

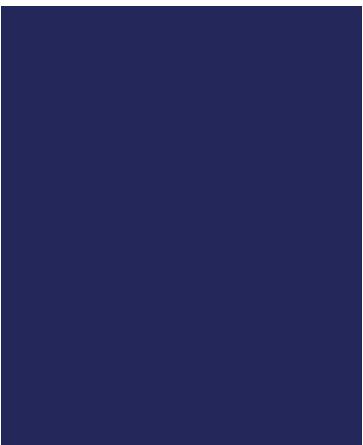
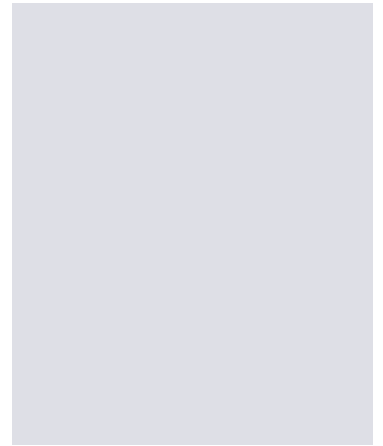


United States Department of Agriculture



Agroforestry Strategic Framework

Fiscal Years 2019–2024



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Vision, Mission, Motto, and Guiding Principles

Vision

Farms, ranches, and woodlands across the United States are healthy, productive, and profitable.

Mission

Advance agroforestry knowledge, tools, and assistance for the benefit of landowners, communities, and the Nation.

Motto

Enriching agriculture through trees.

Definition

Agroforestry is the intentional integration of trees or shrubs with crop and animal production to create environmental, economic, and social benefits.

Introduction



America’s farmers, ranchers, and forest landowners are integrating trees with agriculture to address a variety of conservation and production goals. A unique land management approach, agroforestry provides opportunities to integrate productivity and profitability with environmental stewardship to support healthy, sustainable agriculture systems, economies, and communities.

The five most common categories of agroforestry practices in the United States are:

1. **Windbreaks**, also known as shelterbelts—for fields, farmsteads, and livestock
2. **Riparian forest buffers**—along waterways
3. **Silvopasture systems**—with trees, livestock, and forages
4. **Forest farming**—with edible, herbal (botanicals), medicinal, and decorative products grown under managed forest cover
5. **Alley cropping**—with annual crops and high-value trees and shrubs

Depending on the practice, the benefits of practicing agroforestry can include:

- Protection for valuable topsoil, livestock, crops, and wildlife
- Increased productivity of agricultural and horticultural crops
- Diversified local economies
- Improved water quality
- Reduced energy and chemical inputs
- Increased water-use efficiency by plants and animals
- Enhanced biodiversity and landscape diversity

Agroforestry practices can also be designed to address other needs, such as mitigating odor, improving pollinator habitat, trapping snow, and producing biomass feedstock.

Many U.S. Department of Agriculture (USDA) programs provide opportunities for research and outreach to enhance the use of agroforestry by today’s landowners and communities. With continued leadership and teamwork, much progress can be made in developing agroforestry science and tools, as well as delivering agroforestry assistance to the owners and managers of America’s farms, woodlands, and ranchers.

Development of This USDA Agroforestry Strategic Framework

This updated fiscal year 2019–2024 USDA Agroforestry Strategic Framework is based upon input from the eight agency members of the USDA Agroforestry Executive Steering Committee (AESC) and the USDA Interagency Agroforestry Team (IAT). Agency input was, in turn, based on current agency needs and priorities, as well as input from partners. This included input provided by stakeholders to the National Agroforestry Center (NAC)—a partnership between the USDA Forest Service and Natural Resources Conservation Service—as it renewed its 5-year charter.

USDA agencies members of the AESC and the IAT:

- Agricultural Marketing Service
- Agricultural Research Service
- Farm Service Agency
- Forest Service
- National Agricultural Statistics Service
- National Institutes of Food and Agriculture
- Natural Resources Conservation Service
- Rural Development

Strategic Goals and Objectives

Strategic Goal 1—Reach Out

Ensure all landowners and communities have access to the latest tools and information that support agroforestry adoption.

Desired Outcome: Landowners, managers, Tribes, and communities have the resources they need to adopt agroforestry practices tailored to their objectives, including product diversity; rural wealth; water, soil, and air quality; and sustainable agriculture.



Objective 1.1—Listen and Communicate

Listen to landowners and other stakeholders to understand their needs; provide agroforestry information and tools to advance their economic and ecological objectives.

Strategies

1. Develop a plan for two-way landowner communications on agroforestry, using communication mechanisms and approaches already established within USDA agencies.
2. Develop communication approaches that respond to the needs and objectives of the range of landowner and manager demographic categories.
3. Deploy a variety of educational technologies reflective of the range of educational needs, learning styles, and demographics of America's landowners.

Objective 1.2—Advance Professional Education

Increase the availability of information and tools that help natural resource professionals to provide technical, educational, financial, and marketing assistance.

Strategies

1. Support university efforts to develop agroforestry curricula and to offer a major, certificate, or area of expertise in agroforestry.
2. Provide natural resource professionals with a variety of options for receiving and providing training and technical assistance in agroforestry technologies and landowner outreach, including professional meetings and conferences, stand-alone training activities, and online courses.
3. Develop recognition mechanisms for professionals that have gained expertise in agroforestry through completion of a recommended set of agroforestry training requirements.

Objective 1.3—Partner

Expand learning partnerships with stakeholders, including underserved and minority audiences, Tribes, new and beginning farmers and ranchers, and early adopters.

Strategies

1. Create learning networks and “communities of practice” that include practitioners and technical advisors.
2. Strategically locate, establish, and maintain agroforestry demonstration sites.
3. Utilize “on-farm research” and “action research” approaches that connect practitioners, scientists, and technical advisors.

4. Strengthen the exchange of agroforestry technologies between the United States and other countries to advance global and domestic food security and economic well-being by:
 - (a) Facilitating communication between U.S. agroforestry communities and international organizations engaged in agroforestry, including the World Agroforestry Center and the European Agroforestry Federation.
 - (b) Creating linkages between USDA agencies engaged in agroforestry and USDA initiatives related to global food security.

Strategic Goal 2—Investigate

Conduct applied and basic research to advance the science and technology that supports the use of agroforestry.

Desired Outcome: Advances in the use of science-based agroforestry tools by landowners, managers, Tribes, and communities to improve productivity and address complex environmental, economic, and social conditions.

Objective 2.1—Plan

Identify, assess, and prioritize interagency agroforestry science and technology needs, opportunities, and investments.

Strategies

1. Conduct syntheses of leading-edge science to inform the development of information, technologies, and tools for practitioners.
2. Create an updated catalog of USDA programs that catalyze and support agroforestry research activities and resources.
3. Include agroforestry, where appropriate, into requests for proposals through existing USDA science and technology programs.
4. Form an interagency team to identify, assess, and prioritize agroforestry science and technology needs and outcomes to improve the quality, relevancy, and performance of end-user products.

Objective 2.2—Discover

Conduct interagency, multidisciplinary research to advance agroforestry science and technologies.

Strategies

1. Establish and/or strengthen regional interagency, multidisciplinary teams to frame priority issues that can be addressed by agroforestry.
2. Facilitate access to relevant data across participating agencies to support interagency, multidisciplinary, and cross-scale analyses.
3. Conduct an agroforestry economics assessment to identify steps needed to ensure that landowners and communities can access the data, resources, and tools needed to understand financial costs and benefits of agroforestry adoption.
4. Develop agroforestry knowledge and technologies that help to:
 - (a) Develop profitable and economically sustainable systems for producing market goods.
 - (b) Build healthy and productive farms, ranches, woodlands, and communities.
 - (c) Protect air, water, and soil resources.
 - (d) Restore ecological services across rural and urban landscapes.
5. Develop the knowledge and technologies to improve the accounting of agroforestry benefits by:
 - (a) Establishing measurement, inventorying, and monitoring protocols that more accurately reflect agroforestry practices and their impacts.
 - (b) Building the infrastructure to conduct lifecycle analyses of agroforestry practices and systems.
 - (c) Quantifying the net economic benefits from agroforestry applications for comparison with those from other management systems.
 - (d) Quantifying and estimating the impacts of climatic variability and environmental changes on agroforestry systems.
 - (e) Conducting inventories of trees outside of forests to support carbon accounting.

Objective 2.3—Translate

Move agroforestry innovations into products and services.

Strategies

1. Facilitate ongoing interaction with end users throughout the technology-development cycle.
2. Evaluate the ways of learning by and about customers to improve application of agroforestry.
3. Develop customized agroforestry products and services for targeted audiences and locations.
4. Conduct evidence-based syntheses to provide agroforestry planning and design guidelines to address the following priorities:
 - (a) Providing multifunctional and multiscale planning and design.
 - (b) Addressing mitigation and adaptation to extreme weather events and adverse climate.
 - (c) Meeting the needs of landowners with small holdings and limited resources.
 - (d) Protecting and creating critical habitat for wildlife, aquatic species, and pollinators.

Strategic Goal 3—Integrate

Facilitate the integration of agroforestry information, research, tools, and technologies to meet the goals and objectives of USDA agencies.

Desired Outcome: All USDA agencies understand the benefits of agroforestry and opportunities for strengthening agency programs and missions through agroforestry research and outreach.

Objective 3.1—Institutionalize

Incorporate agroforestry into USDA policies, programs, and activities.

Strategies

1. Identify strategies within this strategic framework that respond to individual agency priorities and develop a plan for addressing these priorities.
2. Support cross-agency communication and, where appropriate, coordination of agroforestry research and outreach opportunities through the AESC and the IAT.
3. Inform the U.S. Secretary of Agriculture and USDA agencies of agroforestry support, accomplishments, and outcomes.

Objective 3.2—Assess Opportunities and Accomplishments

Monitor, assess, and strengthen agroforestry contributions to meeting agency objectives.

Strategies

1. Assess and report on the environmental, economic, and social impacts of agroforestry.
2. Work within USDA to establish a comprehensive, continuous national inventory of on-the-ground applications of agroforestry practices/systems or include in existing inventory structures (e.g., Forest Inventory and Analysis or the National Resources Inventory).
3. Work with the USDA National Agricultural Statistics Service (NASS) to strengthen the use of the Census of Agriculture and NASS capabilities for monitoring the application of agroforestry practices/systems by agricultural producers.
4. Utilize the National Woodland Owners Survey to monitor the application of agroforestry practices/systems by nonindustrial private forest landowners.
5. Track agroforestry technologies applied by communities.

Objective 3.3—Communicate Results

Enhance knowledge and awareness of USDA agencies and partners of the benefits and services that agroforestry provides.

Strategies

1. Communicate the economic, environmental, and social benefits of agroforestry to the full spectrum of land users, Tribes, communities (urban to rural), minority landowners/limited-resource producers, natural resource professionals, and other stakeholders.
2. Advance agroforestry as a means to support sustainable agricultural systems, including increased resilience to extreme weather events (e.g., drought and floods) brought on by climate variability.
3. Foster public-private partnerships that increase understanding, acceptance, and application.
4. Highlight agroforestry in USDA communications to increase awareness of the potential benefits for diversifying agricultural production, enhancing environmental and economic conditions, building vibrant communities, and conserving private working lands.
5. Create mechanisms for stakeholders to provide feedback to the AESC.

APPENDIX I

Missions and Programs of the U.S. Department of Agriculture Agencies Providing Input to This Framework

USDA Agricultural Marketing Service

Mission

The Agricultural Marketing Service (AMS) administers programs that create domestic and international marketing opportunities for U.S. producers of food, fiber, and specialty crops. AMS also provides the agriculture industry with valuable services to ensure the quality and availability of wholesome food for consumers across the country.

Nearly 4,000 AMS professionals work every day to support the country's diverse agricultural operations, which range from individual farmers to international businesses that employ 1 in 12 people. AMS services and its millions of dollars in annual [grant investments](#) also create opportunities by supporting economic development in small towns and rural communities that stand as the backbone of American values.

Programs and Activities

AMS programs that most directly tie to agroforestry are those that have the potential to support marketing opportunities for agroforestry products. These include those focused on specialty crops, local food market channel research, grant programs, market news, the local and regional food working group, and organic or food safety certification programs.

Much of the agency's support for agriculture is provided through commodity-specific efforts, such as its Dairy; Specialty Crops; Livestock, Poultry and Seed; and Cotton and Tobacco Programs. For fruit and vegetable growers, the Specialty Crop Program offers voluntary food safety audits, including the Good Agricultural Practices (GAP) and Good Handling Practices (GHP), Harmonized GAP, and Group GAP. AMS also oversees the National Organic Program, Science and Technology Program, and the Transportation and Marketing Program. The AMS Transportation and Marketing Program houses grant programs, including the Farmers Market Promotion Program, Local Food Promotion Program, and the Specialty Crop Block Grant Program, as well as a Marketing Services Division that conducts research and hosts voluntary online directories on local food market channels. AMS also provides regulatory oversight for over 20 [research and promotion programs](#) and enforces other Federal regulations such as the [Perishable Agricultural Commodities Act](#) and the [Seed Act](#). AMS also hosts the interagency Local and Regional Food Working Group, which coordinates programs across the U.S. Department of Agriculture (USDA) that support local and regional food systems and maintains web pages and

a [Local Food Compass Map](#). The searchable map shares local food system assets and infrastructure, as well as projects across the country funded through USDA and other Federal programs.

For More Information

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USDA Agricultural Research Service

Mission

The Agricultural Research Service (ARS) is the principal in-house research agency of the USDA. It is one of the four component agencies of USDA's Research, Education, and Economics mission area. Congress first authorized federally supported agricultural research in the Organic Act of 1862, which established what is now known as the USDA. That statute directed the Commissioner of Agriculture "... To acquire and preserve in his Department all information he can obtain by means of books and correspondence, and by practical and scientific experiments" The scope of USDA's agricultural research programs has been expanded and extended many times since it was first created.

ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination to:

- Ensure high-quality, safe food and other agricultural products.
- Assess the nutritional needs of Americans.
- Sustain a competitive agricultural economy.
- Enhance the natural resource base and the environment.
- Provide economic opportunities for rural citizens, communities, and society as a whole.

Programs and Activities

The agency's four national program areas serve to bring coordination, communication, and empowerment to the approximately 1,000 research projects carried out by ARS.

The national programs focus on the relevance, impact, and quality of ARS research. The programs are:

- Animal Production and Protection
- Crop Production and Protection

- Natural Resources and Sustainable Agricultural Systems
- Nutrition, Food Safety/Quality

While agroforestry is integrative across these program areas, most ARS research on agroforestry systems is in the Natural Resources and Sustainable Agricultural Systems Program Area. This program supports researchers at 70 locations who are developing the technologies and strategies needed to help farmers, ranchers, and other managers effectively steward the diverse agricultural mosaic spread across the Nation. From livestock grazing on expansive natural Western rangelands, to crops grown in the rich Midwestern Heartland and the Southern States regions, to the high-value produce that comes from the valleys and plains along both coasts, these diverse landscapes generate more than \$200 billion in goods and services that are the basis of a strong rural economy. Emphasis is given to developing technologies that are and will be economical to use and systems that support profitable production and enhance the Nation's vast renewable natural resource base. ARS identifies research priorities through a continual dialogue with a wide range of customers and stakeholders to ensure that the agency's science is relevant and provides effective solutions to their concerns. ARS addresses issues affecting both private and public lands because together these are the foundation of a healthy and vibrant agricultural industry that not only provides food, feed, fiber, and renewable energy to the Nation, but also abundant and high-quality supplies of fresh water and clean air, as well as healthy ecosystems.

Program areas within the Natural Resources and Sustainable Agricultural Systems are:

- Grass, Forage, and Rangeland Agroecosystems
- Soil and Air
- Sustainable Agricultural Systems
- Water Availability and Watershed Management

Agroforestry research is being conducted in most of these National Programs. Research projects focus on designing and evaluating the production and environmental effects from forested riparian buffers, shelterbelts, and field windbreaks; determination of water requirements from tree components in agricultural landscapes; production and environmental effects from use of gray waters for tree plantations, including use of brackish and saline waters; how to utilize forest byproducts for developing new economic activities; strategies to control and/or gain benefit from brushy species in rangelands; and characterizing greenhouse gas emissions reductions and soil carbon sequestration in silvopasture systems. ARS also manages the National Arboretum, which contains species of trees and shrubs that serve as a living library for genetic potential in agroforestry systems.

Specific projects of several ARS locations include:

- **Ames, IA**—Studying field windbreaks' impacts on soil carbon and nitrogen cycling as well as aboveground biomass and woody residue as a bioenergy feedstock.
- **Davis, CA**—Researching opportunities to intercrop between grape vine rows.
- **Fort Collins, CO**—Studying and modeling field windbreak spacing and density impacts on wind dynamics, crop evapotranspiration, and soil erosion.
- **Lubbock, TX, Beltsville, MD, and Ames, IA**—Studying the benefits of vegetative environmental buffers around livestock production facilities.
- **Raleigh, NC, and University Park, PA**—Characterizing the impacts of tree species and forage management on production and environmental aspects of silvopastures, including on nutrient cycling, greenhouse gas emissions, and soil carbon sequestration systems for production and environmental benefits.
- **Tifton, GA, and others**—Researching riparian forest buffers as a tool to trap sediment and nutrient runoff from agricultural fields.

ARS also manages agroforestry research through collaborative pass-through funding for Mississippi State University, Oregon State University, University of Maine, and University of Missouri Center for Agroforestry. These projects address the role of the forest products sector in the U.S. economy and the need to create new and improved value-added products, renewable energy, wood-quality evaluations, and valuation improvements for the benefit of the Nation's wood supply. Projects are conducted in consultation with the USDA Forest Service, Forest Product Laboratory.

For More Information

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USDA Farm Service Agency

Mission

The Farm Service Agency (FSA) is dedicated to delivering to the American people an abundant, safe, and affordable food and fiber supply while sustaining agricultural communities and balancing agricultural production with natural resource conservation. FSA administers farm commodity, crop insurance, credit, environmental, conservation, and emergency assistance programs for the Nation's farmers and ranchers. With regard to agroforestry, FSA is heavily dependent on the Forest Service and Natural Resources Conservation Service (NRCS) for outreach and technical assistance to landowners and agricultural producers participating in FSA programs and the technology transfer initiatives of the National Agroforestry Center (NAC) in Lincoln, NE.

Programs and Activities

Agroforestry practices include alley cropping, forest farming, riparian forest buffers, silvopasture, and windbreaks. Many of these practices are consistent with participation in the agency’s commodity programs. Agroforestry practices can be established with technical and financial assistance provided by FSA and NRCS. However, some USDA conservation programs, such as the Conservation Reserve Program (CRP), are designed to retire marginal agricultural land from production. There are prohibitions against certain commercial use of land under CRP contracts. CRP is one of the largest conservation programs in USDA history. The enrollment of CRP acres is close to the current cap of 24 million acres, providing soil, water, and wildlife benefits. CRP is a voluntary program available to agricultural producers to help them enhance environmentally sensitive lands. Producers enrolled in CRP plant long-term, resource-conserving covers, such as approved introduced or native grasses or hardwood trees to improve the quality of water, control soil erosion, and enhance wildlife habitat. Contract terms range from 10 to 15 years. The Biomass Crop Assistance Program, authorized with the passage of the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) and administered through FSA, also offers opportunity to integrate agriculture and energy production.

For More Information

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USDA Forest Service

Mission

The Forest Service mission is “to sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations.”

Within the Forest Service, three mission areas support agroforestry programs/activities:

- **Research and Development**—Developing and communicating the scientific information and technology needed to manage, protect, use, and sustain the natural resources of forests and rangelands.
- **State and Private Forestry**—Connecting people to resources, ideas, and one another in order to care for forests and sustain their communities.
- **National Forest System**—Protecting and managing the 155 national forests and 20 national grasslands so they best demonstrate the sustainable multiple-use management concept, using an ecological approach to meet the diverse needs of people.

Programs and Activities

Research and Development

The Forest Service represents the world's largest natural resources science capacity. Nationwide, Forest Service scientists carry out basic and applied research that result in science-based applications and tools that support management of all the Nation's forests and trees, including the agroforestry Research and Development (R&D) activities conducted by the NAC (described later in this section). The Forest Inventory and Analysis Program (FIA) surveys, analyzes, and reports on the status and trends in forest area and location. Assessment work accomplished under this program does not include most agroforestry plantings because they do not meet the standard definition of "forest." However, FIA staff located at the Northern Research Station, in cooperation with the NAC and State forestry agencies, have been piloting and advancing the use of Geographic Information System tools for assessing agroforestry practices across the Great Plains.

State and Private Forestry

Through Forest Service grants and cooperative agreements, State forestry agencies and other partners deliver assistance directly to customers through three State and Private Forestry (S&PF) "umbrella" program areas that receive annual Federal appropriations: Cooperative Forestry, Forest Health Protection, and Cooperative Fire Protection. The two Cooperative Forestry programs most important to supporting agroforestry activities are the Forest Stewardship Program (FSP) and the Urban and Community Forestry (U&CF) Program. Through FSP, landowners receive technical and financial assistance to complete a long-term, multi-resource Forest Stewardship Plan, which may include agroforestry practices. Through the U&CF Program, communities receive technical and financial assistance to establish and protect community trees and forests to improve air quality, water quality, human health, and wildlife habitat. This landscape-scale approach often requires planning and integrating agroforestry systems into the green infrastructure of larger landscapes that include a matrix of urban, rural, agricultural, and forest lands. Forest Health Protection programs provide national leadership in protecting America's forest and tree resources through technical and financial assistance to Federal, State, Tribal, and private landowners to assess, prevent, suppress, and control forest insects, pathogens, and invasive plants.

National Forest System

Although the application of agroforestry practices/systems on the 193 million acres of national forests and grasslands managed under National Forest System programs is limited, low-intensity silvopastoral practices/systems are applied on some national forests. While there are many "non-timber," or "special" forest products gathered on national forests (e.g., florals, foods, and medicinal products), these tend to be "wild harvested" rather than intentionally produced, and therefore do not fall under the definition of forest farming. However, the practice of forest farming on private lands may be helpful in reducing pressures on public lands to provide such products.

Opportunities may occur in the future to expand the application of agroforestry on national forests and grasslands as part of larger landscape-scale efforts with adjacent cooperating landowners/land managers to accomplish conservation and sustainable production goals. The Forest Service supports the science, practice, and application of agroforestry primarily through its R&D and S&PF programs, with a current focus on non-Federal working lands. In addition, through its international programs, the Forest Service, in cooperation with a wide range of partners, also provides some assistance to support agroforestry in other countries, primarily in the tropics.

For More Information

Susan Stein, Director, USDA Forest Service NAC; sstein@fs.fed.us; (202) 360-9737.

USDA National Agricultural Statistics Service

Mission

The National Agricultural Statistics Service (NASS) provides timely, accurate, and useful statistics in service to U.S. agriculture. The agency conducts hundreds of surveys every year and prepares reports covering virtually every aspect of U.S. agriculture. Production and supplies of food and fiber, prices paid and received by farmers, farm labor and wages, farm finances, chemical use, and changes in the demographics of U.S. producers are only a few examples.

NASS worked with the Interagency Agroforestry Team to develop the agroforestry question included in the 2012 Census of Agriculture. This question has been modified for inclusion in the 2017 census. NASS has also provided cross-cuts upon request, based on responses to this question as well as other questions that relate to agroforestry, such as woodland grazing.

For More Information

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USDA Natural Resources Conservation Service

Mission

The NRCS improves the health of our Nation's natural resources while sustaining and enhancing the productivity of American agriculture. We achieve this by providing voluntary assistance through strong partnerships with private landowners, managers, and communities to conserve, protect, restore, and enhance the lands and waters upon which people and the environment depend.

NRCS Programs and Activities Supporting Agroforestry

The 2014 Farm Bill authorizes NRCS to provide financial and technical assistance through conservation programs to private landowners who want to support their working lands. Through the conservation programs, NRCS works one-on-one with farmers, ranchers, and forest landowners to implement conservation practices and systems on their working land that help address critical natural resource issues, including soil erosion, water quality and quantity, air quality, wildlife habitat, and damages caused by floods and other natural disasters.

Financial Assistance

Through financial assistance, NRCS supports agroforestry as a land management approach by using properly designed agroforestry systems that help private landowners achieve specific natural resource goals. When appropriate, implemented practices are incorporated with agroforestry systems such as alley cropping, forest farming, riparian forest buffers, silvopasture, windbreaks, and special applications, all of which help support American working lands.

NRCS financial assistance programs supporting agroforestry include:

- [Environmental Quality Incentives Program](#)
- [Conservation Stewardship Program](#)
- [Regional Conservation Partnership Program](#)

Conservation Technical Assistance and Conservation Planning

Through conservation technical assistance, NRCS generates, manages, and shares the data, research, and standards that enable private landowners, partners, and policymakers to make land management decisions informed by objective, reliable science.

NRCS [conservation planning](#) helps private landowners plan and execute conservation decisions to meet land use goals. Conservation Plans record decisions supporting the treatment and management of natural resources on working lands.

NRCS technical experts give advice on the best solutions to meet the unique conservation and business goals of the people growing the Nation's food and fiber.

Professional advice from NRCS experts and conservation planning assistance help the Nation's private landowners make investments in their operations and local communities to keep working lands working, boost rural economies, increase the competitiveness of American agriculture, and improve the health of our air, water, and soil.

Technology Transfer and Assistance

To strengthen scientific and technical support for NRCS conservation programs and activities, National Technology Support Centers were established in the East, Central, and West. The primary functions of these centers are to provide direct technical assistance and technology transfer to States, the Pacific Basin, and Caribbean areas and to acquire and/or develop new science and technology in order to provide cutting-edge technical support.

National Technology Support Center tools include agroforestry conservation standards, specifications, guides and references, and modeling systems. NRCS uses this technology to help facilitate sound conservation decisions by private landowners.

Training and certification programs include agroforestry technical training to internal and external customers and the administration of certification standards and procedures.

Plant materials and related technologies provide for improved plant species and better agroforestry treatment.

Natural Resource Inventory and Assessment

NRCS assesses, acquires, develops, interprets, analyzes, and delivers natural resource data and information to enable knowledge-based natural resource planning and decision making at all landscape scales.

Data-gathering protocols ensure that reliable natural resource data are acquired and delivered. Databases and delivery include the maintenance and delivery of geospatial datasets and information.

Assessments and analyses include the modeling and interpretation of natural resource data to better inform decision makers and to facilitate policy development.

For More Information

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USDA National Institute of Food and Agriculture

Mission

Located in USDA's Research, Education, and Economics mission area, the mission of the National Institute of Food and Agriculture (NIFA) is to lead food and agricultural sciences to create a better future for the Nation and the world.

Programs and Activities

The NIFA was established in the 2008 Farm Bill to serve the Nation's needs by supporting exemplary research, education, and extension programs that address many challenges facing the Nation. NIFA works with the best and brightest scientists at universities and colleges throughout the United States and around the world to find innovative solutions to global problems. With a timely, integrated approach and collaboration with other Federal science agencies, NIFA will also serve as a vital contributor in science policy decision making. Research supports the discovery of new solutions needed to solve many of the issues facing the Nation and the world. Education strengthens schools and universities to train the next generation of scientists, educators, producers, and citizens. Extension brings the knowledge gained through research and education to those who need it most—people in the United States and around the world. NIFA has two key mechanisms for accomplishing its mission.

National program leadership. NIFA helps States identify and meet research, extension, and education priorities in areas of public concern that affect farm, forest, and ranch producers; small business owners; youth and families; and communities.

Federal assistance. NIFA provides annual capacity grants to the Land-Grant University System and competitive grants to researchers in land-grant and other universities. NIFA also partners with other Federal agencies, within and beyond USDA, nonprofit organizations, professional societies, commodity groups, grower associations, multistate research committees, private industry, citizen groups, foundations, regional centers, the military, task forces, and other groups and organizations.

Research

NIFA solicits applications for competitive programs, several of which may include agroforestry. Awards are made to land-grant and other universities, Federal research agencies, and nongovernmental organizations. Applications are reviewed by panels of experts from outside NIFA, and recommendations are made for funding. In addition to competitive grants, NIFA awards Hatch Act formula grants to land-grant universities for research in the agricultural and environmental sciences. The McIntire-Stennis formula funds are awarded to more than 70 universities and are used specifically to support forestry research.

Education

NIFA makes competitive awards to universities, faculty members, and graduate students through several programs directed at 1862, 1890, and 1994 land-grant universities; Hispanic-Serving Institutions; Alaska Native-Serving Institutions, Native Hawaiian-Serving Institutions, and Tribal colleges. These awards support faculty development, fellowships, capacity building, resident instruction, distance learning, and curriculum development at eligible institutions of higher education. Agroforestry projects can be funded through higher education programs.

Extension

Through an extensive network of State, regional, and county extension offices in every State and territory, NIFA supports the application and extension of new and existing research-based information to a wide variety of audiences. These offices have educators and other staff who respond to public inquiries and conduct informal, noncredit workshops and other educational events. Information and programs are delivered through print media, videos, CDs, workshops and seminars, internet sites, and webinars. With support from more than 600,000 volunteers, 4-H (USDA's 105-year-old youth development program administered through NIFA) engages more than 6.5 million young people every year and teaches them life skills through hands-on learning and leadership activities. Smith-Lever and Renewable Resources Extension Act funds are used to plan, conduct, and evaluate extension programs, including agroforestry, delivered by the Cooperative Extension System.

For More Information

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USDA National Agroforestry Center

Mission

The NAC is a partnership between the Forest Service R&D and S&PF and the NRCS. Authorized in the 1990 Farm Bill and established in 1992 in Lincoln, NE, NAC is administratively assigned to the Forest Service's R&D Deputy Area in Washington, DC.

The NAC mission is "To advance the health, diversity, and productivity of working lands, waters, and communities through agroforestry." The center conducts research, develops technologies and tools, establishes demonstrations, delivers training, and provides science-based information on agroforestry nationwide. While its primary audience is natural resource professionals who work with farmers, ranchers, forest landowners, and communities, many of its materials can be used by all of these audiences.

NAC develops and delivers technology on the entire suite of agroforestry practices and conducts research on the design and installation of practices that address multiple landowner and manager goals related to income diversification and environmental services.

Critical to NAC's success is the national network of partners and stakeholders established through a long history of collaboration. These include USDA agencies, other Federal agencies, universities/extension (including the 1890 Agroforestry Consortium), State forestry agencies, conservation districts, Resource Conservation and Development Councils, regional councils, nongovernmental organizations, and other private land entities.

Programs and Activities

Through cooperation with a wide variety of internal and external partners, NAC draws upon an extensive body of expertise and resources to identify and address the most pressing needs for agroforestry science and tools.

NAC's current charter calls for work to concentrate on three problem areas:

- Agroforestry Ecosystem Services—To advance the understanding and quantification of agroforestry impacts on key ecosystem services
- Social and Economic Dimensions of Agroforestry—To better understand the factors influencing adoption and retention of agroforestry
- Agroforestry Education, Networks, and Support—To accelerate and support information transfer to landowners and land managers.

Research and Development

Research and Development (R&D) is directly tied to NAC's Technology Transfer and Applications (TT&A) program as well as NAC's national network of partners and stakeholders. Through its R&D activities, NAC provides scientific knowledge and tools to provide, restore, and sustain ecosystem services through the integration of trees and forests in mixed land-use landscapes.

NAC's R&D activities are currently focused on agroforestry tools and technologies to restore or enhance water quality, pollinator habitat, and other ecosystem services in agricultural landscapes.

Technology Transfer and Application

NAC's TT&A program, in cooperation with partners, delivers agroforestry technology nationally across the entire suite of agroforestry practices, including alley cropping, forest farming, riparian forest buffers, silvopasture, windbreaks, and special applications. Work includes the production of technical materials for natural resource professionals and conservation district partners, including: Inside Agroforestry newsletter, Technical Notes, Working Trees brochures, website, displays, and training sessions. This information is, in turn, incorporated into technical guidelines and training courses of NRCS and an array of partner organizations. For information about NAC's TT&A products, visit <https://www.fs.usda.gov/nac>.

For More Information

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USDA Rural Development

Mission

Rural Development is committed to helping improve the economy and quality of life in rural America.

Programs

USDA Rural Development programs are administered by three agencies: Rural Housing Service, Rural Utilities Service, and Rural Business-Cooperative Service. The programs of these three agencies help rural Americans in many ways. They offer loans, grants, and loan guarantees to support economic development and essential services such as business development, housing, health care, first responder services and equipment, as well as water, electric, and telecommunications infrastructure. Economic development is promoted by supporting loans to businesses through a variety of intermediaries, banks, and other financing partners. Technical assistance and information are provided to help agricultural producers and cooperatives get started and improve the effectiveness of their operations. Rural Development programs also provide technical assistance to help communities undertake community empowerment programs. There are also programs to help rural residents buy or rent safe, affordable housing and make health and safety repairs to their homes. Rural Development has approximately \$216 billion portfolio of loans.

Rural Development support for agroforestry is provided through various programs such as the Appropriate Technology Transfer for Rural Areas (ATTRA) project and Value Added Producer Grants (VAPG) and through loans and loan guarantees for higher level investments in supporting producers to have access to capital for working capital, equipment, and facility construction. Some crops grown in agroforestry systems have a short shelf life or are most commonly processed before they are sold. Value Added Producer Grants help producers develop systems to effectively and efficiently sell goods in a processed form, often at a higher price. Cooperatives also play a key role in the growth of specialty crops grown in agroforestry systems, so Rural Development's Rural Cooperative Development Grant programs may also provide help for agroforestry producers in the future through support for cooperative development, marketing, or processing equipment.

For More Information

Rural Development Innovation Center, rdinnovation@wdc.usda.gov.

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January 2019

Miscellaneous Publication 1615

