	2	100	2	100	2
Total, Other USDA.....	17,577	90	19,666	89	11,513	88	11,513	88
Total, Agriculture Appropriations .....	200,367	966	216,517	920	203,381	919	174,513	907
Other Federal Funds:								
American Pecan Council .....	-	-	135	1	135	1	135	1
DHS, RDD.....	-	-	29	-	-	-	-	-
DOI, BLM grazing fee survey .....	73	-	76	-	76	-	76	-
DOI, Ag Labor.....	1,200	2	1,200	2	1,200	3	1,200	3
Inter American Bank .....	-	-	8	-	-	-	-	-
NSF, Data Collection.....	615	2	675	2	615	2	615	2
NASA .....	-	-	85	-	3	-	3	-
Rutgers University, Special Tab .....	-	-	10	-	-	-	-	-
United Soybean Council.....	40	-	40	-	40	-	40	-
CNSTAT Core (DOT) .....	15	-	15	-	15	-	15	-
USGS (RDD).....	2	-	3	-	3	-	3	-
Total, Other Federal.....	1,945	4	2,276	5	2,087	6	2,087	6
Non-Federal Funds:								
State Agencies - survey work .....	2,724	12	2,084	12	2,683	12	2,683	12
Total, NASS .....	205,036	982	220,877	937	208,151	937	179,283	925

**PERMANENT POSITIONS BY GRADE AND STAFF YEARS***Table NASS-2. Permanent Positions by Grade and Staff Years*

Item	2017 Actual			2018 Actual			2019 Estimate			2020 Budget		
	D.C.	Field	Total	D.C.	Field	Total	D.C.	Field	Total	D.C.	Field	Total
SES .....	9	1	10	9	1	10	9	1	10	9	1	10
SL .....	2	-	2	2	-	2	2	-	2	2	-	2
GS-15.....	29	17	46	29	17	46	29	17	46	29	17	46
GS-14.....	56	71	127	56	71	127	56	71	127	56	71	127
GS-13.....	205	90	295	205	90	295	205	90	295	205	90	295
GS-12.....	32	155	187	32	155	187	32	155	187	32	155	187
GS-11.....	19	43	62	19	43	62	19	43	62	19	43	62
GS-10.....	2	3	5	2	3	5	2	3	5	2	3	5
GS-9.....	22	63	85	22	63	85	22	63	85	22	63	85
GS-8.....	12	20	32	12	20	32	12	20	32	12	20	32
GS-7.....	17	106	123	17	106	123	17	106	123	17	106	123
GS-6.....	1	19	20	1	19	20	1	19	20	1	19	20
GS-5.....	3	16	19	3	16	19	3	16	19	3	16	19
GS-4.....	1	13	14	1	13	14	1	13	14	1	13	14
GS-3.....	-	6	6	-	6	6	-	6	6	-	6	6
Other Graded .....	5	10	15	5	5	10	5	5	10	5	5	10
Ungraded .....	3	5	8	3	3	6	3	3	6	3	3	6
Total Permanent....	410	623	1,033	416	617	1,033	416	617	1,033	416	617	1,033
Unfilled, EOY.....	10	67	77	16	111	127	-	-	-	-	-	-
Total Perm. FT EOY .....	400	556	956	400	506	906	416	617	1,033	416	617	1,033
Staff Year Est.....	410	572	982	416	521	937	410	527	937	410	515	925

**VEHICLE FLEET****Motor Vehicle Fleet**

All passenger motor vehicles operated by NASS are located at various field offices and are assigned based on approved program needs and geographic region. NASS uses its fleet to conduct agricultural statistics programs through its 12 regional statistical offices and 33 statistical offices that serve all 50 States.

The NASS fleet is comprised primarily of sport utility vehicles (SUVs) that allow passengers and equipment to travel easily to farms, ranches, fields and trade shows. Among the 12 regional offices and 33 State offices, there are 10 NASS owned vehicles and 43 vehicles leased from General Services Administration (GSA). While all 12 NASS regional offices and 33 State offices require the use of motor vehicles, it is often more cost-effective to acquire vehicles through existing cooperative agreements with the National State Departments of Agriculture, through leases from State motor pools, or via rental agreements. Field offices monitor and track vehicles' use and costs. Where possible NASS uses short term rental and shared motor pools. The use of common carrier is not feasible. The ability to reach the nation's farms, ranches, and fields is crucial to the NASS mission and for ensuring data are collected and reported accurately.

***Changes to Motor Vehicle Fleet***

At the end of 2018, NASS had 53 vehicles; 10 owned and 43 GSA leased vehicles.

***Impediments to Managing the Motor Vehicle Fleet***

There are no identified impediments to managing the motor vehicle fleet in the most cost-effective manners.

*Table NASS-3. Size, Composition, and Annual Costs of Motor Vehicle Fleet<sup>a</sup>*

<b>Fiscal Year</b>	<b>Sedans and Station Wagons</b>	<b>Lt. Trucks, SUVs, and Vans (4x2)</b>	<b>Lt. Trucks, SUVs, and Vans (4x4)</b>	<b>Medium Duty Vehicles</b>	<b>Heavy Duty Vehicles</b>	<b>Total Vehicles</b>	<b>Annual Operating Costs<sup>b</sup></b>
2017	2	21	27	1	-	51	\$233
Change	+1	+3	-2	-	-	+2	+5
2018	3	24	25	1	-	53	238
Change	-	-	-	-	-	-	+16
2019	3	24	25	1	-	53	254
Change	-	-	-	-	-	-	+2
2020	3	24	25	1	-	53	256

<sup>a</sup> Vehicle count include those owned by agency and leased from commercial sources or GSA.

<sup>b</sup> Excludes acquisition costs and gains from sale of vehicles as shown in FAST.

**SHARED FUNDING PROJECTS***Table NASS-4. Shared Funding Projects (dollars in thousands)*

Item	2017 Actual	2018 Actual	2019 Estimate	2020 Budget
<b>Working Capital Fund:</b>				
HR Enterprise System Management.....	\$12	\$10	\$11	\$11
Material Management Service.....	165	154	125	145
Mail and Reproduction Services.....	114	167	198	207
Integrated Procurement Systems.....	108	98	97	102
Subtotal.....	400	429	431	465
National Finance Center.....	296	257	265	277
Financial Share Services.....	662	651	661	654
Subtotal.....	958	908	926	931
Client Experience Center.....	1,290	1,469	1,531	1,522
Digital Infrastructure Services Center.....	920	968	955	955
Enterprise Network Services.....	1,662	1,314	3,085	3,319
Subtotal.....	3,872	3,751	5,571	5,796
Creative Media & Broadcast Center.....	36	199	216	309
Office of the Executive Secretariat.....	13	12	3	3
Total, Working Capital Fund.....	5,278	5,299	7,191	7,548
<b>Department-Wide Shared Cost Programs:</b>				
1890's USDA Initiatives.....	35	-	-	-
Advisory Committee Liaison Services.....	2	2	-	-
Agency Partnership Outreach.....	-	72	77	77
Classified National Security Information.....	6	-	-	-
Continuity of Operations Planning.....	19	-	-	-
Emergency Operations Center.....	22	-	-	-
Facility and Infrastructure Review and Assessment.....	4	-	-	-
Faith-Based Initiatives and Neighborhood Partnerships...	4	-	-	-
Hispanic-Serving Institutions National Program.....	18	-	-	-
Honor Awards.....	-	-	1	1
Human Resources Self-Service Dashboard.....	6	6	6	6
Human Resources Transformation.....	15	-	-	-
Identity Access Management.....	63	-	-	-
Medical Services.....	28	34	32	32
Office of Customer Experience.....	-	19	31	37
People's Garden.....	6	5	-	-
Personnel and Document Security.....	-	15	15	15
Personnel Security Branch.....	8	-	-	-
Security Detail.....	32	43	46	46
Security Operations.....	-	100	105	105
TARGET Center.....	14	13	11	11
USDA 1994 Program.....	7	-	-	-
USDA Enterprise Data Analytics Services.....				53
Virtual University.....	19	10	-	-
Total, Department-Wide Reimbursable Programs.....	309	325	323	383
<b>E-Gov:</b>				
Budget Formulation and Execution Line of Business.....	1	1	1	1
Enterprise Human Resources Integration.....	20	20	20	20
Financial Management Line of Business.....	1	1	1	1
Geospatial Line of Business.....	13	13	13	13
Human Resources Line of Business.....	3	3	3	3
Integrated Acquisition Environment.....	-	-	1	-
Total, E-Gov.....	38	38	38	38
Agency Total.....	5,625	5,662	7,552	7,969

**ACCOUNT 1: SALARIES AND EXPENSES**

**LEAD-OFF TABULAR STATEMENT**

*Table NASS-5. Lead-Off Tabular Statement*

<b>Item</b>	<b>Amount</b>
2019 Annualized Continuing Resolution.....	\$191,717,000
Change in Appropriation .....	-28,717,000
Budget Estimate, 2020.....	<u>163,000,000</u>
Budget Estimate, Current Law 2020 .....	\$163,000,000
Change Due to Proposed Legislation .....	-
Net 2020 Request .....	<u>163,000,000</u>

**APPROPRIATIONS LANGUAGE**

The appropriations language follows (new language underscored; deleted matter enclosed in brackets):

For necessary expenses of the National Agricultural Statistics Service \$163,000,000 of which up to \$45,300,000 shall be available until expended for the Census of Agriculture: Provided, That amounts made available for the Census of Agriculture may be used to conduct the Current Agricultural Industrial Report surveys subject to 7 U.S.C. 2204 g(d) and (f).

**PROJECT STATEMENT***Table NASS-6. Project Statement (thousands of dollars, staff years (SY))*

Item	2017		2018		2019		Inc. or Dec.	Chg Key	SY	2020	
	Actual	SY	Actual	SY	Estimate	SY				Budget	SY
Discretionary Appropriations:											
Agricultural Est.....	\$129,062	646	\$128,367	561	\$128,367	561	-\$10,667	(1)	+28	\$117,700	589
Census of Ag.....	42,177	230	63,350	270	63,350	270	-18,050	(2)	-40	45,300	230
Total Appropriation.....	171,239	876	191,717	831	191,717	831	-28,717		-12	163,000	819
Bal. Available, SOY.....	270	-	134	-	151	-	-151		-	-	-
Recoveries, Other (Net).....	11,415	-	5,151	-	-	-	-		-	-	-
Total Available.....	182,924	876	197,002	831	191,868	831	-28,868		-12	163,000	819
Bal. Available, EOY.....	-134	-	-151	-	-	-	-		-	-	-
Total Obligations.....	182,790	876	196,851	831	191,868	831	-28,868		-12	163,000	819

The numbered justifications items are keyed to the Change Key (Chg Key) column on the Project Statement.

**JUSTIFICATIONS****Agricultural Estimates**

Base funding for AEP provides objective data essential to both the public and private sectors of the agriculture industry. AEP base funding will be used to continue collecting integrated surveys and estimates used for over 450 agricultural statistical reports that:

- Directly impact the market,
- Directly contribute to the Federal Principle Economic Indicators of the United States,
- Provide data for which NASS reports are the only publicly available objective sources of information,
- Support USDA program delivery, and
- Have specific legislative requirements for release.

Reduction in sample size results in less precise estimates as measured by coefficients of variation (CVs), confidence intervals, or other statistical measures of precision. If sample sizes are reduced fewer estimates may meet publication standards.

Providing market information was one of the USDA key missions when it was created in 1862. Critical market-sensitive data are used by the commodity and agricultural markets to operate efficiently, providing a fair and equitable environment for price discovery in the marketplace. Without a federal provision of objective data available for the U.S. and world markets, key market information would be in the hands of a few. Individual producers and ranchers would be at a disadvantage compared to those who have resources to pay for information, and markets could be exposed to manipulation.

Funds will be used for salaries and benefits, travel and transportation, rental payments, communications and utilities, printing and reproduction, goods and services from non-federal and federal sources, research and development, equipment, operation and maintenance of equipment, and supplies and materials.

The NASS AEP is an integrated program; most report costs cannot be itemized as separate costs for a single report. For example, the June Area, Crops, and Objective Yield surveys provide direct estimates or are a component of data collection and estimation for the following publications: June Acreage; Cattle Inventory; Small Grains Summary; Crop Production Summary; Hogs & Pigs Inventory; Sheep Inventory; Farm Production Expenses; Agricultural Land Values; Farms, Land in Farms, and Livestock Operations.

As with base funding, the increases and decreases shown below support the mission, vision, and goals of the agency. The funding changes are requested for the following items:

- (1) A net decrease of \$10,667,000 and an increase of 28 staff years for Agricultural Estimates Program (\$128,367,000 and 561 staff years available in 2019).

The funding change is requested for the following items:

A decrease of \$600,000 for a Geospatial Improvement Initiative (\$800,000 available in 2019)

With the decrease in the Geospatial Improvement Initiative funding, the program will maintain base activities. There will not be any new initiatives produced from the program.

A decrease of \$2,480,000 to the Bee and Honey Program (\$2,902,000 available in 2019).

This decrease will only allow for the base funding of the Bee and Honey Program which includes the annual report of number of colonies producing honey, yield per colony, honey production, average price and value and honey stocks. NASS will not conduct the annual or quarterly loss surveys, or the cost of pollination survey

A decrease of \$2,521,000 in additional Agricultural Estimates Program

*Table NASS-7. Surveys to be Eliminated in 2020*

Survey Title	Amount
Hop and Hops Stocks Estimates	55,000
Catfish and Trout	480,000
Potato Stocks Report	353,000
Barley	33,000
Feed Cost Component Survey	1,600,000

A decrease of \$3,520,000 to Fruit and Vegetable Reports (\$8,935,000 available in 2019)

Reduction in some of the forecast for the fruit and vegetable reports.

***Fruit and Vegetable Program Cost Savings:***

- Consolidate noncitrus fruit and vegetable monthly price estimation functions.
- Exclusively utilize administrative data for estimating monthly noncitrus fruit and vegetable monthly price estimates.
- Eliminate in-season forecasts for vegetable crops.
- Eliminate in-season forecasts for noncitrus fruit & tree nut crops such as pecans.
- Reduce the number of noncitrus fruit crops included in the estimating program.
- Reduce the number of vegetable crops included in the estimating program.
- Reduce the number of States included in the estimating program for noncitrus fruit & tree nut crops.
- Reduce the number of States included in the estimating program for vegetable crops.
- Discontinue processing vegetable estimates by county.

***Remaining Program***

- Annual end-of-season estimates for noncitrus fruit & tree nut crops, including acreage, production, utilization, price, and value, with a prioritization being given to higher production States.
- Annual end-of-season estimates for vegetable crops, including acreage, yield, production, utilization, price, and value, with a prioritization being given to higher production States.

A decrease of \$4,820,000 to the Acreage, Crop Production and Grain Stocks (\$65,876,000 available in 2019).

Reduction in sample size results in less precise estimates as mentioned by coefficients of variation (CVs) confidence intervals, or other measures of precision. As a consequence, during the forecast months, NASS will publish national and major production States only.

A decrease of \$4,003,000 to Chemical Use Program (\$7,503,000 available in 2019)

NASS will eliminate the fruit chemical use survey.

An increase of \$277,000 to the Decentralized GSA and Security Payments (\$8,238 available in 2019).

This amount covers an increase for some of our regional offices for security and rent.

An increase of \$2,000,000 for the Agriculture and Rural Prosperity Initiative (0 available in 2019).

Broadband access is perhaps one of the most limiting factors in rural communities. Funding is requested for an initiative that will allow NASS to collect information on the use of technology by farmers and ranchers in our rural communities, including access to broadband and e-connectivity. As a direct response to the President's Interagency Task Force on Agriculture and Rural Prosperity call to action, NASS is proposing an increase of \$2,000,000 in FY 2020 to the establish a stand-alone survey that would collect detailed data

on technology use by agricultural producers. The initiative's goal is to build a stronger, more robust evidence base on drivers of on-farm technology use and barriers to use of technology.

The *Agriculture Technology Survey* has two main objectives. The first is to measure how technology is currently being used by agricultural producers. In addition to broadband, NASS would study access and quality to cellular service (5G capability) and producer access to tools and technical innovations (i.e. farm technologies, precision ag data, big data) in active, data-driven decision making. The second is to measure the barriers and reasons that cause farmers and ranchers not to use technology. NASS will field a survey that collects basic demographics, farm characteristics, technology used, barriers and reasons why technology is not used. NASS places a high importance priority on ensuring these data will describe internet access, availability, and use of technology by farmers, ranchers and agricultural producers, a significant contribution to USDA's Farmers.gov mission.

This initiative aligns with NASS's core mission of providing timely, accurate and useful statistics in service to U.S. agriculture. NASS is conducting a number of statistical and survey research projects to improve methods and techniques to use technology and third-party data to reduce the burden on farmers. NASS is committed to Strategic Goal 4 of USDA's Strategic Plan FY 2018-2022: Facilitate Rural Prosperity and Economic Development. If funded, the proposed initiative will allow the Department to rapidly move toward objective 4.1 to expand rural business opportunity and rural quality of life with access to capital; improved infrastructure, broadband access and connectivity; and support for workforce availability.

An increase of \$5,000,000 and an increase of 28 staff years for Farm Labor Survey (\$0 request in FY 2019)

The NASS Farm Labor Survey is conducted semi-annually on a cost reimbursable basis in April and October. During the April data collection period, data for both January and April reference weeks are collected. During the October data collection period, data for both July and October reference weeks are collected.

Currently, the Farm Labor Survey is funded by the Department of Labor. NASS is proposing to directly receive appropriation for this survey and an increase of funding to include additional questions related to base rate and incentive rate. Initial work would focus on internal processes and tolls that support analyses and estimation and ensure consistency in sampling, design and program execution. Precision and statistical reliability of data are necessary for stakeholders to be able to rely on the data to make sound policy decisions.

### **Census of Agriculture**

The Census of Agriculture is conducted every five years to obtain agricultural statistics for each county, State, and the Nation. The COA also includes the outlying areas: Commonwealth of Puerto Rico, Commonwealth of the Northern Mariana Islands, the United States Virgin Islands, American Samoa, and Guam. The COA is the leading source of statistics about the Nation's agricultural production and the only source of consistent, comparable data, at the county level. The COA is authorized by law under Public Law 105-113, Title 7, U.S. Code 2204g, and is conducted in close cooperation with the Nation's agricultural user groups and farmer organizations.

The entire Census of Agriculture Program consists of the COA conducted every five years; the Current Agricultural Industrial Report program; and Special Studies, such as the Census of Horticulture, the Farm Ranch Irrigation Survey, and the Census of Aquaculture.

Continuation of the Census of Agriculture Program is critical because funding below the base level would result in:

A data gap that hinders NASS ability to complete the COA.

Lack of Census of Agriculture data used by public and private decision-makers, including USDA and Congress, to make sound, well-informed, and effective policy, production and marketing decisions.

Lack of Census of Agriculture data that is vital to USDA programs in the Economic Research Service, Agricultural Research Service, the World Agricultural Outlook Board, Foreign Agricultural Service, Farm Service Agency, Risk Management Agency, Natural Resource Conservation Service, and Rural Development.

Significant deleterious effects on NASS' ability to complete the Census of Agriculture. If the Census of Agriculture is not completed NASS will not have a current list frame for conducting its ongoing surveys in the

Agricultural Estimates program, census follow-on surveys, and reimbursable surveys as well. Not having the Census of Agriculture

Base funding for the entire Census of Agriculture Program is broken down into five general categories listed below. Due to the cyclical nature of the Quinquennial Census of Agriculture Program, appropriated funds will shift among these five broader categories over the five-year cycle of activities. Research, evaluation and analysis are continually being conducted during the entire cycle of the Quinquennial Census of Agriculture throughout all aspects to ensure data quality and efficiency.

#### ***Direction and Planning***

This category includes planning, administration, and support for the entire Census program. The category encompasses developing timelines, milestones, deliverables, and quality assurance measures associated with the Census of Agriculture, as well as collaboration with USDA, other Federal and State agencies, and private sector stakeholders to incorporate critical periodic and emerging data needs into the plan.

#### ***Content Determination and Design***

Staff from many units in NASS evaluate and test the questionnaires for the COA. Any proposals for new content, whether from staff or from external stakeholders, must be tested before being included in the questionnaire to ensure respondents will understand the question correctly and answer consistently. NASS staff conduct cognitive interviews to obtain vital feedback on questionnaire content and design. The COA questionnaire is developed to facilitate NASS' capability to survey specific sub-populations without the additional cost of screening for those populations.

The category includes implementing the findings from research, evaluation, and analysis activities. In improving the questionnaire design and modifying the questions, NASS relies on research done throughout the Census cycle. For example, NASS staff use metrics from the Census edit system to determine how frequently and what kinds of changes are made during the edit process. This enables NASS to discern which questions need to be adjusted to more accurately collect data that lead to higher-quality data products

#### ***Mail List Development and Mail Out***

The activities necessary to develop a robust, inclusive and proficient census mail list (CML) are similar to those needed to maintain NASS' list frame for the ongoing Agricultural Estimates Program. NASS uses the information collected from the COA to build a sampling frame used in the AEP. This sampling frame is critically important to adequately cover specific commodities and farm attributes that are routinely estimated in the more than over 450 reports that NASS produces each year. NASS builds and improves the list on an ongoing basis by obtaining information from outside sources such as Federal and State government agencies, producer associations, seed growers, pesticide applicators, veterinarians, marketing associations, and other agriculture-related interest. NASS also obtains special commodity lists to address specific list deficiencies. Staff review the outside sources to determine whether they already are or should be included on the CML. Many names on newly acquired lists are already on the CML. Records not on the CML are treated as potential farms until NASS can confirm whether they are a qualifying farm

NASS conducts the National Agricultural Classification Survey (NACS) in the three years leading up to the COA. The NACS questionnaire is sent to new additions to the CML: It includes four pages of questions used to assess whether the operation meets the farm definition for inclusion in the COA. NACS enables NASS to prescreen all new operations and reduce the overall cost of the COA. Following the third year of NACS, the CML is a comprehensive list of all known farms and ranches in the United States.

This category also covers all activities related to screening potential farms. Included are the cost for assembling and labeling the mail packets and the return postage costs for questionnaires returned by mail.

#### ***Data Collection and Processing***

This category involves all activities associated with system development, programming, and data collection for the COA. A high Census response rate is important both for conducting an accurate Census and for keeping the list frame up to date. NASS staff process, edit, and analyze all online and mailed responses. Also included is outreach to Native American farms and tribes, outlying areas, and small or disadvantaged farm operators (including outreach to the community-based organizations). NASS outsources some data collection and processing activities in cooperative agreements with the National Association of State Departments of Agriculture (NASDA) and the Census Bureau's National Processing Center (NPC) in Jeffersonville, Indiana.

### ***Publication and Data Dissemination***

This category includes marketing, production, and dissemination of print and electronic products created to promote data collection as well as products created in connection with data release for the Census of Agriculture. NASS conducts publicity prior to and during data collection to encourage better response rates. Public relations and customer service activities are important functions that encourage the continued willingness of farmers, ranchers, and agribusinesses to provide information on which most NASS statistics are based. Also included is staff time for developing publication tables, creating summary and disclosure programs, and reviewing data and data products prior to release.

This category also includes research into value-added data products and dissemination techniques that respond to data user needs and requests. In response to such requests, for example, NASS examined ways to improve the visual representation of Census data, which produced a dynamic new web-mapping product first made available for the 2012 Census of Agriculture data.

### ***County Profiles***

The County Profiles provide a snapshot of agriculture activity by county. The profile includes number of farms, land in farms, market value of commodities produced, economic and operator characteristics, along with a host of other information that details the importance of agriculture in the specified area. This product also provides a listing of the top crops and livestock within the county and ranks the commodity across the State and U.S. This is one of the cornerstone products of the Census of Agriculture because of the program's focus on compiling uniform and comprehensive agricultural statistics at the county level.

### ***Congressional Profiles and Rankings***

Following each Census, reporting farms and ranches are assigned to congressional districts and two products are prepared, district profiles and district rankings. Congressional district profiles provide data on selected farm, economic, and operator characteristics for the farms and ranches assigned to the district. The ranking of congressional districts presents the order of districts from largest to smallest for selected items from the Census of Agriculture. This allows the data user to understand agriculture activity as it relates to congressional districts across the Nation. Rankings are provided for farm and operator characteristics, selected value of agricultural products sold, selected livestock and poultry inventories, and selected crops area harvested.

### ***Watershed Publication***

The 2017 Census of Agriculture Watershed publication provides data that supplement the 2012 Census of Agriculture. As a service to agricultural and environmental data users, the 2017 data for 38 individual land characteristics are published at the 6-digit Hydrologic Unit Code (HUC) level. For comparison, data from the 2012 Census of Agriculture will also be published in this report.

### ***Race, Ethnicity, and Gender Profiles Tabulation***

This product comes as a result of the Department's focus on supporting socially disadvantaged farms. These profiles provide State and county level farm operator data for women, Hispanic, Native American Indian, Asian American, and Black farmers. The statistics provided in these profiles include number of farms, value of products sold, government payments received, operator and economic characteristics, and production levels for selected crops and livestock commodities.

### ***Zip Code Tabulations***

The zip code tabulations may be used by regional planning boards, County Commissioners, and others interested in looking at farm level information more narrowly than county level data provide. Some of the Census data are tabulated as aggregate totals produced by farms and populated into QuickStats [<http://quickstats.nass.usda.gov>], NASS' online database available to the public. Individual farm information is not disclosed (for privacy laws); however, the data on the count of farms that produce different products are valuable information for anyone needing statistical farm related data within a particular county.

### ***Specialty Crops Tabulation***

The 2017 Census of Agriculture Specialty Crop publication provides data that supplement the 2012 Census of Agriculture. This publication complies with Section 10103 of the Food, Conservation, and Energy Act of 2008. As a service to agricultural and economic data users, the 2012 data for specialty crops are published at the U.S. and State level. A specialty crop is defined by Section 3 of the Specialty Crops Competitiveness Act of 2004 (7

U.S.C. 1621 note; Public Law 108-465) as fruits and vegetables, tree nuts, dried fruits, and nursery crops (including floriculture).

Funds will be used for salaries and benefits, travel and transportation, rental payments, communications and utilities, printing and reproduction, goods and services from non-federal and federal sources, research and development, operation and maintenance of equipment, supplies and materials, and equipment. NASS will collaborate with the National Association of the State Departments of Agriculture (NASDA) in data collection.

(2) A net decrease of \$18,050,000 for the Census of Agriculture (\$63,350,000 in 2019).

A decrease of \$2,385,000 due to expiration of a contract for the temporary Centralized Edit Unit (\$2,385,000 in 2019).

The Centralized Edit Unit provided NASS with a temporary streamlined and standardized edit and analysis unit. This new unit hired contract employees to handle the large volume of work associated with the data collection year. The unit was led by four NASS staff serving on detail for the duration of the unit to train, guide, and provide quality control.

A decrease of \$15,009,000 for conducting and publishing the 2017 COA.

The Census is conducted every 5 years to obtain agricultural statistics for each county and State, as well as the Nation. The Census is the leading source of statistics about U.S. agricultural production and the only source of consistent, comparable data at the county, State and national levels.

A decrease of \$5,794,000 for the Irrigation and Water Management Survey.

The Irrigation and Water Management Survey is a follow-on survey to the Census of Agriculture, occurring every five years in the year after the census. This survey will be conducted in FY 2019.

A decrease of \$1,700,000 for the Census of Aquaculture.

The Census of Aquaculture was conducted for the 2013 and planned for the 2019 growing years and provides a comprehensive picture of the aquaculture sector at the State and national level.

An increase of \$265,000 for the Decentralized GSA Rent and Security Payments.

This amount covers an increase for some of our regional offices for security and rent.

An increase of \$73,000 for the Current Agricultural Industrial Reports (\$1,277,000 in 2019).

This increase covers an increase in operating costs.

An increase of \$4,000,000 for the Quinquennial COA Special Study: Census of Horticulture Specialties (0 in 2019).

The Census of Horticultural Specialties was last conducted for the 2015 growing season. The census is a detailed examination of all operations identified from the Census of Agriculture with sales of \$10,000 or more. NASS proposes to conduct the Census of Horticultural Specialties every five years as funding permits and the next one is scheduled for FY 2025.

An increase of \$2,500,000 for the Organic Agriculture Survey (0 in 2019)

This increase is for conducting the Organic Agriculture follow-on survey in FY 2020. The Organic Production Survey provides acreage, production, and sales data for a variety of organic crop and livestock commodities as well as information on organic production expenses and organic production and marketing practices. NASS proposes to conduct the Organic Production Survey every five years as funding permits and the next one is scheduled for FY 2025.

**GEOGRAPHIC BREAKDOWN OF OBLIGATIONS AND STAFF YEARS***Table NASS-8. Geographic Breakdown of Obligations and Staff Years (thousands of dollars, staff years (SY))*

State/Territory/Country	2017 Actual	SY	2018 Actual	SY	2019 Estimate	SY	2020 Budget	SY
Alabama.....	\$247	1	\$261	2	\$261	2	\$243	2
Alaska.....	163	1	180	1	180	1	163	1
Arizona.....	234	2	246	2	246	2	230	2
Arkansas.....	2,246	19	2,140	19	2,140	19	2,123	21
California.....	2,036	26	2,055	26	2,055	26	2,007	27
Colorado.....	3,492	32	3,738	32	3,738	33	3,405	33
Delaware.....	74	1	91	-	91	-	86	-
District of Columbia.....	133,008	390	143,856	338	138,873	338	114,057	333
Florida.....	362	3	379	3	379	3	357	3
Georgia.....	2,565	21	2,587	21	2,587	21	2,532	22
Hawaii.....	284	2	300	2	300	2	283	2
Idaho.....	294	2	312	2	312	2	294	2
Illinois.....	276	2	290	2	290	2	274	2
Indiana.....	260	2	275	2	275	2	261	2
Iowa.....	2,576	27	2,627	27	2,627	27	2,520	27
Kansas.....	117	2	128	2	128	2	95	2
Kentucky.....	2,648	27	6,655	27	2,655	27	2,603	27
Louisiana.....	276	2	284	2	284	2	276	2
Maryland.....	130	1	131	1	131	1	129	1
Michigan.....	2,280	26	2,305	26	2,305	26	2,270	26
Minnesota.....	263	2	279	2	279	2	242	2
Mississippi.....	261	2	268	2	268	2	259	2
Missouri.....	12,850	114	14,464	121	14,654	121	12,534	109
Montana.....	259	5	268	5	268	5	254	5
Nebraska.....	2,986	31	3,290	31	3,290	31	2,980	31
Nevada.....	166	1	184	1	184	1	166	1
New Hampshire.....	313	2	327	2	327	2	302	2
New Jersey.....	307	2	317	2	317	2	303	2
New Mexico.....	252	2	265	2	265	2	249	2
New York.....	262	2	273	2	273	2	256	2
North Carolina.....	350	2	459	2	459	2	448	2
North Dakota.....	264	2	283	2	283	2	261	2
Ohio.....	237	2	250	2	250	2	234	2
Oklahoma.....	298	3	315	3	315	3	291	3
Oregon.....	257	2	274	2	274	2	256	2
Pennsylvania.....	2,802	35	2,954	35	2,954	35	2,761	35
South Carolina.....	269	2	286	2	286	2	267	2
South Dakota.....	227	2	238	2	238	2	219	2
Tennessee.....	243	2	246	2	246	2	242	2
Texas.....	2,755	32	2,877	32	2,877	32	2,703	32
Utah.....	264	2	277	2	277	2	259	2
Virginia.....	242	2	244	2	244	2	240	2
Washington.....	2,323	28	2,377	28	2,377	28	2,302	28
West Virginia.....	252	2	264	2	264	2	251	2
Wisconsin.....	255	2	265	2	265	2	253	2
Wyoming.....	265	4	277	4	277	4	260	4
Obligations.....	182,790	876	196,851	831	191,868	831	163,000	819
Bal. Available, EOY.....	134	-	151	-	-	-	-	-
Total, Available.....	182,924	876	197,002	831	191,868	831	163,000	819

**CLASSIFICATION BY OBJECTS***Table NASS-9 Classification by Objects (thousands of dollars)*

<b>Item No.</b>	<b>Item</b>	<b>2017 Actual</b>	<b>2018 Actual</b>	<b>2019 Estimate</b>	<b>2020 Budget</b>
	Personnel Compensation:				
	Washington D.C.....	\$41,500	\$42,204	\$42,204	\$41,500
	Personnel Compensation, Field.....	34,000	34,506	34,506	34,000
11	Total personnel compensation .....	75,500	76,710	76,710	75,500
12	Personal benefits .....	24,500	27,519	27,519	24,500
13.0	Benefits for former personnel .....	1,000	1,000	1,000	1,000
	Total, personnel comp. and benefits .....	101,000	105,229	105,229	101,000
	Other Objects:				
21.0	Travel and transportation of persons .....	2,000	2,072	2,100	1,000
22.0	Transportation of things .....	1,400	1,594	1,202	790
23.1	Rental payments to GSA.....	6,742	6,321	6,447	6,667
23.2	Rental payments to others .....	37	165	165	165
23.3	Communications, utilities, and misc. charges .....	800	1,246	1,200	1,000
24.0	Printing and reproduction.....	400	422	400	300
25.2	Other services from non-Federal sources .....	7,200	9,075	7,000	3,000
25.3	Other goods and services from Federal sources .....	2,000	4,987	4,720	3,000
25.4	Operation and maintenance of facilities .....	3,000	4,814	4,800	3,000
25.41	Contractual Services – Other Non-Federal - NASDA.....	39,400	42,500	42,500	29,000
25.5	Research and development contracts .....	9,000	9,000	9,000	9,000
25.7	Operation and maintenance of equipment.....	4,000	4,911	3,500	3,000
26.0	Supplies and materials .....	1,601	1,846	1,000	872
31.0	Equipment.....	4,200	2,663	2,600	1,200
42.0	Insurance Claims & Indemnities .....	10	6	5	6
	Total, Other Objects.....	81,790	91,622	86,639	62,000
99.9	Total, new obligations.....	182,790	196,851	191,868	163,000
	DHS Building Security Payments (included in 25.3).....	\$1,676	\$1,787	\$1,791	\$1,799
	Position Data:				
	Average Salary (dollars), ES Position .....	\$180,907	\$184,525	\$187,293	\$190,102
	Average Salary (dollars), GS Position.....	\$86,652	\$88,385	\$90,153	\$91,505
	Average Grade, GS Position .....	11.5	11.5	11.5	11.5

## **STATUS OF PROGRAMS**

The National Agricultural Statistics Service (NASS) mission is to provide timely, accurate, and useful statistics in service to U.S. agriculture. To achieve this, NASS administers USDA's program of collecting and publishing current national, State, and county agricultural statistics, which consists of the Agricultural Estimates and the Census of Agriculture programs. The NASS statistical data are essential to both the public and private sectors for making effective policy, production, and marketing decisions on a wide range of agricultural commodities. NASS conducts its work through 12 regional field offices (RFOs) and 33 State offices serving all 50 States.

The NASS Agricultural Estimates Program conducts scientifically designed surveys of farmers, ranchers, agribusinesses, and others, and provides the basis for developing estimates of production, supply, price, and many other aspects of the agricultural economy. These surveys are supplemented by field observations, objective yield counts and measurements, and other data to provide reliable information. Administrative data available from other USDA agencies and State departments of agriculture are also used to produce statistical reports, including monthly livestock and poultry slaughter, egg production, and dairy products reports.

Official USDA national and State reports are issued relating to:

- 1) the number of farms and land in farms;
- 2) acreage, yield, production, and stocks of grains;
- 3) production of
  - a) hay,
  - b) oilseeds,
  - c) cotton,
  - d) potatoes,
  - e) tobacco,
  - f) fruits & vegetables,
  - g) and selected specialty crops;
- 4) inventories and production of hogs, cattle, sheep and wool, goats and mohair, poultry, eggs, and dairy products;
- 5) prices received by farmers for products;
- 6) prices paid indexes for farm input commodity group;
- 7) cold storage inventories;
- 8) agricultural chemical use;
- 9) farm production expenditures;
- 10) land value;
- 11) cash rents;
- 12) grazing fees;
- 13) local foods;
- 14) organic production and income;
- 15) farm labor;
- 16) current agricultural industrial reports;
- 17) the Census of Agriculture; and
- 18) other related items that affect the agricultural economy.

The NASS regional offices forward the estimates to Headquarters in Washington, D.C., where they are combined, analyzed, and released at scheduled times to the media and public through free published statistical reports on the NASS website, <http://www.nass.usda.gov/>. Annually, NASS publishes more than 450 national agricultural statistical reports, covering over 120 crops, 45 livestock items, and 12 major economic and environmental categories, complemented by additional State agricultural statistical releases. These basic and objective data are critical to maintain an orderly association between the consumption, supply, marketing, expenses, income, and input sectors of agriculture.

NASS provides timely and accurate agricultural statistics that are used throughout the agriculture sector to evaluate supplies and determine competitive prices for world marketing of U.S. commodities. These statistics promote a level playing field in production agriculture with impartial information available to everyone at a predetermined and publicized date and time.

Statistical data are also provided on chemical use and biotechnology for use in monitoring and evaluating risk assessment to both food safety and food security. Data on agricultural practices, farm and ranch irrigation practice trends, and the geographic information system cropland data layer provide meaningful information on the nation's resource base and environment.

NASS continues to keep abreast of information needs through a variety of means, including hosting data user and advisory committee meetings, attending industry meetings, and sponsoring outreach activities. Even though most NASS reports consist of specific data series, improvements to reports and databases are constantly being made in terms of additional data breakouts, improved coverage, and improved timeliness. Special reports or additional categories within existing reports are added to best summarize the constantly changing character of agriculture.

## **Agricultural Estimates Program**

### ***Current Activities***

#### **Chemical Use Program**

The chemical use survey is coordinated in conjunction with the Agricultural Resource Management Survey (ARMS)-Phase 2. Field Crops Chemical Usage data for corn and potatoes were released in May 2018 and Vegetable Chemical Usage data was released in July 2018.

#### **Geospatial Program**

##### ***Remote Sensing for Enhanced Crop Acreage Estimates***

NASS has used remote sensing to enhance its crop acreage estimates since the 1970s, when satellite imagery was first used as a major input in constructing the nation's area sampling frame – the statistical foundation for collecting agricultural estimates with complete coverage of U.S. agriculture. The Cropland Data Layer (CDL) is the agency's core remote sensing product; it provides crop-specific land cover information and serves as the basis of acreage estimates. The CDL shows the type and location of crops planted in a particular season using low-cost and free mid-resolution satellite imagery, such as Landsat 8, Disaster Monitoring Constellation Demos-1 and UK2, Indian Space Research Organization Resources at 2, and Sentinel 2a and 2b; high-quality ground reference data; and efficient and robust classification software.

##### ***Remote Sensing for Enhanced Crop Yield Estimates***

NASS utilized National Aeronautics and Space Administration (NASA) Moderate Imaging Spectroradiometer (MODIS) Normalized Difference Vegetation Index (NDVI) products for forecasting corn yields for the 17 largest production States and soybean yields for the 11 largest. Updated yield forecasts were delivered operationally to the Agricultural Statistics Board as an independent indication for setting official yield estimates. MODIS Land Surface Temperature (LST) products served as an independent variable for yield estimation. After the season's full conclusion, county-level yield estimates for corn and soybeans were generated by integrating MODIS Land Surface Temperature (LST) products through modeling. The NASS statistical staff constantly review and test the models for potential improvements.

##### ***Remote Sensing for Disaster Assessments***

Geospatial decision support products were derived and provided for rapid response to assess flooded areas and identify potential crop losses caused by Hurricane Florence. The geospatial data products were derived from remotely sensed satellite and meteorological information obtained from NASA, the European Space Agency (ESA), and the National Oceanic Atmospheric Administration (NOAA). This was the second year that this technology was available for Agency use. The products included flood assessment reports with crop and pasture land inundated areas and percentages of impacted crops, CDL crop area maps, and wind swaths or surface winds overlaid onto crop areas identified from the CDL product. The estimates of crop and pasture hay inundation were provided to the NASS Agricultural Statistics Board for decision support. Crop inundation raster layers were shared with the USDA Operations Center Emergency Programs Division to be included in their mapping efforts. The disaster assessment reports, maps, crop inundation raster layers, metadata and a methodology report were posted on the NASS website for public dissemination at [https://www.nass.usda.gov/Research\\_and\\_Science/Disaster-Analysis/index.php](https://www.nass.usda.gov/Research_and_Science/Disaster-Analysis/index.php). Final reports, excluding in-season crop and pasture hay estimates, were posted on the NASS website for public use.

## ***Selected Examples of Recent Progress***

### ***Data Users Meeting***

NASS conducts at least one data user meeting annually, which brings together a panel of USDA agencies that produce statistical information for the public. The most recent meeting was held on April 24, 2018, in Chicago, IL. The meeting was attended by more than 125 people including agribusinesses, market analysts and traders, university professors and researchers, trade groups, and other government agencies. The meeting is an opportunity for panelists to share information about what is new in their agency and provides an open forum for questions from the attendees. As ongoing outreach, NASS continues working closely with industry groups to share the importance of responding to surveys and ask for feedback on their data needs.

### ***Prices Paid Survey***

The annual Prices Paid Survey conducted each March now includes questions for volume of quantities and total dollars received or annual average price paid for survey items. The reference period was changed from the mid-March timeframe to items sold in the previous year. The prices paid indexes was updated with the new data on April 27, 2018, in the *Agricultural Prices* report. In April 2018, NASS released the latest annual prices Highlights, *Prices U.S. Farmers Received and Paid, 2007-2017*.

New queries have been produced to make it easier to find the price indexes and prices. They incorporate estimates from many different surveys on one user-friendly web page. These pre-defined queries for prices and economic data are available at: [https://www.nass.usda.gov/Data\\_and\\_Statistics/Pre-Defined\\_Queries/index.php](https://www.nass.usda.gov/Data_and_Statistics/Pre-Defined_Queries/index.php).

### ***Farm Computer Usage and Ownership***

In August 2017, NASS published *Farm Computer Usage and Ownership*. This publication is released biennially.

### ***Improvements Made in Data Collection***

In FY 2018, NASS tested the response rate effects of using an email message blast and a text message blast for two separate major quarterly Acreage, Production, and Stocks (APS) surveys. Records of each sample were randomly assigned to a treatment and control group, evenly distributing two groups by age, stratum over 90 (i.e., high value producers), race, response history, regional location, and sex. The treatment group for the email test received an email message encouraging them to report. Likewise, for the text message test a treatment group received a text message to encourage responses. Both had control groups who did not receive an email or text message to better understand effects. NASS will study the results and recommendations more closely to determine whether to use email and text messages to improve data collection efforts.

Additional tests are recommended, along with substantial changes to the treatment message itself (such as length, content, and survey type) to investigate whether text and email blasts increases response rates. Understanding the limitations of these methods and their possible effects on the outcome of response should assist the continued effort of implementing new technologies to elicit a completed survey.

### ***Farms with High Impact on Survey Results***

In FY 2016, NASS released a tool that allows Regional Field Office staff to easily identify operations that impact commodity estimates in their State or region, allowing them to customize data collection for targeted operations. In FY 2017, the tool was modified to help NASS headquarters staff identify “impact farms” at the national level, and to add State-specific variables that may help identify operations that are impactful in ways besides affecting commodity estimates. In FY 2017, RFOs began implementing formal data collection plans in their States for operations identified on their State level “impact” lists. The use of the High Impact Farms tool continued in FY 2018 as data collection plans were updated to include the 2017 Census of Agriculture (COA). It was used in some cases to identify qualified records that were not eligible for non-response adjustments, since at the county level these operations were integral to the summary totals.

## **Improvements and Sampling**

### ***Sampling Frames and Web Scraping***

For most NASS surveys, the sampling frame is the NASS list frame, which is ideally a complete and up-to-date list of all U.S. agricultural operations. However, as is the case with all list frames for complex populations, the NASS list frame is not complete; that is, not all farms are on the list. This lack of completeness has significant

implications for the quality of survey data and the official estimates. NASS is examining the practice of web scraping or web crawling techniques to identify farms, especially non-traditional agricultural operations, to measure the undercoverage of the NASS list frame. NASS is working with the Multi Agency Collaboration Environment (MACE), a cross-agency effort to create data sharing partnerships across the Federal government, to harvest open source information to develop web-scraped lists of agricultural operations that are not well covered by the NASS list frame, such as urban farms, operators of farmers markets, and local food producers. NASS's primary objective is to explore the feasibility of using web-scraped lists of farms to measure the undercoverage of the NASS list frame for each of the NASS surveys.

NASS began a pilot study in the State of Washington in FY 2017 to assess the feasibility of using a web-scraped list to account for undercoverage of hard-to-survey groups in the Census of Agriculture. During FY 2019, the data will be analyzed to assess the viability of using the web-scraped list to provide a measure of undercoverage for the hard-to-survey groups.

In FY 2018 NASS assembled a team to explore the feasibility of replacing the June Area Survey. The goal of the June Area Research Project (JARP) is to explore a different approach to producing comparable estimates obtained by the June Area Survey. JARP was designed to (1) assess the effectiveness of using a web-scraped list instead of the area frame in JAS and to account for under coverage; (2) assess the effectiveness of collecting data by mail, telephone and the web; and (3) determine whether estimates from this web-scraping approach have the desired precision. Currently, we are developing a web-scraped list frame for four states (Kansas, Nebraska, New York, and Pennsylvania), have completed the web-scraping portion, and are completing the record linkage process.

#### ***Competitive Grant Work Continues***

NASS and George Mason University are collaborating on a NASA competitive grant titled “Remote-Sensing-based Flood Crop Loss Assessment Service System (RF-CLASS) for Supporting USDA Crop Statistics and Insurance Decision Making.” The RF-Class has prototyped Flood Frequency, Crop Loss, and Flood Event data and interactive maps. The research continues as the project is on extension. NASS should benefit from the data products and technology developed, which may improve the current NASS Crop Progress and Condition report and online data products, publication, and access.

#### ***Continued California Drought Monitoring***

NASS, in cooperation with the U.S. Geological Survey, NASA, and the California Department of Water Resources released monthly geospatial products related to the ongoing California drought. The datasets map the extent of idle agricultural acreage in California since 2011. The datasets highlight steady increases in idle farmland as the drought continues. The results of this remote sensing project have provided better quantification of monitoring the drought conditions, visualizing the impacts in near real-time during the growing season over a large geographic area.

#### ***Tenth National Cropland Data Layer Completed***

NASS completed its 48-State Cropland Data Layer in 2018 for the 2017 crop year, making ten years of national CDLs available. This layer provides information on the crops planted and is disseminated via the [CropScape](#) portal upon publication of county estimates. CropScape can be used interactively for visualization and geospatial data query purposes as well as downloading into Geographic Information System (GIS) value-added products.

#### ***Soil Moisture Monitoring***

NASS began development efforts to create a new soil moisture monitoring prototype using the NASA Soil Moisture Active Passive (SMAP) mission launched in 2015. For FY 2018—FY 2020, NASA Western Water Application Office (WWAO) awarded NASS a total of \$111,600 to develop an enhanced online national soil moisture monitoring application based on the VegScape platform, and to work with NASA Goddard Space Flight Center (GSFC) to develop high resolution remote-sensing-based soil moisture data products for further improvement of NASS soil moisture monitoring and assessment. The NASS Research and Development Division will collaborate with NASS Field Offices and Crops Branch, NASA Goddard Space Flight Center, Western Water Application Office, USDA Agricultural Research Service, and George Mason University to develop the soil moisture application. The research and development activities will include NASS user requirements for collection and analysis, quantification of cropland area soil moisture, qualitative soil moisture measures, and a possible high-resolution soil moisture data product with field-level validation.

### ***VegScape***

NASS continued to provide its 48-State crop and vegetation condition monitoring from VegScape, which is an online geospatial data service offering automated updates of vegetative condition at daily, weekly, and biweekly intervals. The enhanced VegScape online GIS application provides a better user experience in using vegetation condition information for informed decision support. The VegScape Web Services provide a machine-to-machine communication channel for the user community to consume VegScape's vegetation condition data. The VegScape GIS application will be further enhanced with the development of SMAP application

### ***Crop Frequency Layers***

The 48-State Crop Frequency Layers were released in 2018 for the 2017 crop season. The Crop Frequency Layers identify crop specific planting frequency are based on land cover information derived from the 2008 through 2017 CDL. The Crop Frequency Layers can be used and analyzed in CropScape and are also available for download. Additionally, they were used for the first time in 2018, when CropScape was made available for the June Area Survey manual imputation and editing/review of Section D in the survey instrument. Currently, these are produced for corn, soybeans, wheat, and cotton.

## **Research and Development**

### ***Model-Based Estimation***

NASS is examining model-based estimation techniques to improve the statistical reliability of published forecasts/estimates and to provide accurate measures of uncertainty. Estimates of cotton yields derived from Bayesian hierarchical models are now being produced in parallel with NASS operational survey processes, and these results along with corn, soybean, and wheat yields are provided to the Agricultural Statistics Board for their consideration in producing reports. Bayesian methods are also being used to estimate hog production by combining a state-space model and a biologic model. The goal is to have more precise estimates with standard errors when there is a disruption in the system, such as a disease outbreak.

### ***County Estimates for Crops***

Based on recommendations from a panel that the National Academies of Sciences Committee on National Statistics (CNSTAT) convened at NASS's request, NASS has used small area estimation methods in a Bayesian hierarchical structure to develop models to estimate county acreage, yield and production using survey and administrative data. The modeled estimates for previous years will be evaluated by NASS staff in the State and Regional Field Offices with the hope of implementing these new methods for the 2019 estimates, which will be released in 2020. Concurrently, NASS publication standards, which are currently based on survey responses, are being reviewed and perhaps revised to be more appropriate when modeling using both survey and other data. As a consequence of this effort, NASS should be able to produce more precise estimates and to publish results for more counties.

### ***Area Frame Stratification***

NASS uses its area frame both as a stand-alone frame to estimate numbers of farms and a wide variety of commodities, and as a measure of incompleteness for its list surveys – including the quinquennial Census of Agriculture. To date, new area frames for Oklahoma, Arizona, New Mexico, Georgia, South Dakota, Alabama, North Carolina, Wisconsin, Nebraska, and Texas were created using a hybrid stratification approach that uses automatic stratification with manual editing. The new frames have more uniform strata than those based on the traditional manual stratification, leading to more precise estimates at no additional cost.

### ***Cognitive Testing for Agricultural Labor Survey***

Extensive cognitive testing has been and is being conducted to be sure that respondents understand and respond to the questions on the Agricultural Labor Survey. This has led to major improvements in the survey instrument and consequently to more precise estimates.

### ***Web-scraped List Frame Development***

NASS developed a web-scraped list of urban agriculture producers in a 2015 pilot study in the City of Baltimore and then used another web-scraped list to assess undercoverage of the NASS list frame for the 2016 Local Foods Marketing Survey. Currently, NASS is developing a web-scraped list frame of all agricultural operations in Nebraska, Kansas, Pennsylvania, and New York. The goal of the study is to assess the viability of using the web-scraped list frame instead of the NASS area frame for the June Area Survey. In addition, the viability of collecting the data via mail, the web, and telephone will be explored. If some or all of these efforts lead to new production processes, the costs of data collection can be reduced.

***New Methods for the Cropland Data Layer (CDL)***

Ten years of the CDL have been made publicly available online. The data from the June Area Survey have been used to adjust for bias in the resulting estimates of area. Research is now being conducted to determine whether USDA Farm Service Agency (FSA) data could be used instead. This has the potential to improve estimates and to reduce reliance on the NASS area frame.

***Response Rates***

NASS has seen declining response rates, though NASS response rates tend to be higher than those for other Federal surveys. Efforts continue to maintain or increase response rates. A Response Rate Research Team has completed two years of research testing ideas for the 13 sub-teams and many improved processes are actively being implemented into everyday procedures to improve response rates. Thus far, we have seen response rates stabilize and increase slightly with most survey response rates on the rise. As an example, one sub-team has developed a model to identify records on the NASS list frame that potentially are no longer associated with farms, called “deadwood.” When assigning data collection methods, most records are assigned the most cost-effective data collection method at NASS. This method first involves a mail out of the survey, with telephone follow-up. Unfortunately, in the case of deadwood records, this method of data collection often leaves deadwood records unresolved and inaccessible for many survey periods. Inaccessible records remain in the sampling population for future surveys and have a negative impact on response rates. Furthermore, these records could lead to potential bias in estimates if they truly are no longer operating a farm. The “Deadwood” process has become a key part of our survey methodology to keep a handle on deadwood moving forward. Started in FY 2018, it is NASS’s first comprehensive, agency-supported plan to eliminate deadwood records from future samples. Other efforts include information on the response history of a farmer, a measure of the response burden, extension of the survey period, use of previously reported data, improved data collection training to increase cooperation and engagement, and revision of the sampling methods to more evenly distribute the burden. This will be a long-term endeavor with emphases changing as progress is made.

***All Data Team***

The purpose of the All Data Team is to lead NASS in the use of all data that will result in increased quality and efficiency while minimizing burden. The team continues to work on: 1) expanding the use of USDA Farm Service Agency administrative data, 2) increasing the use of previously reported data (PRD), and 3) advancing the use of remote sensing. The team has developed new areas of focus, including 1) accessing and utilizing USDA Risk Management Agency data, 2) utilizing Administrative data sources, and 3) researching and learning about precision agriculture data. The FSA sub team’s work successfully used previously reported data and FSA data to complete about 52,000 records saving the costs of data collection for these records. They also established direct access to additional FSA databases that increase the efficiency of using the FSA data. The PRD sub team successfully ran a pilot project in two regions where PRD was provided to respondents who completed the crops survey on the internet which reduce the farmer’s burden to report.

**Census of Agriculture Program*****Current Activities***

The Census of Agriculture is conducted every five years and provides comprehensive data series at the national, State, and county level. A snapshot of the agriculture economy including the number of farms, farm typology, characteristics of farm operators, land use, production expenses, value of land and buildings, farm size, market value of agricultural production, acreage of hundreds of crops, inventory of livestock and poultry, and extensive farming practices including irrigation, marketing, and utilization of government-sponsored programs. FY 2018 consisted of data collection, processing, and analysis for the 2017 Census of Agriculture.

***Selected Examples of Recent Progress******Census of Agriculture Special Tabulations***

As a complement to the data provided from the Census of Agriculture, NASS receives requests from the public for a variety of reformulations of available data. Since the release of the last Census of Agriculture in February 2014, NASS has responded and made public about 200 special tabulations, of which 27 were done during FY 2018. The tabulations included data on specialty crops, farm economics, farmer demographics, and geographic disbursements of livestock inventories.

## **2017 Census of Agriculture**

Data collection began with the announcement of the Census via a letter instructing respondents to fill out their questionnaire online. This was followed by mailing nearly three million Census questionnaires in December 2017 and January 2018 to those that had not already reported via the internet. The data collection strategy included two additional follow-up mailings, telephone enumeration, and selected personal interviews. NASS had a desirable response rate of 71.5 percent. Full release of the Census of Agriculture will occur in FY 2019.

NASS made great efforts leading into the Census data collection to increase the number of online responses. Over 440,000 respondents utilized the internet reporting instrument compared to around 280,000 respondents during the 2012 Census five years earlier.

During 2018, NASS continued the Census of Agriculture communications campaign with tactics such as the production of 16 video and 28 audio public service announcements featuring national, State, and community agricultural leaders (including PSAs in English and Spanish); and nationwide radio and TV media outreach featuring interviews with NASS spokespeople. In total, NASS staff conducted over 150 interviews regarding the Census of Agriculture.

A workshop was held with representatives of community-based organizations (CBOs) in September 2017 to explain the importance of the Census of Agriculture to all of those involved in farming, regardless of size. NASS requested the assistance of the CBO leaders to spread the message to respond and to help promote trust among respondents who may be less familiar with NASS. The CBO-NASS handbook was updated – *Partnering to Count and Serve U.S. Farmers, A Handbook to Increase Participation*.

A workshop was conducted to train Regional Field Office staff on census procedures. In March 2018, NASS conducted a training school on editing and analysis of data reported by farmers. This workshop was key to applying standardized procedures to ensure reliable official statistics from the 2017 Census of Agriculture.

NASS continues to make a strong effort to improve online products. All products will be available online shortly after their official release. The on-line query system has been enhanced to allow improved downloads of customized data. Introduction of internet-driven dynamic mapping tools will highlight new products in response to public requests for visual data presentation.

The release date for the entire 2017 Census of Agriculture data will be in the spring of 2019.

### ***Census Follow-on Surveys***

The content and forms design have been completed for the 2018 Irrigation and Water Management Special Study (Census Follow-on Survey). NASS solicited input from the irrigation industry, the USDA Water Team members, the Environmental Protection Agency, and the USDA Economic Research Service (ERS). The primary purpose of the Irrigation and Water Management survey is to provide a wide range of irrigation information covering water usage, irrigation practices, irrigation by type, irrigation by crop, expenses, sources of irrigation, purchase of energy for pumping water by power source, and use of recycled or reclaimed water. The initial mail-out is planned for January 2019.

The content and forms design have been completed for the 2018 Census of Aquaculture Special Study (Census Follow-on Survey). NASS solicited input from the aquaculture industry, National Aquaculture Association, and National Oceanic and Atmospheric Administration. The Census of Aquaculture collects detailed information relating to production methods, surface water acres and sources, production, sales, point of first sale outlets, and aquaculture distributed for restoration, conservation, or recreational purposes. The initial mail-out is planned for December 2018.

### ***Puerto Rico & Outlying Areas***

NASS is making final preparations to conduct an agriculture census for each of the U.S. territories of American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands. NASS delayed the Puerto Rico Census of Agriculture until December 2018 to allow for continued focus on Hurricane Maria recovery efforts and to assure Puerto Rico's agriculture can be accurately represented with quality data. This was a critical year for obtaining lists of farmers and finalizing the questionnaire. Data collection is set to begin in the first half of 2019.

## Research and Development

### *Development of a Responsive Web Form for the 2017 Census of Agriculture*

The agency's number one priority for improving the 2017 Census of Agriculture was the development of a modern, responsive web form. The web form was used in collecting data for the 2017 Census in early 2018, and all surveys are being transitioned to a responsive web form.

### *Content Improvements for the 2017 Census of Agriculture Questionnaire*

Based on feedback after the 2012 Census of Agriculture, NASS requested that the National Institute of Statistical Science convene an expert panel to review the information being gathered on women and new/beginning farmers. The new demographics section was revised based on the expert panel's recommendations and included in the content tests for the 2017 Census of Agriculture, along with other proposed changes, leading to further revisions in the questions. Additional cognitive tests were conducted for the full census questionnaire. These efforts are reflected in the final version of the 2017 Census of Agriculture questionnaire.

### *New Methods for Rounding and Calibration for the Census of Agriculture*

After adjusting for undercoverage, nonresponse, and misclassification, the weights from the 2017 Census of Agriculture are non-integers. To ensure that all subdomains for which NASS publishes sum to their grand total and are consistent with known population values from administrative data, NASS developed a new discrete calibration algorithm. Unlike other algorithms that first calibrate to the population values and then round, the new routine first rounds the weights and then calibrates. The calibration process considers all targets simultaneously through a priority index. Although the calibration will not be able to adjust weights so that all State targets are met, all targets are brought collectively as close to the targets as possible. In addition to providing improved estimates, the new procedure is much more efficient.

### *New Imputation Methodology Used for the 2016 Certified Organic Survey*

Fully conditional specification (FCS) is a multivariate imputation method, providing flexible model specification for missing survey responses and the ability to handle both qualitative and quantitative data. This methodology was implemented for the 2016 Certified Organic Survey (conducted in FY 2017) using IVEware. IVEware is a stand-alone or SAS callable product from the University of Michigan that implements FCS while incorporating simple edit constraints. The methodology improved the quality of imputed data over the prior conditional means imputation approach. Micro-data quality was improved by preserving relationships between variables and the uncertainty in the survey indications were reflected more accurately.

## ACTIVITIES COVERING BOTH AGRICULTURAL ESTIMATES & THE CENSUS OF AGRICULTURE

### Current Activities

#### *National Academies of Sciences, Engineering, and Medicine Panel*

The USDA's National Agricultural Statistics Service and Economic Research Service work continually to improve their processes to provide timely, accurate, and useful statistics in service to U.S. agriculture. As part of these efforts, NASS and ERS engaged the National Academies of Sciences, Engineering, and Medicine to provide advice on how to best collect and produce information given the increasing complexity of U.S. farms, especially those producing the vast majority of the nation's agricultural products. The resulting report, *Improving Data Collection and Measurement of Complex Farms*, contains a series of recommendations. NASS and ERS will consider each recommendation carefully. Restructuring the NASS list frame into a business registry, using relational data bases to link farms to farm households and farmland, incorporating other data sources to reduce respondent burden, and revising the sampling of the Agricultural Resource Management Survey (ARMS) are among the recommendations about which the two agencies have already begun discussions. Together, NASS and ERS intend to implement some, if not all, of the recommendations in advance of the 2022 Census of Agriculture.

#### *Selected Examples of Recent Progress*

NASS assists other USDA agencies in the review of their Information Collection Requests (ICRs) to OMB. In most cases, this involves a thorough review of their survey methodology. In FY 2018, NASS reviewed 15 ICRs for the following agencies: Food and Nutrition Service, Forest Service, Food Safety and Inspection Service, Agricultural Marketing Service, and Animal and Plant Health Inspection Service.

### Cyber and Physical

## ***Current Activities***

### ***Emphasis on Security***

NASS continues to increase its users' awareness of the importance of sound security practices and procedures by means of mandatory information security awareness training, role-based security training for privileged users, as well as training on regular phishing campaigns.

### ***LincPass Technical Mandatory***

NASS continues to place a high priority for all full-time staff to use their LincPass badges to log in to the NASS network as required by HSPD-12 and USDA mandates. NASS is currently on par with the USDA mandate by requiring LincPass use by 100 percent of its privileged users and 96 percent of all its employees. NASS has a lower percentage of employees with a LincPass because of the number of temporary employees that NASS employs for data collection activities.

### ***Continuous Diagnostics and Mitigation Compliance***

NASS continues to collaborate with the USDA Office of Information Security (OIS) on all its efforts relating to the Department of Homeland Security Continuous Diagnostics and Mitigation (CDM) program. NASS is on track to complete tasks on schedule.

### ***Selected Example of Recent Progress***

#### ***USDA Cybersecurity Scorecard***

NASS continues to maintain an overall green score on its biweekly cybersecurity scorecard. NASS is one of a few agencies/offices to achieve this feat. NASS continues to put effort in maintaining a high level of security around all its IT assets and data.

#### ***USDA Office of Inspector General (OIG) Federal Information Security Modernizations Act (FISMA) Audit***

The USDA OIG recently completed its FISMA review of the NASS operational environment. Though a number of findings were identified, there were no glaring weaknesses that could critically undermine the security of agency data. NASS has put a plan in place on mitigating all findings by established due dates.

#### ***Security Awareness and Role-Based Security Training 100 percent Participation***

In FY 2017, NASS once again garnered 100 percent completion rate for both information security awareness and role-based security training requirements. NASS continues to ensure all its employees and contractors complete this requirement.

## **Stakeholder Engagement/Information Technology Projects**

### ***Current Activities***

#### ***Data Visualization for Mobile***

NASS has started working on phase two of its data visualization project. The primary goal of this project is to better communicate information clearly and efficiently to users via statistical graphics, plots, information graphics, tables, and charts. Our goal is to make complex data more accessible, understandable, and usable for customers. Over the next few years, NASS will continue to use this as a base to expand our data visualization products and services.

#### ***New and Improved Census of Agriculture Data Dissemination***

NASS expects to release a newly designed data dissemination tool for the Census of Agriculture. The new tool will allow data users to interact via a dashboard with various State and county-level agriculture data.

#### ***Upgrading Legacy Services***

NASS is in the process of expanding several different services for the development of a system to replace multiple stand-alone legacy processing services. This effort will lead to sunseting multiple legacy services that present security risks and are costly to maintain.

***NASS Media Subscription Services***

Using our media subscription services in FY 2018, NASS maintained media lists for States and key commodities and distributed 30 news releases and Agricultural Statistics Board notices to hundreds of interested media outlets and to thousands of data users through subscription services.

***NASS Email Subscription Lists***

NASS continues to use email subscription lists and social media tools such as Twitter, the USDA Blog, USDA Facebook page, and USDA YouTube channel to notify the public about all data products available from NASS and to create two-way conversation with our customers. Our e-mail subscribers to NASS national reports total 20,635, up from 19,608 last year, and national media list of nearly 2,500.

***NASS Twitter Following***

In FY 2018, NASS increased its Twitter following to more than 33,400 followers (up 7.5 percent over the year) by sending 487 tweets on interesting and timely topics, including graph, chart, and map data visualizations. NASS's tweets achieved 2.3 million impressions and nearly 20,000 engagements. NASS continued its monthly #StatChat series on Twitter with 10 #StatChats during the year, inviting Twitter users to ask questions directly to NASS representatives following major report releases.

***NASS USDA Blog Posts***

NASS contributed 10 blogs to USDA's blog and Facebook page. We also contributed to posts by sister agencies. Importantly, NASS created video PSAs and promotional videos for the Census of Agriculture distributed via USDA's YouTube channel to promote the census, the value of NASS data, and key surveys. These videos were cross promoted via traditional news releases and multiple social platforms.

**Operational Transformations To Streamline Business Processes**

Over the last eight years, NASS has completed several operational efficiency initiatives and has continued to build on what had been put in place for maximum efficiency. These changes have moved NASS toward constant improvement for using the best practices of a Federal statistical agency and fully delivering on the principles and practices for a statistical organization.

***Current Activities******Data Collection at the NOD***

The NOD is designed to complete a large portion of the agency's telephone data collection. The NOD call center includes 154 calling seats, 24 seats for coaches and supervisors, and a 12-station call monitoring room to enhance quality assurance. In FY 2018, the call center placed more than one million out bound telephone calls, supporting nearly 100 different survey projects. Over 40,000 incoming telephone calls were received and handled by the NOD call center from respondents and the general public, significantly more than last year, due to 2017 Census data collection activities. The NOD call center also attempted to contact more than 1,000 respondents to clarify information reported on the 2017 Census or to fill in incomplete information. Several respondents for other surveys were also contacted for out-of-business clarification or because they returned blank forms.

***Interviewer Training***

The NOD administers NASS's interviewer training program. Enhanced training protocols have proved efficient in providing interviewers the skills, knowledge, and abilities they need to perform at a high level. In FY 2018, the NOD-Training Group (NOD-TG) produced National Association of State Departments of Agriculture (NASDA) field and telephone enumerator training materials for nearly 100 different surveys and the 2017 Census of Agriculture. These training materials leveraged a wide range of technology and delivery methods to consistently disseminate the information to all enumerators. At the end of 2018, there were 8 supervisors, 15 coaches, and 119 telephone interviewers on board at the NOD. NASS will continue to train well-qualified NASDA telephone interviewers. The NOD-TG will continue to improve the training protocols to improve standards, efficiency, and data quality.

***Frames Maintenance Group***

The agency's national list sampling frame defines a target population for drawing survey samples or conducting the Census of Agriculture. This group's mission is to develop, maintain and allow for efficient sampling of U.S. agricultural operations. The group also completes record linkage for newly acquired list sources and adds newly

discovered farm and ranch operator names to increase farm coverage of all sizes. The group processed 494,830 records from outside list sources and identified 32,828 potential new operations from those lists. The group performs maintenance on a daily basis to keep the frame as up-to-date as possible. In FY 2018, the group processed 436,339 update requests from the 2017 Census of Agriculture and survey returns to make sampling, mailing, data collection, and summarization efforts more efficient. In addition, the group updated the list sampling frame with address changes based on the USPS NCOA (National Change of Address) and LACS (Locatable Address Change) files which resulted in 431,671 major address updates and 1,250,496 minor address updates. Also the group updated 311,936 telephone numbers and 94,280 email addresses based on InfoUSA data.

### ***Forms Processing Group***

The Forms Processing Group (FPG) receives the paper-based survey questionnaires that are completed and returned by mail from farmers and ranchers. These respondent-completed forms are tracked and accounted for to ensure the respondents are not contacted by telephone. Completed forms are keyed and the data are loaded into a centralized database and then scanned for image retrieval for regional field offices to use in reviewing the data. During FY 2018, FPG integrated key-from-image technology into its operations. In FY 2018, the group completed these activities by keying over 250,000 forms and scanning over 276,000 forms. The objective yield (OY) lab is a work unit within the FPG. As part of NASS's OY survey programs, NASDA field staff harvest crop samples from winter wheat, corn, soybean, and cotton field sample plots. All field samples for winter wheat, corn, soybeans and cotton are then sent to the NOD's OY Lab for processing. During FY 2018, the lab processed over 8,300 OY field samples. The OY Lab is also responsible for the procurement and distribution of objective yield supplies and coordination of the printing and distribution of over 70,000 OY survey forms to the regional field offices.

### ***Enumerative Surveys Development Group***

The Enumerative Surveys Development Group supports and develops computer-assisted telephone interviewing (CATI) programs used by the agency's call centers to conduct interviews over the telephone with farmers and ranchers. CATI is a complex process that requires survey sample management, call management, scheduling, reporting, and call monitoring that requires careful coordination. Most surveys also include data editing functionality and the creation of numerous calculations that assist in the summary process. In FY 2018, the group supported more than 140 CATI interviewing programs and developed four new programs. Preparations and programming are being completed for the follow-on Census of Agriculture data collection instruments and data capture. Additionally, the group is collaborating across divisions to transition to a new version of the Blaise software to utilize enhanced capabilities and harness and expand to more robust server processes.

### ***Print and Mail Facility***

The print and mail facility managed by the NOD, which includes a print and mail facility located in the North Carolina Field Office, processes and mails questionnaires to farmers and ranchers selected for USDA surveys. During FY 2018, the NOD continued to expand its operational footprint by applying new technology to serve the organization's and customer's needs. The print and mail facility is designed to gain greater efficiency in the NOD's operational and production practices. In FY 2018, the mail facility printed and mailed 3,132 jobs with a total of 3,304,823 pieces. That count includes mailing 41,700 door hangers, 17,800 agency business cards, 1,638,023 releases, questionnaires (consisting of questionnaires, pre-survey letters, and business reply envelopes for each piece not included in the total count), etc., and 1,607,300 envelopes.

### ***Training Workshops***

In FY 2018, the Training Group planned and administered five major training workshops/events. Using information gathered on the annual skills and training needs assessment conducted by the group, these workshops targeted approximately 200 agency staff members and covered: basic data collection and estimation, the ARMS III survey, Census of Agriculture analysis, a virtual Mid-Year surveys VTC workshop, and a NASS orientation for new employees.

## **Quality Management Program**

### ***Current Activities***

#### ***Statistical Quality Standards***

In FY 2018, NASS continued work on the development of a comprehensive and cohesive quality assurance framework of standards and guidelines to help ensure the utility, objectivity, and integrity of the statistical

information NASS provides its customers and stakeholders. This framework of standards and guidelines reflects the requirements in OMB's Standards and Guidelines for Statistical Surveys in the context of NASS programs, products, and processes. The standards aid NASS in promoting quality in its information products and the processes that generate them. In addition, statistical standards provide a means to ensure consistent processes in NASS' program areas, from planning through dissemination. In FY 2018, NASS published seven new statistical policy documents, called Policy and Standards Memorandum (PSMs), on its intranet site addressing: List Frame Coverage and Maintenance, External Project Agreements, Sample Design and Statistical Precision, Developing Data Collection Instruments and Supporting Materials, Data Collection Methods, Approval for Surveys by the Office of Management and Budget, and Calculating Response Rates and Evaluating Nonresponse Bias. In FY 2019, NASS will continue its effort to author statistical quality standard documents on survey planning, dissemination, estimation, editing, and review of information products. NASS plans to publish the full framework upon completion on its internet site to promote transparency to its data users.

### ***Technical Reviews***

In FY 2018, the NASS Quality Management Office along with the staff in NASS's Field Operations completed planning activities to establish a technical review (TR) program to examine the methods and procedures used to carry out NASS's statistical programs. The TR program was developed to be a comprehensive audit program, gathering input for three main objectives. First, the program is a compliance audit of applicable Policy and Standards Memorandum (PSMs) and procedures from the commodity survey manuals. Second, the program includes a performance audit to examine the effectiveness or efficiencies of RFO processes. Finally, the TRs include a customer satisfaction component to gather feedback from customers of the area under review. The TR program was developed in alignment with the International Standards Organization (ISO) 9001 auditing standards and with other statistical organizations, such as Statistics Sweden and the U.S. Census Bureau, that have instituted quality audit programs within their organizations. Ultimately, the TRs will help NASS to understand current processes and methods and to guide future improvements. Each TR will result in a findings report that will include recommendations and examples of best practices where applicable, as well as an action plan prepared by the audited program area. In FY 2019, a pilot of the TR program is planned in the Eastern Mountain Regional Office. It was originally scheduled for late FY 2018, but had to be postponed due to work on the 2017 Census of Agriculture. Modifications may be made to the TR procedures and materials for subsequent TRs based on the pilot.

### ***Computer Assisted Recorded Interviewing***

In FY 2018, NASS completed implementation of a new quality assurance system, called computer assisted recorded interviewing (CARI), in its five data collection centers (DCCs). The CARI software creates audio recordings of interviews and video recordings of automated data collection instrument screens as the interviewer enters survey data. CARI provides significant benefits to NASS including improved quality control and data quality, as well as cost savings by eliminating non-productive time during live monitoring sessions. The CARI system also provides NASS the ability to evaluate the performance of questionnaires and study the interaction between the respondent and interviewer. In FY 2018, all DCC coordinators were trained and began utilizing the software for quality control to ensure interviewers are following data collection procedures and to identify areas needing improvement. In addition, NASS used the system to evaluate the performance of questionnaires used in the Agriculture Labor Survey by conducting several behavior coding studies using the CARI system recordings of telephone interviews. These behavior coding studies will continue into FY 2019. In FY 2019, Verint specifications will be adjusted to 100 percent screen recording, providing NASS more insight into the data collection process and identification of areas needing improvement. Evaluation forms and key performance indicators will be developed to allow the DCC coaches and supervisors to document quality control evaluations within Verint and run results reports. In addition, methods to utilize recordings for calibration (i.e., ensuring scoring consistency among evaluators) will be developed and implemented.

### ***Paradata Analysis for Web Data Collection***

In FY 2018, NASS launched a newly designed Census of Agriculture web instrument and also began work to transform the web instrument for other NASS data collections. Collecting data via a self-administered web instrument poses unique design challenges not present in other interviewer-administered modes. Many factors must be carefully implemented to ensure web surveys are designed effectively to promote high-quality data while minimizing burden. In FY 2018, NASS began analysis of paradata (i.e., data about the process by which the data were collected) of the COA and other survey web instruments. Evaluating and understanding paradata provides valuable insight into what worked well and what areas are problematic. The analysis results provide insight into multiple dimensions of web data collection, such as the device types and browsers used, where breakoffs and

errors occur, problematic questions, help screen access, the frequency and location of error messages triggered, and questions subject to frequent changing answers. Analysis will continue into FY 2019 and findings will be used to inform future web instrument improvements in our survey and census programs.

## **Computer Assisted Personal Interviewing**

### ***Current Activities***

The NASS Computer-Assisted Personal Interviewing (CAPI) initiative has been in production since 2012. NASS is currently moving towards leveraging benefits of mobile data collection and streamlining data collection processes. Census and Survey Division Staff (CSD) supports the CAPI program and manages all aspects of the inventory.

NASS and contracted development resources are currently engaged in several initiatives to maximize the benefits of mobile technology, improve performance, streamline processes, and create additional efficiencies. These initiatives set the stage for new innovation such as responsive forms, improvements to the user interface, propensity scoring, and cognitive testing, real time cost analysis, interactive online training, and marketing tools.

### ***Re-engineer CAPI***

This development initiative focuses on re-engineering the CAPI solution to render responsive questionnaires that can be viewed and completed on any device. The new solution can be compiled as a mobile application and improves performance of the devices by reducing the footprint needed for the sample and streamlining data flow both upstream and downstream through the effective use of APIs. The new CAPI solution moves NASS forward on the path towards a one platform solution for data collection. The Census and Survey Division and the Information Technology Division are researching analyzing the feasibility of moving the CAPI solution to the Cloud. Cloud technology would offer a 24/7 service level agreement, offer expansion capability during peak times of data collection, and improve data flow behind the scenes.

### ***Responsive Web Design***

Responsive web design will improve usability, dynamically format the questionnaires to fit any device, and embrace industry best practices for survey questionnaires and website design. This new design improves usability for smart phones and other mobile devices, which opens the door for “bring your own device” (BYOD) while maintaining Section 508 compliance. Development is focused on a new automated questionnaire repository system that generates questionnaires for paper, phone, and the web, while also incorporating new usability functions. The next focus of this project will be on mobile applications for data collection for both self-respondents and enumerators.

### ***Improved Security***

The Census and Survey Division is exploring a solution for two factor authentication possibly through soft credentials. This project, if successful, will improve security procedures and further align with FISMA regulations.

### ***Management of the Mobile Devices***

This initiative focuses on improving inventory management, adherence to security on the device, standardization of the IOS platform, and improved customer service through remote desktop management. The solution was deployed via the cloud so no physical access to the device was required for headquarters staff, saving NASS thousands of dollars in shipping costs and mitigating any negative impact on CAPI data collection efforts. A regional hierarchy for access to the dashboards for inventory management was put in place allowing each region access to the inventory for their region only. The CAPI points of contact were trained and given the responsibility to manage the inventory and monitor for security and IOS violations.

### ***Selected Examples of Recent Progress***

#### ***Data Collection Enhancements - Computer Assisted Web Interviewing (CAWI) and Computer Assisted Personal Interviewing (CAPI)***

NASS implemented a new responsive web data collection system for the Census of Agriculture and other surveys. This new instrument provides an enhanced web experience for agricultural producers responding to NASS surveys and more than 3,000 field enumerators that are tasked with completing personal interviews with

respondents. The systems produce responsive web data collection forms that can be used for both CAWI and CAPI data collection efforts. NASS worked with a contractor to develop this system and has made significant progress in producing responsive web forms for respondents in FY 2018 with full implementation expected in FY 2019. Implementation of the solution for field enumerators is expected to begin early in calendar year 2019 and should be completed by spring 2020. The overall goal of this project continues to be providing an enhanced experience for respondents and field enumerators, which reduces burden while also improving data quality.

## **Research and Development**

### *Current Activities*

#### *Editing and Imputation Improvements*

In 2017, NASS commissioned Westat to review its editing and imputation processes. In its report, Westat provided short-, medium-, and long-term recommendations for process improvement. A team has been designated to work toward implementation of the recommendations over time. Current efforts are focused on automating editing processes that are currently being done manually and modularizing the editing and imputation procedures so that they can be more readily revised as improved methods are identified.

#### *Using Previously Reported or Other Data*

Sometimes NASS has access to previously reported, administrative, or other data that could be used to prepopulate answers to a survey, thereby potentially reducing respondent burden. Past studies have shown that using these other data sources can lead to bias in the estimates. Studies are being conducted to determine whether biases occur for a variety of estimates and how to adjust for those biases if they are present. NASS hopes to use these other data increasingly to provide major reductions in respondent burden.

## **Work Performed For Others – Reimbursable Program**

### *Current Activities*

#### *Reimbursable Work for Federal, State, and Private Organizations*

NASS conducts surveys for and lends technical expertise to other Federal agencies, State governments, and private organizations on a reimbursable basis. Statistics generated meet special needs not covered by the NASS programs. In addition, statistical consultation by NASS staff members contributes to improvements in the overall quality and consistency of statistical information produced for the needs of other organizations. NASS provides support and assistance in the areas of questionnaire and sample design, data collection and editing, analysis of survey results, and training. NASS also provides technical consultation, support, and assistance to foreign countries desiring to enhance their statistical programs.

#### *International Technical Assistance on a Reimbursable Basis*

NASS works with the U.S. Agency for International Development and other Federal agencies to provide technical assistance and training on a reimbursable basis in all aspects of statistical surveys and data systems to improve and expand a developing or transitioning country's capacity to produce agricultural statistics and information.

Providing such assistance benefits the United States. By helping other countries improve their agricultural statistics systems, USDA improves its ability to assess world food and fiber production. In today's global economy, timely and accurate supply statistics for fair and efficient price discovery in the global market are critical. Establishing strong working relationships with other agricultural statisticians around the world allows NASS staff to gather and develop new ideas for improving the U.S. agricultural statistics system, while exposure to other cultures and work situations enhances NASS employees' abilities to solve problems.

### *Selected Examples of Recent Progress*

#### *External Project Agreements*

NASS partners extensively with external State and Federal governmental organizations, universities, and agricultural commodity organizations to provide high-quality, rigorous, and standardized statistical consultation.

NASS provides statistical services on a fee-for-service basis and fully recovers all costs. Statistically accepted methods, practices, and processes are administered. These procedures have been streamlined and enhanced to provide maximum flexibility and design adaptability. A variety of agricultural community data needs are requested, which augment the ongoing federally funded statistical program. Whether economic, environmental, or opinion-based, external clients collaborate with NASS to effectively conduct longitudinal studies, grant-based research, and surveys. The external project agreement program places NASS in a position to be responsive to the changing needs of agricultural data users. NASS continues to strengthen its commitment to external stakeholders by maximizing resources, eliminating duplication, minimizing respondent burden, and leveraging resources that utilize consistent and sound statistical methodology. To date, NASS has worked on more than 935 projects since beginning this centralized process in 2012, which includes about 115 such projects in FY 2018.

### **The Agricultural Marketing Service (AMS) Pesticide Data Program (PDP)**

NASS will continue to select AMS-PDP samples in FY 2019. The AMS-PDP Sampling Frame comprises terminal markets and large chain store food distribution centers. The Sampling and Frame Development Section (SFDS) in NASS's Methodology Division compiles the AMS-PDP sampling frame information supplied by State Department of Agriculture agencies prior to selecting the quarterly AMS-PDP samples using a probability-proportional-to-size technique. SFDS continues to work with AMS-PDP to improve the sampling methodology.

The AMS-PDP uses samples selected by SFDS to collect data on pesticide residue on commodities most commonly consumed by infants and children. The Environmental Protection Agency relies on sample results to conduct dietary risk assessments and to ensure pesticides residues – if any – are at safe levels. USDA uses the data to ascertain the relationship of pesticide residues to agricultural practices, to enhance USDA's Integrated Pest Management objectives, and to work with growers to improve agricultural practices. This past year SFDS submitted a paper titled "Estimating the Precision of Quantile Estimates of Pesticide Residues" to AMS-PDP that addressed one outstanding General Accounting Office Audit item.

### ***Risk Management Agency (RMA) Improper Payments Elimination and Recovery Act (IPERA)***

USDA's Risk Management Agency (RMA) contacted NASS's Sampling and Frame Development Section in mid-2015 to develop a sampling methodology for RMA's Improper Payment Rate Survey. By the end of 2015, SFDS derived the Improper Payment Rate sampling methodology and selected the sample for FY 2016. In FY 2018, SFDS continued to support RMA by addressing their sampling specification changes and reviewing and verifying their sample selection process and summary results. For example, this past year insurance providers complained to their members of Congress about the respondent burden on their large farmers; SFDS adjusted the sample design to address these complaints. Additionally, SFDS was asked by RMA to verify their variance calculation before they finalized their report for payments totaling \$9.2 billion.

### ***Agricultural Resources Management Survey (ARMS)***

ARMS is conducted annually in cooperation with the Economic Research Service. The survey provides data that enable NASS to publish chemical use statistics and provides ERS the ability to estimate farm income, conduct economic analysis relating to field crop chemical usage, estimate costs associated with producing agricultural commodities, and compile farm business and household financial data. Data collected support both agencies' estimation programs for farm production expenditures. The ARMS Phase I will screen farms for target commodities (barley, cotton, sorghum, and wheat) for the 2019 crop year conducted in FY 2020. Phase II target commodities for the 2019 crop year are barley, cotton, and sorghum for the production practices, cost, and return data (PPCR) and wheat will be the return data (PPR) conducted in FY 2020. The FY 2020 ARMS Phase III focuses on 2019 calendar year farm financial data for all types and sizes of farms with a special emphasis on barley, cotton, and sorghum production costs. In FY 2020, the ARMS Phase II survey will continue to use the iPad mapping application (Maps by Apple – Apple Product). This new application was developed to assist enumerators in identifying the latitude and longitude coordinates of selected fields in the ARMS II survey. ERS uses the coordinates to cross-validate responses in ARMS. Comparisons between the ARMS Phase II crop history table and reported planting acreage from Farm Service Agency data are made to see whether or not the two match and the observation can be used. NASS and ERS have developed a long-term plan focused on improving survey performance, adopting new technologies, training, and marketing initiatives. One major goal will be met in FY 2019, which is the new adaptive responsive web design that was recently used in collecting the 2017 Census of Agriculture.

***Agricultural Labor Survey***

In 2014, Department of Labor Employment and Training Administration (DOLETA) and NASS renewed their agreement where NASS would collect data from producers on number of workers, hours worked, and wage rates. In FY 2018, the Agricultural Labor Survey was conducted in April and October. NASS issued a) a report from the April data collection on May 18, 2018, and b) a report from the October data collection on November 16, 2018.

In April 2018, NASS created a pilot test questionnaire version for the Agriculture Labor Survey including the web instrument to evaluate base wages paid per hour. NASS methodologists traveled to Florida and California to cognitively test the wording and understanding of base wages before creating the pilot questionnaire. To capture the true distinctions between base wages, incentives/bonus pay, and gross wages, NASS added three additional columns in the worker code, hours work, and wages portion of the questionnaire to collect data by worker codes to study the differences between base wages and incentive/bonus paid wages on agricultural labor wages. This pilot test was also extended to the 2018 October Agriculture Labor Survey to provide NASS with additional data to make the best decisions moving forward in FY 2019 and FY 2020.

***County Cash Rents Survey***

Through the 2008 Farm Bill (and later amended by the Agricultural Act of 2014), NASS was directed to conduct a biennial Cash Rents survey to establish per acre estimates of county cash rental rates for dry and irrigated cropland and pastureland. Six annual and two biennial surveys have been conducted providing cash rental rate indications for 2008 through 2018. Data are published at the county and/or district level for cash rental rates for all counties with 20,000 plus acres of any combination of dry cropland, irrigated cropland, or permanent pasture. Data collected supports the USDA Farm Service Agency's administration of payments for the Conservation Reserve Program. Survey results can be viewed at:

[https://www.nass.usda.gov/Surveys/Guide\\_to\\_NASS\\_Surveys/Cash\\_Rents\\_by\\_County/](https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Cash_Rents_by_County/)

***Natural Resource Environmental Indicators***

NASS received funding from the USDA Natural Resources Conservation Service (NRCS) in FY 2016 to continue the Conservation Effects Assessment Project (CEAP) survey. CEAP is a multi-agency effort to quantify the environmental effects of conservation practices and programs and develop the science base for managing the agricultural landscape for environmental quality. Project findings are used to guide USDA conservation policy and program development and to help conservationists, farmers, and ranchers make more informed conservation decisions. NASS continued collaboration with NRCS and Iowa State University in developing the sample utilizing the Natural Resources Inventory points. In FY 2017, a national study was done on calendar year 2016 with points being selected from various watersheds throughout the United States. This is the third year of a nationwide data collection effort. NRCS does not plan or need NASS to administer and collect data for NRI points. They now have enough data to model.

Conservation Practice Adoption on Cultivated Cropland Acres: Effect on Instream Nutrients and Sediment Dynamics and Delivery in Western Lake Erie Basin 2003-06 and 2012, published October 2017:

[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcseprd1355824.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1355824.pdf)

***New Initiative with NRCS for FY 2019 and FY 2020***

In early FY 2018, a meeting was held between NASS, NRCS, and OMB officials to discuss plans to be developed from regional focus group sessions NRCS conducted in FY 2017 and FY 2018. The NASS-NRCS-OMB team has decided to develop a pilot survey for FY 2019 to assure the questions and focus will provide NRCS the information needed to evaluate their programs. Then in FY 2020 the actual survey, analysis, summary, and publication can be administered to accurately measure NRCS programs. This survey will have no ties to the CEAP data collected in the past.

What must be determined in FY 2019 for the pilot survey is who the target audience is, whether there should be multiple variations, how the target audience should be reached, the size of the sample and survey question, the mode of response (phone, online, mail, in-person), and timing.

***Survey Marketing and Promotions***

During FY 2018, the NASS Public Affairs Office (PAO) supported collection of data through strategic communications promoting response to surveys including the Agriculture Resource Management Survey, the quarterly agricultural and livestock surveys, and the 2017 Census of Agriculture. Preparation included distribution of national news releases, blogs, feature stories, talking points, e-mails, videos and tweets. NASS created and distributed production story packages with interviews for local radio around the country. The NASS Public

Affairs Office encouraged electronic reporting as quicker, easier, more secure, and leading to less burden than responding by mail. PAO is working with stakeholders such as the national corn, soy, and wheat growers associations, community-based organizations, communications officers of State departments of agriculture, and others to promote response to all NASS surveys and use of the resulting data. For data release, the NASS Public Affairs Office produced a number of press releases, infographics for social media, website graphics, and data visualizations, and 10 Highlights documents on topics ranging from the Farm Expenditures to Agricultural Chemical Use to Agricultural Land Values and Cash Rents. Promotion of the surveys and resulting data also occurs at tradeshows across the country with PAO-produced printed materials and exhibit banners.

#### ***International Technical Assistance Provided***

NASS provided technical assistance and training to improve agricultural statistics programs in seven countries. Short-term assignments in 2018 supported work in Armenia, Georgia, Haiti, Mexico, Panama, Peru, and Tanzania. The technical assistance ranged from basic survey concepts and procedures to complete national Census of Agriculture support. Major accomplishments included the publication of data from the 2nd Annual Agricultural Sample Survey in Tanzania and the posting of a senior mathematical statistician to Rome, Italy, for cooperative work with the Food and Agriculture Organization of the United Nations and World Bank to develop and deploy a modular agriculture survey in developing countries. In addition, NASS coordinated and/or conducted training programs in the United States for 157 visitors representing 22 countries. These assistance and training activities promote better quality data and improved access to data from other countries, which allows U.S. analysts to better understand the world supply and demand situation. Improved analysis supports trade and more efficient marketing of U.S. agricultural products.

The agricultural statistics programs in Armenia, Georgia, Haiti, Mexico, and Tanzania are expected to continue in FY 2019. Proposals for multi-year projects in Panama and Peru are under development. The cooperative work with FAO and the World Bank will continue with NASS staff providing support from Washington, DC. Each project is dependent upon NASS receiving reimbursable funds.