United States
Department of
Agriculture

June 2011

USDA Agroforestry Strategic Framework, Fiscal Year 2011–2016

Enriching Our Lives With Trees That Work

Additional copies of this Strategic Framework can be downloaded from <http://www.usda.gov/wps/portal/usda/usdahome?navid=FOREST_FORESTRY>.

Contents

Message From the Secretary

The U.S. Department of Agriculture (USDA) developed this Agroforestry Strategic Framework to increase awareness and support of agroforestry. It brings together the ideas and resources of five USDA agencies, two key partners, and a diverse group of stakeholders. This strategic framework creates a roadmap for advancing the science, practice, and application of agroforestry as a means of enhancing America's agricultural landscapes, watersheds, and rural communities.

While Governor of Iowa, I saw first-hand the benefits associated with the application of agroforestry to local farms, ranches, and woodlands. As the Secretary of Agriculture, I am pleased with USDA's efforts to balance agricultural production with natural resource conservation. Established with assistance from USDA or other public agencies and private organizations, riparian forest buffers and other agroforestry practices have helped to reduce soil erosion and nutrient run-off and conserve natural resources, such as water and wildlife, on several million acres. These practices have been a key component of landscape conservation efforts, such as the Chesapeake Bay and Gulf of Mexico initiatives.

I have, however, also noticed that the application of agroforestry is not widespread. Agroforestry—the intentional combining of agriculture and forestry to create integrated and sustainable land-use systems—presents an opportunity to address agricultural and conservation concerns and enrich human lives not only at the local level, but at the State, national, and global levels as well. Agroforestry addresses several of the top priorities identified in the USDA Strategic Plan for fiscal years 2010–2015.

The USDA Agroforestry Strategic Framework is built around three simple goals: Adoption, Science, and Integration. These goals will enable USDA to provide additional knowledge, tools, and assistance to better combine agriculture and forestry for the benefit of landowners, communities, and the Nation. The principles of leadership, partnerships, engagement, and enrichment guide USDA efforts to enhance the production of food, feed, fiber, and renewable energy; to enhance the sustainability and prosperity of rural communities; and to protect, conserve, and restore natural resources.

I plan to release a policy statement on agroforestry and establish an Agroforestry Steering Committee that will guide the implementation of this strategic framework. Please join me in an "all lands/all hands" approach that expands the application of agroforestry and generates prosperity in new ways while helping to conserve the Nation's natural resources and ensuring sustainable production of food, feed, fiber, and energy for the country and the world.

THOMAS J. VILSACK
Secretary of Agriculture

Vision, Mission, Motto, Guiding Principles

Vision

Creating productive and healthy farms, ranches, woodlands, and communities through agroforestry

Mission

Provide knowledge, tools, and assistance to combine agriculture and forestry for the benefit of the landowner, the community, and the Nation

Motto

Enriching our lives with trees that work

Guiding Principles

Achieving the vision will require:

- **Leadership—**Providing the leadership, knowledge, and assistance in agroforestry for the benefit of the Nation.
- **Partnerships—**Bringing together the diversity of public agencies and land stewards to capitalize on the strengths of all.
- **Engagement—**Continuously seeking the involvement, input, action, and feedback of partners and customers.
- **Enrichment—**Contributing to conservation, restoration, and resiliency of all lands.

Strategic Roadmap

There are four key purposes for the USDA Agroforestry Strategic Framework:

- Increase USDA and partner awareness and support for agroforestry as a means to implement the USDA Strategic Plan (2010-2015);
- Identify the most important future USDA emphasis areas for agroforestry research, development, and technology transfer;
- Establish an interagency Agroforestry Steering Committee to guide USDA implementation of the strategic framework (including the activities of the Forest Service, Natural Resources Conservation Service, Agricultural Research Service, National Institute of Food and Agriculture, and the Farm Service Agency); and
- Expand on-the-ground application of agroforestry practices and systems to support attainment of the USDA Strategic Plan.

To assist the Nation in addressing today's challenges, USDA will:

- Increase use of agroforestry by landowners and communities (Goal 1—ADOPTION);
- Advance the understanding of, and tools for, applying agroforestry (Goal 2—SCIENCE); and
- Incorporate agroforestry into an all-lands approach to conservation and economic development (Goal 3—INTEGRATION).

Each of these three goals has a desired outcome and three objectives that describe how USDA will carry out this strategic framework. Each objective has strategies that provide further specifics on how the goals, objectives, and desired outcome will be attained. To attain these goals and objectives, USDA must effectively incorporate agroforestry into its programs, policies, and activities. To facilitate this, USDA will need to:

- Issue a policy statement in support of agroforestry;
- Through a proposal in the Farm Bill, define agroforestry and specifically authorize its application;
- Develop a Memorandum of Understanding that establishes a steering committee to increase agroforestry collaboration among USDA mission areas, agencies, and cooperators;
- Guide implementation of this strategic framework through the Agroforestry Steering Committee;
- Develop an implementation plan for this strategic framework that will include progress indicators, baselines, metrics, and targets; and
- Establish an interagency reporting system that tracks the application of agroforestry practices and the change in benefits that accrue to landowners and communities.

USDA mission area and agency plans, as they are being developed and updated, are expected to incorporate agroforestry, as appropriate, and support accomplishment of the USDA Agroforestry Strategic Framework.

Introduction

Agroforestry: a unique land management approach of working trees

The foundation of agroforestry is putting trees to work in conservation and production systems for farms, forests, ranches, and communities. Agroforestry begins with placing the right plant, in the right place, for the right purpose.

Agroforestry is a unique land management approach that provides opportunities to integrate productivity and profitability with environmental stewardship, resulting in healthy and sustainable agricultural systems that can be passed on to future generations.

Agroforestry technologies, when used appropriately, help attain sustainable agricultural land-use systems in many ways. Specifically, agroforestry technologies:

- Provide protection for valuable topsoil, livestock, crops, and wildlife.
- Increase productivity of agricultural and horticultural crops.
- Reduce inputs of energy and chemicals.
- Increase water use efficiency of plants and animals.
- Improve water quality.
- Diversify local economies.
- Enhance biodiversity and landscape diversity.
- Reconnect agriculture, people, and communities.

Agroforestry technologies ultimately enhance the quality of life for people.

There are five categories of agroforestry practices in the United States:

- Field, farmstead, and livestock windbreaks.
- Riparian forest buffers along waterways.
- Silvopasture systems with trees, livestock, and forages growing together.
- Alley cropping that integrates annual crops with high-value trees and shrubs.
- Forest farming where food, herbal (botanicals), and decorative products are grown under the protection of a managed forest canopy.

Agroforestry is the intentional mixing of trees and shrubs into crop and animal production systems to create environmental, economic, and social benefits

These five practices can be designed to accommodate other purposes such as odor mitigation, improving pollinator habitat, trapping snow, or producing biomass feedstock.

Windbreaks

Silvopasture

Riparian Forest Buffer

Alley Cropping

There is a significant opportunity to apply agroforestry practices to address the priorities identified in the current USDA Strategic Plan, including landscape-scale conservation, climate change, clean and abundant water for communities, biomass energy, and sustainable agriculture. Integrated into individual farm operations and watersheds, agroforestry practices can create and enhance certain desirable functions and outcomes essential for sustainability.

The effective application of agroforestry in the United States requires leadership and teamwork by USDA and its partners in both: (1) developing agroforestry science and tools and (2) delivering agroforestry assistance to the owners/managers of working farms, woodlands, ranches, and communities. Both are essential if we are to realize the many benefits of this unique approach to land management.

USDA Agroforestry Strategic Framework Development

In recognition of the significant contribution to society and the need to coordinate USDA programs, resources, and services to maximize public benefits, the Forest Service and Natural Resources Conservation Service (NRCS) initiated an effort in January 2010 to develop an Agroforestry Strategic Framework. The Forest Service and NRCS reached out to other USDA agencies and two key partners to charter an Interagency Agroforestry Team (IAT) that would jointly develop the strategic framework with input from a diverse group of stakeholders.

USDA agencies on the IAT:

- Forest Service
- Natural Resources Conservation Service (NRCS)
- Agricultural Research Service (ARS)
- National Institute of Food and Agriculture (NIFA)
- Farm Service Agency (FSA)

Forest Farming

Special Applications

Key partners on the IAT:

- National Association of State Foresters (NASF)
- National Association of Conservation Districts (NACD)

Individual members of the IAT are listed in Appendix A, and a brief description of the mission and programs of each partner and USDA agency is provided in Appendix B. External and internal stakeholder input was solicited at a May 2010 Agroforestry Roundtable Workshop conducted in Washington, DC. Approximately 90 stakeholders participated in the workshop, representing landowner and conservation organizations, tribes, universities/extension, State agencies, regional councils, as well as other USDA/Federal agencies. The IAT considered the stakeholder input and incorporated many of its ideas into the strategic framework. For a summary of the stakeholder input, see Appendix C.

Previous Agroforestry Activity

The history of USDA and its partners' roles in agroforestry can be traced back to the windbreaks that were established during the Dust Bowl years to reduce soil erosion in the Great Plains. More widespread interest in the United States began in the mid-1980s. Even though the science and practice of agroforestry has advanced in the United States since the 1980s, it has still not been institutionalized into USDA's concepts, philosophy, strategies, and programs. This issue was recognized in 1996, when a USDA Interagency Working Group on Agroforestry was established under the leadership of the USDA Director of Sustainable Development Programs. The Working Group commissioned a task force in 1997 to assess the potential of agroforestry to help attain USDA sustainable development goals and to develop a strategy to realize that potential. Three other national agroforestry reports (two in 1994, one in 2000) and the 2008 "joint forestry" Memorandum of Understanding also address agroforestry issues and opportunities in the United States. See Appendix D for more information about these reports and the history of agroforestry in the United States.

Strategic Goal 1–Adoption

Increase use of agroforestry by landowners and communities

Desired Outcome: *Landowners, managers, tribes, and communities adopt agroforestry practices resulting in improved water, soil, and air quality; sustainable agriculture; product diversity; and rural wealth.*

Accomplishing Goal 1 will require establishing new agroforestry partnerships and networks and expanding technology transfer and assistance to support sustainable agriculture and effective agroforestry system development among natural resource professionals, tribes, landowners, and communities in the United States. International agroforestry activities will focus on creating food secure nations.

Objective 1.1—DEVELOP PARTNERSHIPS: Expand learning partnerships with stakeholders, with a priority on tribes and underserved and minority audiences.

Why Do This?

The opportunities and prospects for agroforestry call for new approaches in learning and collaborating. Individuals are experimenting with various practices and plants while at the same time new knowledge is being discovered by scientists and transferred to stakeholders through new learning opportunities. Everyone engaged in agroforestry—e.g., landowners, scientists, and technical advisors—can be a teacher, and everyone can be a learner. By using this approach, the needs of agroforestry practitioners can be identified and addressed, the community of learners can be expanded, and new learning networks will be created. Through learning partnerships, farm, ranch, and forest stewards will gain new knowledge that helps them establish and maintain agroforestry practices and market products derived from those practices.

Strategies

1. Create learning networks and "communities of practice" comprised of practitioners and technical advisors.
2. Strategically locate, establish, and maintain agroforestry demonstration sites.
3. Utilize the concepts of "on-farm research" and "action research" to connect practitioners, scientists, and technical advisors.
4. Support the creation of "peer-to-peer" learning networks.
5. Develop the full suite of learning opportunities, ranging from tried and proven approaches (publications, field days, and workshops) to technological innovations (e.g., electronic or e-learning).

Objective 1.2—EDUCATE PROFESSIONALS: Enable natural resource professionals to provide technical, educational, financial, and marketing assistance.

Why Do This?

Landowners and communities that are interested in agroforestry need to have access to expert assistance in "how to" plan and apply agroforestry practices, as well as understand the financial considerations and marketing of agroforestry products. Natural resource and other professionals need specific agroforestry training and education in order to provide the type and level of assistance needed. Individuals who complete a set of requirements to achieve an agroforestry competency will be better able to provide assistance to landowners and communities.

Strategies

1. Examine the feasibility of developing an agroforestry competency for adoption by universities to offer a major, certificate, or area of expertise in agroforestry.
2. Develop a professional recognition mechanism to acknowledge professionals who have participated in and completed a common set of agroforestry training requirements.
3. Provide technical agroforestry training to natural resource professionals at existing professional meetings and conferences.
4. Utilize the power of markets by linking the production of profitable products to agroforestry system design.

Objective 1.3—ENGAGE GLOBALLY: Support the exchange of agroforestry technology between the United States and other countries.

Why Do This?

The utilization of agroforestry practices to produce food, feed, and fiber had a history of significant achievements around the globe long before agroforestry was recognized as an option for U.S. agricultural producers, forest landowners, and communities. Agroforestry practices can play a key role in creating sustainable agriculture systems and food-secure nations in the face of global issues such as climate change and a growing population. The United States has much to learn from the international agroforestry community and much to contribute.

Strategies

1. Initiate partnerships between the U.S. agroforestry community and the World Agroforestry Centre, as well as with other international agroforestry organizations, in order to advance global and domestic food security and economic well-being.
2. Create linkages between USDA agencies whose technical assistance, research, financial planning, and extension/outreach programs in agroforestry would enhance the USDA "Feed the Future" Global Food Security initiative and other food security projects.

Goal 1 Progress Indicators

Performance indicators, baselines, metrics, and targets will be developed in the Goal 1 implementation process.

Strategic Goal 2–Science

Advance the understanding of, and tools for, applying agroforestry

Desired Outcome: *Tailored science-based agroforestry tools are created and used by landowners, managers, tribes, and communities to address complex environmental, economic, and social conditions across all lands.*

The focus of Goal 2 is to advance the scientific underpinnings of agroforestry technologies that contribute to:

- Sustainable production of food, feed, fiber, and renewable energy;
- Enhanced landscape resilience to climate change;
- Protection, conservation, and restoration of natural resources; and
- Creation of rural prosperity and thriving communities.

The goal also concentrates on translating these findings into products and delivery actions that support Strategic Goals 1 and 3.

Objective 2.1—PLAN: Identify, assess, and prioritize interagency agroforestry science and technology needs, opportunities, and investments.

Why Do This?

Due to agroforestry's interdisciplinary and integrated nature, research and the resulting tools and technologies must be developed using an interactive process with feedback loops involving the full suite of players—from scientists and natural resource professionals representing multiple disciplines to landowners and communities. A team approach with these participants can provide a more rapid incorporation of on-the-ground findings by end users and lead to the next generation of science and tool development. The results will also better reflect the multifunctional nature of agroforestry and the practical needs of the agroforestry practitioner. By working together, key technology needs can be identified, prioritized, and used to formulate the most effective and efficient research directions and approaches.

Strategies

1. 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.
2. Catalog USDA agroforestry research activities and resources.
3. Incorporate agroforestry, where appropriate, into requests for proposals through existing USDA science and technology programs.

Objective 2.2—DISCOVER: Conduct interagency, multidisciplinary research to advance agroforestry science and technologies.

Why Do This?

Agroforestry encompasses a complex system of interactions that must be managed for multiple objectives, alternatives, and social interests and preferences, while being applied across a wide range of landscapes. Landowners need regionally relevant decision support tools to quantify the objectives and goals that would result from various scenarios and that would aid in the application of agroforestry technologies on the ground.

Strategies

1. Establish 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 analysis.
3. Develop the knowledge and technologies to improve the application of agroforestry in:
   a) Protecting air, water, and soil resources.
   b) Building healthy and productive farms, ranches, woodlands, and communities.
   c) Emerging environmental markets (e.g., carbon, water quality).
   d) Creating diversity and building landscape-level resiliency to climate change impacts.
   e) Restoring ecological services across rural-urban lands and communities.
   f) Providing innovative and sustainable bioenergy production systems.
   g) Developing profitable and economically sustainable agroforestry-based systems that produce market goods.
4. 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 plantings and their impacts.
   b) Building the infrastructure to conduct lifecycle analyses of agroforestry practices/systems.
   c) Quantifying the net economic benefits from agroforestry applications for comparison with those from other management systems.

Objective 2.3: TRANSLATE—Move agroforestry innovations into products and services.

Why Do This?

Successful application of agroforestry depends upon pulling together diverse sources of information in a way that responds to users' needs and resources. There is a lack of tailored products and services to address multiple issues at multiple scales for targeted audiences. Currently, there are limited methods for assessing profitability and investment worthiness.

Strategies

1. Facilitate ongoing interaction with end-users throughout the technology development cycle.
2. Evaluate the ways of learning by 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 multi-scale planning and design.
   b) Addressing mitigation and adaptation to climate change.
   c) Meeting the needs of small and limited-resource landowners.
   d) Protecting and creating critical habitat for wildlife, aquatic species, and pollinators.

Goal 2 Progress Indicators

Performance indicators, baselines, metrics, and targets will be developed in the Goal 2 implementation phase.

Strategic Goal 3–Integration

Incorporate agroforestry into an all-lands approach to conservation and economic development

Desired Outcome: *USDA agencies understand, use, and integrate agroforestry into their policies and programs to maximize benefits and services to citizens.*

Achieving Goal 3 depends on increasing USDA awareness of the current and potential contributions of agroforestry to agricultural production, sustainable development, community stability, and natural resource conservation.

Objective 3.1—INSTITUTIONALIZE: Incorporate agroforestry into USDA policies, programs, and activities.

Why Do This?

U.S. agriculture, in general, and USDA, in particular, have made limited use of agroforestry as a means to balance commodity production, resource conservation, and the retention or restoration of ecosystem services. Agroforestry initiatives are filtered through diverse and sometimes conflicting individual USDA agency missions, philosophies, and cultures. USDA needs a common understanding of agroforestry; recognition of the potential value and contribution to agriculture, conservation, and the American public provided by agroforestry; and a long-term commitment and an integrated and collaborative USDA approach to the practice of agroforestry.

Strategies

1. Develop a USDA agroforestry policy statement.
2. Through Farm Bill legislation, define agroforestry and specifically authorize its application in conservation and natural resource programs.
3. Establish a National Agroforestry Steering Committee that will direct implementation of this framework. This committee should consist of senior leaders from across USDA mission areas/agencies, NASF and NACD.
4. Develop and adopt a Memorandum of Understanding formalizing the steering committee and establishing a framework of cooperation to advance the science, practice, and application of agroforestry by appropriate USDA mission areas/agencies and cooperators.
5. Develop an implementation plan for the strategic framework, including a reporting system to monitor progress.
6. Report annually to the Secretary of Agriculture, including a review of USDA financial commitments to agroforestry, accomplishments, and outcomes.
7. Include agroforestry as a strategy to achieve the goals of Statewide Assessments and Strategies for Forest Resources, State Wildlife Action Plans, U.S. Environmental Protection Agency Unified Watershed Assessments, NRCS Rapid Watershed Assessments, and other similar assessments and strategies.

Objective 3.2—ASSESS PERFORMANCE: Account for and monitor agroforestry impacts and applications.

Why Do This?

Agroforestry can facilitate the integration of agricultural and environmental considerations across landscapes. As such, agroforestry can improve soil quality and productivity, collect sediment, protect water quantity and quality, help moderate microclimate, intercept waste, enhance wildlife habitat, provide ecological stability, diversify individual and local economies, and provide aesthetic and intrinsic values. There is, however, relatively little ongoing monitoring and evaluation of the impacts, benefits, and outcomes associated with agroforestry at the national, regional, and local levels.

In addition, limited information is available about the actual application and adoption rate of agroforestry practices and systems in the United States.

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 to utilize the Census of Agriculture to monitor 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: Promote awareness and appreciation of agroforestry.

Why Do This?

Agroforestry application and design should be science-based. The benefits of agroforestry include opportunities to address global food security, energy security, and climate change. Creating greater awareness of these benefits will lead to better acceptance and use of new agroforestry technologies, with increased financial security and environmental protection for farmers, ranchers, forest owners, communities, and tribes.

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 the impacts of climate change (e.g., drought, floods).
3. Foster public-private partnerships that increase understanding, acceptance, and increased application of agroforestry.
4. Publicize and increase use of demonstration sites that increase acceptance and understanding of agroforestry.
5. Utilize USDA newsletters, market bulletins, and other publications to highlight the practice of agroforestry and its contribution to improving and diversifying agricultural production, enhancing environmental and economic resiliency, building vibrant communities, and conserving private working lands.
6. Create feedback mechanisms for stakeholders to the new National Agroforestry Steering Committee.

Goal 3 Progress Indicators

Performance indicators, baselines, metrics, and targets will be developed in the Goal 3 implementation phase.

Appendix A: The Interagency Agroforestry Team

Agricultural Research Service (ARS)

Bob Fireovid, National Program Leader, Bioenergy
Ev Byington, National Program Leader, Livestock Forage Programs

Farm Service Agency (FSA)

Mike Linsenbigler, Deputy Director, Conservation and Environmental Programs Division
David Hoge, Agricultural Program Specialist, Conservation and Environmental Programs Division

Forest Service

Andy Mason, Director, USDA National Agroforestry Center
Carlos Rodriguez-Franco, Staff Director, Forest Management Science
Ralph Crawford, National Program Leader, Rangeland Ecology Research
Keith Cline, Program Manager, Urban and Community Forestry
Steve Covell, Program Manager, Forest Service Pesticides and S&PF Invasive Plants
*Katrina Krause, Social Science Analyst, Research and Development
*Michele Schoeneberger, Research Program Leader, USDA National Agroforestry Center
*Richard Straight, Coleader, Technology Transfer, USDA National Agroforestry Center
*Cheryl Bailey, Program Analyst, Cooperative Forestry
*Dave Allen, Strategic Planning
*Katie Cerretani, Strategic Planning, Budget, and Accountability
*Kirsten Stuart, Support Services Specialist, USDA National Agroforestry Center
*Nancy Hammond, Secretary, USDA National Agroforestry Center

Natural Resources Conservation Service (NRCS)

Bruce Wight, National Forester
Sonya Neal-Reeves, Senior Program Analyst
*Doug Wallace, Coleader, Technology Transfer, USDA National Agroforestry Center

National Institute of Food and Agriculture (NIFA)

Eric Norland, National Program Leader, Forest Resource Management
Catalino Blanche, National Program Leader, Institute of Bioenergy, Climate and Environment

National Association of Conservation Districts (NACD)

Tom Crowe, NACD Forest Resource Policy Group, Indiana
*Yenie Tran, Western Issues and Forestry Specialist

National Association of State Foresters (NASF)

Scott Josiah, State Forester, Nebraska Forest Service
Steve Koehn, State Forester, Maryland Forest Service
*Jake Donnay, Director of Forest Policy

*Indicates support staff

Appendix B: Missions and Programs of USDA Agencies and Partners

USDA Agricultural Research Service

Mission

The Agricultural Research Service (ARS) is the principal in-house research agency of the U.S. Department of Agriculture (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; and
- Provide economic opportunities for rural citizens, communities, and society as a whole.

Programs and Activities

This is achieved through the agency's four national programs. These programs serve to bring coordination, communication, and empowerment to 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:

- Nutrition, Food Safety/Quality
- Animal Production and Protection
- Natural Resources and Sustainable Agricultural Systems
- Crop Production and Protection

USDA ARS Dale Bumpers Small Farms Research Center, Booneville, AR

The mission of the Dale Bumpers Small Farms Research Center (DBSFRC) is to develop scientific principles and technologies to enhance the profitability and sustainability of small-scale farms. Research at the DBSFRC seeks knowledge that will increase sustainability of small farms by diversifying production, reducing inputs, and capturing a greater proportion of the post-farm value while protecting and/or enhancing natural resources on small farms. The DBSFRC is colocated with the USDA-NRCS Booneville Plant Materials Center, which provides plant solutions addressing conservation problems in areas from the rugged Ozarks to the western coastal plain. The DBSFRC is also a hub within the Southeastern Regional USDA Biomass Research Center, which is tasked with increasing biomass production efficiency and to optimally incorporate biomass and other dedicated feedstocks into existing agriculture and forestry-based systems.

Agroforestry is most relevant to the Natural Resources and Sustainable Agricultural Systems Program. 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 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.

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

- Soil Resources Management
- Air Quality
- Global Change
- Manure and Byproduct Utilization
- Integrated Agricultural Systems
- Water Availability and Watershed Management
- Pasture, Forage, and Range Land Systems
- Agricultural System Competitiveness and Sustainability
- Bioenergy and Energy Alternatives

The primary focus on agroforestry within the ARS is at two locations—the Appalachian Farming Systems Research Center in West Virginia and the Dale Bumpers Small Farms Research Center in Arkansas. However, research at many other locations generates applicable information.

USDA ARS Appalachian Farming Systems Research Center, Beaver, WV

The mission at the Appalachian Farming Systems Research Center is to develop knowledge and technology to increase the profitability of small-farm agricultural enterprises in the region while enhancing soil and water quality and environmental integrity. We do this by identifying and targeting products to satisfy niche market demands and by developing practices that help farmers overcome the challenges presented by climate, steep terrain, and eroded soil. The climate and varied topography of the region create a range of conditions supporting a variety of renewable woody and herbaceous plant resources. The goal is to capitalize on the rich botanical diversity and favorable climate of the region to create production systems for cattle, sheep, and goats. The current research program at the center is a product of stakeholder, producer, and client-cooperator input, with strong links to Miami University (Ohio), West Virginia University, Virginia State University, Virginia Tech, University of Georgia, Mountain State University, Concord University, Langston University, the USDA Natural Resources Conservation Service (NRCS) Plant Materials Center at Alderson, WV, and USDA ARS facilities with complementary and related programs.

For More Information

Randy Raper; Research Leader; Dale Bumpers Small Farms Research Center; USDA, ARS; randy.raper@ars.usda.gov; (479)-675-3834

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. Regarding agroforestry, FSA is heavily dependent on the Forest Service and 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 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, like the Conservation Reserve Program (CRP), are designed to retire marginal agricultural land from production, and there are prohibitions against certain commercial use of land under CRP contracts.

CRP is one of the largest conservation programs in USDA history. Approximately 31 million acres of land are currently enrolled in the program, 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 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, there are three mission areas that primarily 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 so they can 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 & Development (R&D)

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 R&D activities carried out by the USDA National Agroforestry Center (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. FIA includes some agroforestry plantings; however, many "linear forests" (e.g., windbreaks, shelterbelts, riparian buffers) are not currently surveyed.

State and Private Forestry (S&PF)

Through Forest Service grants and cooperative agreements, State forestry agencies and other partners deliver assistance directly to the customer through three S&PF "umbrella" program areas that receive annual Federal appropriations: Cooperative Forestry, Forest Health Protection, and Cooperative Fire Protection.

The two most important Cooperative Forestry programs supporting agroforestry activities are the Forest Stewardship Program (FSP) and Urban and Community Forestry (U&CF) Program. Through FSP, landowners receive technical and financial assistance to complete a long-term, multi-resource Forest Stewardship Management Plan, which may include agroforestry systems. Through the U&CF Program, communities receive technical and financial assistance so they can 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 the larger landscape that includes 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 (NFS)

The application of agroforestry practices/systems through NFS programs is very limited (i.e., on national forests and grasslands, totaling 193 million acres nationwide). Non-timber forest products are "wild" and harvested on many national forests (e.g., florals, foods, and medicinal). Low-intensity silvopastoral practices/systems are also applied on some national forests.

There may be opportunities in the future to expand the application of agroforestry on national forests and grasslands as part of a larger landscape-scale effort 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

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USDA Natural Resources Conservation Service

Mission

The USDA Natural Resources Conservation Service (NRCS) slogan is "Helping People Help the Land." NRCS provides products and services that enable people to be good stewards of the Nation's soil, water, and related natural resources on non-Federal lands. NRCS' role is to provide technical and financial assistance to help customers care for the land. As a result of this assistance, land managers and communities take a comprehensive approach to the use and protection of soil, water, and related resources in rural, suburban, urban, and developing areas. NRCS serves, either directly or indirectly, all people of the Nation. NRCS provides the technical assistance and science-based information that these stewards want to make good decisions about their natural resources. These primary customers are farmers, ranchers, and forest owners who own, operate, or live on farms, ranches, and forests.

Programs and Activities

Within NRCS there are five primary business areas. The following describes these business areas and their relationships to agroforestry.

Conservation Planning and Technical Consultation

NRCS provides data, information, or technical expertise that helps people collect and analyze information to identify natural resource problems and opportunities, clarify their objectives, and formulate and evaluate alternatives.

- Conservation Plans reflect a customer's decision about the management of natural resources for a specific area—which may be a farm, forest, or ranch operating unit, a group of units, a community, or a landscape feature such as a watershed.
- Technical Consultations and Planning Assistance provides professional advice that helps customers make decisions about natural resource management.

Conservation Implementation

NRCS helps customers install on their land agroforestry conservation practices (alley cropping, multistory cropping, riparian forest buffers, silvopasture establishment, windbreak/shelterbelt establishment, and renovation) and associated conservation practices and systems that meet established technical standards and specifications.

- Designs allow for the application of conservation practices (practice survey, practice design, field layout of conservation practices, etc.).
- Follow-up ensures the treatment is working properly and identifies if additional treatment is needed.
- Checks and Reviews are formal program status reviews of land where program contracts are in effect or subject to conservation compliance.

Natural Resource Technology Transfer

NRCS develops, documents, and distributes a wide array of technology pertaining to resource assessment, conservation planning, and conservation system installation and evaluation.

- Technology Tools include agroforestry conservation standards, specifications, guides and references, and modeling systems. NRCS has automated much of this technology to facilitate sound conservation decisions by the public.
- Training and Certification include agroforestry technical training to internal and external customers and administration of certification standards and procedures.
- Plant Materials and related technologies provide for improved plant species and better agroforestry treatment.

Financial Assistance

NRCS provides financial assistance to encourage the adoption of land treatment activities, including agroforestry practices. Financial assistance is awarded to participants who voluntarily enter into contracts, easements, and agreements to conserve natural resources. These contracts provide funding through cost-share, incentives, easements, grants, and land-use payments. Major financial assistance programs administered by NRCS that support agroforestry adoption include:

- Environmental Quality Incentives Program
- Wildlife Habitat Incentive Program
- Conservation Stewardship Program
- Conservation Innovation Grants

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 decisionmakers and facilitate policy development.

For More Information

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USDA National Institute of Food and Agriculture

Mission

The mission of the National Institute of Food and Agriculture (NIFA) in the Research, Education, and Economics mission area 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 by the 2008 Farm Bill to serve the Nation's needs by supporting exemplary research, education, and extension that addresses 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 decisionmaking. *Research* enables us to develop the knowledge needed to solve many of the issues facing our Nation and the world. *Education* strengthens schools and universities to train the next generation of scientists, educatiors, producers, and citizens. *Extension* brings the knowledge gained through research and education to the people who need it most–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 formula grants to the Land-Grant University System and competitively granted funds to researchers in land-grant and other universities.

NIFA collaborates or has formal working partnerships with many institutions. Its key partners are the institutions of higher learning, making up the Land-Grant University System. However, 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; tribal colleges; and Alaska Native-Serving and Native Hawaiian-Serving Institutions. 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, video, CDs, workshops and seminars, Internet sites and Webinars, and other means. 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 USDA National Agroforestry Center (NAC) is a partnership between the Forest Service Research and Development (R&D) and State and Private Forestry (S&PF) and the USDA Natural Resources Conservation Service (NRCS). The NAC mission is "to accelerate the application of agroforestry through a national network of partners." The center conducts research, develops technologies and tools, coordinates demonstrations and training, and provides useful information to natural resource professionals who work with farmers, ranchers, forest owners, and communities nationwide.

NAC was authorized by the 1990 Farm Bill and established in 1992 in Lincoln, NE, with NRCS becoming a full partner in 1995. NAC is administratively assigned to the Forest Service's Southern Research Station in Asheville, NC. Support from NRCS is in the form of a national agroforester at NAC and additional assistance from three regional foresters located at the NRCS National Technology Support Centers in North Carolina, Oregon, and Texas. NAC develops and delivers technology on a broad suite of agroforestry practices and conducts research on how to design and install these practices to help landowners improve their economics and restore environmental benefits.

Programs and Activities

NAC is purposefully configured with minimal but strategic infrastructure. Through its reliance on a wide variety of external partners, NAC is able to leverage the resources and expertise necessary for addressing the most pressing needs for agroforestry science and tools.

Research and Development (R&D)

R&D at NAC is operationally unique, given its direct ties to a technology transfer and applications (TT&A) program and the center's networks with Forest Service S&PF, NRCS, Agricultural Research Service (ARS), National Institute of Food and Agriculture (NIFA), universities/extension (including the 1890 Agroforestry Consortium), State forestry agencies, conservation districts, Resource Conservation and Development Councils, regional councils, and other private land entities. Through its R&D activities, NAC strives to provide the scientific knowledge and tools required to effectively manage trees and forests in mixed land-use landscapes for providing, restoring, and sustaining ecosystem services. NAC's R&D activities are currently focused on:

- Agroforestry tools and technologies to restore ecosystem services in mixed land-use landscapes:
  - Develop scientific knowledge and tools to support site design of agroforestry systems.
  - Develop scientific knowledge and tools for strategic placement and management at landscape scales.
  - Develop knowledge of factors that influence the adoption of agroforestry practices.
- Sustainable management of nontimber forest products (NTFPs):
  - Develop methodologies and protocols for determining NTFP production and their potential contributions to local and regional economies.
  - Develop the knowledge and guidelines needed for sustainable production and harvest of NTFPs.
  - Develop the knowledge and guidelines for integrating NTFPs into forest farming practices that can improve landowner opportunities.

Technology Transfer & Application (TT&A)

NAC's TT&A program, along with its many 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.

Natural resource professionals and conservation district partners are the primary audience for the TT&A products: Inside Agroforestry newsletter, Technical Notes, Working Trees brochures, Web site, displays, and training sessions. In the last 3 years, NAC has delivered 280,000 requested publications in all 50 States and numerous other countries. This information is also incorporated into the NRCS technical guidelines and training courses. For information about NAC's TT&A products, visit http://www.unl.edu/nac/.

For More Information

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National Association of Conservation Districts

Mission

Delivering Conservation on a Landscape Scale. The National Association of Conservation Districts (NACD) is the nonprofit organization that represents America's 3,000 conservation districts and the 17,000 men and women who serve on their governing boards. Conservation districts are local units of government established under State law to carry out natural resource management programs at the local level. Districts work with millions of landowners and operators to help them manage and protect land and water resources on all private lands and many public lands in the United States.

The current board-approved policy regarding agroforestry issues states that NACD supports sustainable management, funding, and educational outreach; provides assistance to districts in all 50 States and U.S. territories; encourages locally led initiatives; and lobbies for such programs to be included in each new Farm Bill. NACD is a member of the Joint Forestry Team, which was established via a Memorandum of Understanding with the Forest Service, National Association of State Foresters, and Natural Resources Conservation Service to provide a coordinated interagency delivery of forest conservation assistance to private landowners.

Conservation districts have been involved in delivering locally driven conservation across America for more than 70 years. No other conservation or environmental group in the country implements more conservation practices on the ground. The beauty of conservation districts is that they exist in virtually every county and community in the Nation where they work on meaningful, landscape-scale projects that produce verifiable improvements in environmental quality.

Among other things, conservation districts help communities to:

- Implement farm, ranch, and forest land conservation practices to protect soil productivity, water quality and quantity, air quality, and wildlife habitat;
- Conserve and restore wetlands, which purify water and provide habitat for birds, fish, and numerous other animals;
- Protect groundwater resources;
- Assist communities and homeowners in planting trees and other vegetation to hold soil in place, clean the air, provide cover for wildlife, and beautify neighborhoods;
- Guide developers in controlling soil erosion and protecting water and air quality during construction;
- Provide technical expertise to landowners to identify, apply for, and participate in local, State, and Federal conservation programs; and
- Reach out to communities and schools to teach the value of natural resources and encourage conservation efforts.

Programs and Activities

Conservation districts work with landowners to put agroforestry practices, such as buffers and windbreaks, on private land. Conservation districts often serve as a nexus for landowners seeking funding or education materials on agroforestry practices.

The NACD Forest Resource Policy Group is a board committee that addresses issues related to private and public forest land management within conservation districts.

NACD also supports collaborative programs like The Backyard Woods and the Tropical Reforestation and Ecosystem Education Center (TREE Center), as well as implementation and funding for S&PF programs.

Some of our many partners who work with us on agroforestry practices are:

- National Association of State Foresters
- U.S. Department of Agriculture
  - Farm Service Agency
  - Forest Service
  - Natural Resources Conservation Service
- U.S. Department of the Interior
  - Bureau of Land Management
  - Bureau of Reclamation

For More Information

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National Association of State Foresters

Mission

The National Association of State Foresters (NASF) is the nonprofit organization that represents the directors of all 50 State forestry agencies, 5 U.S. territories (American Samoa, Guam, the Northern Marianas Islands, Puerto Rico, and the U.S. Virgin Islands), 3 freely associated States (the Federated States of Micronesia, Palau, and the Republic of the Marshall Islands), and the District of Columbia. Through public-private partnerships, NASF seeks to discuss, develop, sponsor, and promote programs and activities that will advance the practice of sustainable forestry, the conservation and protection of forest lands and associated resources, and the establishment and protection of forests in the urban environment.

Programs and Activities

State forestry agencies are responsible for administering a wide range of programs that ensure the protection, health, and sustainability of forests in communities and on State and private lands. State forestry agencies cooperate with the Forest Service to deliver S&PF programs and with the Natural Resources Conservation Service to deliver forestry assistance to private landowners. Many State forestry agencies are the primary source for forestry assistance and fund programs that provide technical assistance, as well as cost-share assistance to private landowners for forestry and agroforestry practices.

State forestry agencies are required to establish a State Forest Stewardship Coordinating Committee for consultation on key program and project actions that are necessary to deliver Cooperative Forestry programs. State forestry agencies are also responsible for comprehensive forest resource planning within their States. These plans are developed with input from partners and the public.

In addition to its national role, NASF works with regional organizations—the Northeastern Area Association of State Foresters, the Southern Group of State Foresters, and the Council of Western State Foresters—to support forest management practices and policies unique to the regional characteristics and needs of our diverse forest resources in the United States.

For More Information

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Appendix C: Summary of Stakeholder Feedback

Following is a brief summary, compiled by Meridian Institute, of comments received at the Agroforestry Roundtable Workshop with approximately 90 stakeholders on May 26, 2010, in Washington D.C. The stakeholders met with the Interagency Agroforestry Team (IAT) to discuss barriers and opportunities associated with a wide range of agroforestry topics. The Meridian Institute provided facilitation and other meeting support services to the IAT for the workshop. Meridian Institute compiled a detailed summary of the entire May 25-26 workshop, including comments received from stakeholders after the workshop, which can be viewed at: http://www.unl.edu/nac/iat.htm

Session I Topics

1. **Landowner Awareness, Acceptance, and Adoption of Agroforestry** (including economic, social, and cultural dimensions)

   Barriers:
   - Farm Bill policy penalizes practices needed to implement agroforestry.
   - Agricultural infrastructure and regulations support large-volume, large-scale approach to agriculture, food and fuel products.
   - Lack of technical expertise to help build awareness and acceptance for practices amongst farmers.
   - Lack of brand or marketing mechanism inhibits the promotion in a comprehensive manner.

   Opportunities:
   - Regional working teams/groups/authorities or stakeholder groups that include development, nonprofit and minority representation to promote awareness.
   - Support for practitioner tools which could be disseminated through various USDA agencies.

2. **Understanding and Quantifying Ecosystem Goods & Services from Agroforestry** (measurement of production, carbon sequestration, water quality, erosion reduction, crop protection, wildlife habitat, etc.)

   Opportunities:
   - Better communications including clarifying/defining what agroforestry means, identifying target audiences and developing key applicable messages.
   - Calculating carbon and water ecosystem benefits associated with agroforestry practices will be key to sustained health and life for both humanity and wildlife
   - Identify roles and responsibilities for creating and sustaining an agroforestry network to promote understanding of associated inter-linked ecosystem benefits.

3. **Planning, Designing and Applying Agroforestry Practices and Systems** (including the six practices – alley cropping, forest farming, riparian forest buffers, silvopasture, windbreaks/shelterbelts, special applications; and landscape-scale systems/models)

   - Scientific and technical needs around agroforestry practices need to be met at the regional and local levels; forest farming practices should be considered a research priority.
   - Develop regionally-based toolkits that include economic decision-making tools, demonstration areas, and modeling of the transitional stages of different practices.
   - Pursue a high-level government mandate to make agroforestry a priority and encourage nation-wide agency collaboration.
   - Develop incentives for implementation such as an index for aggregating payments for ecosystem services.

4. **Education and Training of Natural Resource Professionals to Deliver Agroforestry Assistance** (including training needs, methods, tools, and certification).
   - Pursue partnerships cross-training opportunities with special interest groups and nontraditional partners (e.g., transportation, land-use planning, and air quality sectors).
   - Education and training components need strategic planning for short, medium and long-term goals.
   - Pursue training opportunities such as landowner-to-landowner, peer-to-peer, local organizations, and professional training of different audiences.

Session II Topics

1. **Biomass and Bioenergy**

   Barriers:
   - Lack of available markets for bioenergy or biomass and a cart/horse dynamic that promotes investment in a bioenergy plant only once there is assurance of a biomass source.
   - Not enough equipment available to properly harvest biomass that becomes available.
   - Food security and supply also serves as competition for biomass production.

   Opportunities:
   - Diversify and stagger the production and availability of agroforestry products at different times of the year.
   - Modify the conservation reserve program in the 2012 Farm Bill, with the idea that rental payments would be authorized to be received by a landowner while that person is harvesting trees for biomass energy.

2. **Clean Water**

   Barriers:
   - Need to establish load reduction efficiencies associated with agroforestry practices. A number of practices are good for water quality, but we are currently unaware of what the load reduction efficiencies are.
   - Agroforestry practices that contribute to water quality have not been open to existing program eligibility.

   Opportunities:
   - Greater public-private partnerships, especially around load reduction efficiencies.

3. **Climate Change**
   - Gain greater clarity on whether or not trees planted for agroforestry contribute significantly to reduce global warming (e.g., trees diminish albedo effect)
   - Agroforestry practices could reduce tillage and result in less oxidation of organic matter and soils.
   - Pursue a more holistic perception of agroforestry that consists of healthy soils, crops, and other factors that provide a net benefit - beyond just carbon credits.

4. **Integrating Agroforestry and Urban Forestry (working trees and urban landscapes)**
   - These practices are already happening with greater public interest in urban agriculture and community gardens
   - Focus on the integration of the principles of agroforestry with food production.
   - About 80 percent of Americans live in cities; therefore adoption of agroforestry principles should start with urban populations and landscapes.
   - Employ education methods to build better connections between people and food.

5. **Island Tropical Agroforestry**

   Barriers:
   - Losses of traditional knowledge as people leave islands for greater economic opportunity; many island communities have been practicing agroforestry for a long time.
   - Continental models do not fit within the island ecosystem or culture, including paperwork barriers for receiving government assistance.

   Opportunities:
   - Collect, catalog, and retain people in current agroforestry practices
   - The large international community of island neighbors provides access to all kinds of different cultures, countries, and government programs that could be helpful in promoting and advancing agroforestry.

6. **Markets for Agroforestry Products/Rural Economic Wealth**

   Barriers:
   - Available economic information is lacking in truly assessing the value of agroforestry to local areas and the country as a whole; USDA could track agroforestry products.
   - The omnipresence of agribusiness which is centralized processing is essentially the opposite direction of agroforestry which focuses more on small farms.
   - Regulatory barriers for small farmers due to the tendency for regulations to be geared more towards agribusiness.
   - Lack of certainty over small farmers' appetite for risk in producing for niche markets.

   Opportunities:
   - Growth and increasing demand for organic and more diversified products.
   - From a food and biosecurity perspective, there are benefits of cultivating a decentralized small farm system over big agribusiness processing.
   - USDA could consider conducting a market analysis to determine available and needed infrastructure and how to enable rural and small farmer access to markets.

7. **Multi-functional Working Lands**

Barriers:

- Many of the current policies discourage multifunctional uses on the landscape and may not have the flexibility needed to promote and develop multifunctional lands.
- Diversifying may only lead to land fragmentation; it will be important to think about how to maintain ecological integrity and sustainability.
- Multifunctional land management may require more labor input and specialized equipment.

Opportunities:

- Support multifunctional lands in the 2012 Farm Bill.
- USDA Rural Development agency and community level engagement could promote agroforestry as an energy source.
- Focus outreach, grants and incentives on new land managers in order to capture that audience.
- Utilize existing open spaces such as wind farms or power lines for cropping or companion plantings.

8. **Sustainable and Organic Agriculture**

Barriers:

- Further define 'organic' and 'sustainable' in terms of agroforestry agriculture. Principles might include: agriculture practices that do not cause harm to the land; practices that incorporate environmental, economic and social dimensions and that utilize resources in a sustainable manner (e.g., replaceable or renewable).
- Challenging bureaucracy around organic certifications pose significant challenges to small farms.

Opportunities:

- Develop a two-tier certification system that delineates between small family farms and large agribusiness; reinstate or replicate state or local area certifications for small farms.
- Educate consumers, increase demand and augment incentives for farmers to practice agroforestry by creating a "forest foods" or "forest-friendly foods" label.

9. **Policies, Opportunities and Barriers** (examined the overall goal for agroforestry and what the landscape level objective(s) might be for both large and small-scale farms).

Barriers for large-scale farms (over $250,000/annum):

- Increasing farm size, as compared to forest land, and increasing crop prices.
- Greater demand for food, and bioenergy which will drive up crop prices.
- Increasing pivot irrigation systems and equipment size.
- Decreasing farmer interest in increasing complexity; they want to simplify operations,
- Declining agroforestry plantings on the landscape.
- Needing policies to provide incentives for participation and some disincentives for lack of participation. This includes cost-share payments, and compensation for increased risk and complexity.

Barriers for small-scale farms:

- Lack of continuity in programs and funding, as well as limited opportunities for business incubation. Additionally, there are many inconsistencies in Federal monies for small farms and how those are applied.

Opportunities:

- Ensure language in the 2012 Farm Bill, and in forthcoming energy, climate or transportation legislation that appropriates specific funding for agroforestry practices on small farms.
- The National Agroforestry Center will need more stable funding if they are to serve at the national level. This will require appropriations from a dedicated source to maintain continuity of programming.

10. **Agency Cooperation**

Barriers:

- Limitations posed by budget cycles and resource specific budgets.
- Units of measure, language, and definitions often differ between agencies.

Opportunities:

- To succeed at the agency level, participants suggested promoting agroforestry as a societal issue that includes shared goals and benefits for integrated science.
- The National Agroforestry Center should look at existing collaborative models and garner some key lessons learned.
- Foster agency cooperation through public private partnerships or fund matching programs.

Appendix D: History of Agroforestry in the United States

The history of the Department of Agriculture (USDA) and its partners' roles in agroforestry can be traced back to the windbreaks that were established during the Dust Bowl years to reduce soil erosion in the Great Plains. More widespread interest in the United States began in the mid-1980s, probably informed by a growing body of agroforestry information from the international community. Since that time, USDA and its partners (e.g., universities/extension, conservation districts, and State forestry agencies) have carried out agroforestry-related research and development and technology transfer. This research has provided the science and technology for the agroforestry assistance (primarily through Farm Bill programs) that has been provided to landowners/producers and, in some cases, communities.

Even though the science and practice of agroforestry has advanced in the United States since the 1980s, it has still not been institutionalized into USDA's concepts, philosophy, strategies, and programs. Coordination of agroforestry activities within USDA, to a large degree, has been "ad-hoc," and agroforestry has not been explicitly incorporated into many USDA programs. For example, the term "agroforestry" occurs only once in the 628 pages of the Food, Conservation, and Energy Act of 2008 (also known as the 2008 Farm Bill). This is not a new issue and was recognized in 1996 when a USDA Interagency Working Group on Agroforestry was established under the leadership of the USDA Director of Sustainable Development Programs. The working group commissioned a task force in 1997 to assess the potential of agroforestry in helping attain USDA sustainable development goals and developing a strategy to realize that potential. The agencies participating in the working group were the Forest Service, Natural Resources Conservation Service (NRCS), Agricultural Research Service (ARS), National Institute of Food and Agriculture (NIFA) (then the Cooperative State Research, Education, and Extension Service), and the U.S. Environmental Protection Agency.

The task force in its 1997 report "Integrating Agroforestry into USDA Programs" (http://www.unl.edu/nac/morepublications/agroforestry-usda-1997.pdf) noted that "the fundamental barrier to adoption of conservation practices is socio-economic acceptance." The task force also stated, "Tree-based conservation practices are especially hard to sell because of the element of permanence and perceived problems, yet established permanent vegetative buffers in the system is exactly what we want to achieve!" They further added: "This is exacerbated by institutional and disciplinary segregation of agriculture and forestry in the United States. In other words, there is a perception that agriculture and forestry should be separated on the land. That is certainly not the case in many other countries, where integrated systems have received more widespread adoption and acceptance." Many of the other findings and recommendations in the 1997 task force report are still relevant today. The task force found that agroforestry addressed USDA's stated goals for sustainable development and that it provided one of the "best concrete examples of how we can implement the principles of sustainable development." The task force made 7 key recommendations and also recommended 50 supporting actions:

1. **Institutionalize agroforestry and incorporate it into USDA's concepts, philosophy, and principles of sustainable development:** A USDA policy statement is needed to recognize agroforestry, define the linkage between agroforestry and sustainable development, and establish a strategy to incorporate agroforestry into programs.
2. **Provide leadership to catalyze interdisciplinary, interagency, and intersector collaboration to incorporate agroforestry into USDA programs.** There presently are no compelling reasons for scientists to depart from traditional lines of research and sources of funding. To catalyze efforts within the sustainable development operating paradigm, USDA should identify integrating subject areas, including agroforestry that link agencies, programs,

and disciplines in common efforts, and refocus resources to stimulate the process.

3. **Clearly define and apply agroforestry principles through training and technology transfer.** Agroforestry needs to be clearly defined and communicated to cooperators, stakeholders, and customers. A concerted effort is needed to synthesize what we already know about agroforestry concepts and practices, incorporate it into delivery programs, and get agroforestry applied on the ground.
4. **Fully research and develop agroforestry practices, application guidelines and tools, and document benefits.** In concert with the effort to enhance agroforestry technology transfer and training (#3), focused research and development are needed to fill knowledge gaps, develop appropriate tools and guidelines to facilitate delivery of technical assistance, and document the benefits of agroforestry practices.
5. **Stimulate research to understand the roles and functions of agroforestry within the concept of an ecological systems approach to sustainable land use.** The fields of agroforestry, agroecology, and sustainable agriculture share common principles and are idea-rich to catalyze collaboration toward the goal of sustainable land use. USDA should foster interdisciplinary research to integrate and evaluate agroforestry with other concepts and technologies. The effort should evaluate integrated agricultural systems beyond traditional production parameters and connect the integrative approach with locally led collaborative groups focused on private land stewardship.
6. **Focus attention on overcoming the real and perceived social and economic limitations to the adoption of agroforestry practices by the agricultural community.** As an emerging applied science, agroforestry carries with it many concerns and misconceptions. The bottom line is that agroforestry will prosper only if it is accepted by the agricultural community. Research, development, and extension are urgently needed to address the social and economic barriers to adoption of agroforestry and conservation practices, in general. Furthermore, the value of externalities needs to be understood, as well as to whom they accrue.
7. **Foster collaborative efforts with international organizations focused on agroforestry development and integration into sustainable land-use systems.** Agroforestry has been recognized in a number of other countries working to identify more sustainable land-use practices. There are many possibilities for collaboration and exchange.

Noticeably absent in the 1997 report is any reference to climate change or the use of the term "ecosystem services." Agroforestry, however, was noted as a means to restore and enhance eight potential roles and functions, including "ecological stability—increase system resilience and ability to absorb and recover from disturbances and stresses." The report noted that "…there is currently little scientific basis for incorporating agroforestry practices, or other conservation buffer practices, into the landscape, understanding the interactions that are generated, predicting benefits and outcomes, and avoiding conflicts."

There is certainly a much stronger scientific basis for applying agroforestry today, as evidenced by many articles in refereed journals and numerous publications. One recent example of a stronger scientific basis overall in agroforestry is North American Agroforestry: An integrated Science and Practice, 2nd Edition (Garrett, H.E. (ed.) 2009). Another example, which relates specifically to conservation buffer practices (a synthesis of over 1,400 research publications): Conservation buffers: design guidelines for buffers, corridors, and greenways (Bentrup, G. 2008).

The Interagency Agroforestry Team has considered the findings and recommendations from the 1997 report and incorporated some of the ideas into the strategic framework. There are three other national agroforestry reports that address similar issues and opportunities in the United States:

- Agroforestry in the United States; Research and Technology Transfer Needs for the Next Millennium (Association for Temperate Agroforestry, fall 2000). http://www.unl.edu/nac/morepublications/aftareport.pdf
- Agroforestry for Sustainable Development: A National Strategy to Develop and Implement Agroforestry (Workshop to "Develop a Framework for a Coordinated National Agroforestry Program"; June 29-30, 1994: Nebraska City, NE). http://www.aftaweb.org/resources1.php?page=33
- Agroforestry: An Integrated Land-Use Management System for Production and Farmland Conservation. A Comprehensive Assessment of U.S. Agroforestry—Long Version. The Agroforestry Component of the Resource Conservation Act Appraisal for the Soil Conservation Service. (Prepared for USDA SCS (Account 68-3A75-3-134), February 1994). http://www.aftaweb.org/resources1.php?page=36

In 2008, the National Association of State Foresters (NASF), National Association of Conservation Districts (NACD), NRCS, and Forest Service signed a national "joint forestry" Memorandum of Understanding (MOU) (http://jointforestryteam.org/Websites/jointforestryteam/Images/jft_mou.pdf). The purpose of the MOU is to "strengthen cooperation among the parties that result in coordinated interagency delivery of forestry-related conservation assistance to private landowners in order to sustain the health, diversity, and productivity of America's private working lands – forest land, cropland, pasture, and rangeland." In the MOU, the parties recognized five barriers to the delivery of forestry-related conservation assistance and included agroforestry in barrier 3. This barrier is "Funding devoted to forestry and agroforestry is inadequate and inconsistent." The MOU has 64 action items (17 joint and 47 individual agency/organization), including 10 actions that mention agroforestry.

- **Joint #3:** "Promote the delivery of timely, **coordinated interagency forestry and agroforestry assistance** to landowners through actions such as co-location of agency staff at field and State offices, jointly funded positions, increased use of technical service providers and technology, and related actions that increase assistance for working lands."
- **Joint #4:** "Share information regarding priorities for conservation of private forest lands and other working lands that could benefit from the **application of agroforestry practices**."
- **Joint #8:** "Collaborate with other appropriate entities to facilitate development and implementation of conservation plans and agreements on forest lands and to **promote agroforestry** on other working lands."
- **Joint #12:** "Collaborate to **deliver agroforestry** training for natural resource professionals and develop technical information to support technical assistance to private landowners."

- **NACD #3:** "Cooperate with NASF, State forestry agencies, NRCS, and Forest Service in the **identification of needs for forestry and agroforestry** assistance on private lands and participate in the delivery of this assistance."
- **NRCS #1:** "Incorporate an increased emphasis on providing forestry assistance to nonindustrial private forest (NIPF) landowners to help them address resource concerns and **increase the emphasis on applying agroforestry** on working agricultural lands in its national strategic plan."
- **NRCS #2:** "Encourage State Conservationists to collaborate with State forestry agencies, conservation districts, and Forest Service to allocate appropriate resources to address resource concerns on NIPF land and to help meet landowner needs for **technical and financial assistance in forestry and agroforestry**."
- **NRCS #6:** "Invite and encourage State forestry agencies, conservation districts, and Forest Service to be involved on State Technical Committees and associated subcommittees, as well as local working groups, to **provide expertise in forestry and agroforestry** relative to program priorities, ranking processes, and practice standards. As per section 1261 of the 2008 Farm Bill, ensures that each State technical committee includes representatives from the Forest Service, State Forester or equivalent State official, and the State Association of Conservation Districts."
- **NRCS #10:** "Jointly produce and promote agroforestry technology, training, and educational resources in cooperation with Forest Service."
- **Forest Service #9:** "Conduct research and jointly produce and **promote agroforestry technology, training, and educational resources** in cooperation with NRCS, through Forest Service State and Private Forestry and Research and Development.

Examples of current agroforestry-related activities currently supported by USDA and its partners include:

- ARS's Natural Resources and Sustainable Agricultural Systems Program that supports researchers at 70 locations nationwide. Agroforestry research is a primary focus at two ARS locations: Dale Bumpers Small Farms Research Center (Booneville, AR) and the Appalachian Farming Systems Research Center (Beaver, WV). Researchers at the Center in Booneville cooperate with the University of Missouri Center for Agroforestry to determine best management protocols for trees in agroforestry practices. At the center in Beaver, agroforestry-related research is conducted on systems such as silvopasture for cattle, sheep, and goats.
- Farm Service Agency's (FSA) Conservation Reserve Program, which provides assistance to plan and install agroforestry practices (e.g., riparian forest buffers and shelterbelts). FSA cooperates with NRCS, State forestry agencies,

and conservation districts that provide the necessary technical assistance to landowners/producers. FSA's Biomass Crop Assistance Program provides assistance to agricultural and forest land owners for the establishment and production of eligible crops including woody biomass in selected project areas for conversion to bioenergy (agroforestry practices/systems would be eligible).

- Forest Service's Forest Stewardship Program. Through this program, State forestry agencies provide assistance to landowners to plan and design agroforestry practices, which are included in a larger comprehensive, multi-resource Forest Stewardship Plan. State forestry agencies deliver this program with financial and technical support provided by the Forest Service.
- NIFA's support to agroforestry-related research, education, and extension activities. NIFA provides support through a wide range of programs including the McIntire-Stennis Cooperative Forestry Research Program, Renewable Resources Extension Act Grant Program, Agriculture and Food Research Initiative, and Hatch Act grants.
- NRCS conservation planning services. NRCS provides conservation planning services to landowner/producers to help them address natural resource concerns, which include agroforestry practices. NRCS also provides technical and financial assistance to help with planning and installation of the full range of agroforestry practices through Farm Bill programs (e.g., Environmental Quality Incentives Program, Wildlife Habitat Incentive Program, and Conservation Stewardship Program). Technical service providers, such as consulting foresters, State forestry agencies, and conservation districts provide the technical assistance for these programs.
- USDA National Agroforestry Center's (NAC) efforts. Located in Lincoln, NE, NAC is a partnership between Forest Service and NRCS. NAC works through a national network of partners to develop and deliver technology on a broad suite of agroforestry practices to help landowners improve their economic situation and to optimize public benefits and ecosystem services. NAC's key customers are the natural resource professionals who work directly with farmers, forest owners, ranchers, and communities nationwide.

See Appendix B for more detailed information about the mission, roles, customers, and agroforestry-related programs and activities conducted by each of the agencies/organizations that are represented on the Interagency Agroforestry Team.

Where To Get More Agroforestry Information

USDA National Agroforestry Center: http://www.unl.edu/nac
National Sustainable Agriculture Information Service: http://attra.ncat.org/attra-pub/summaries/summary.php?pub=62
The Center for Agroforestry: http://www.centerforagroforestry.org/
The Center for Subtropical Agroforestry: http://sfrc.ifas.ufl.edu/cstaf/
Association for Temperate Agroforestry: http://www.aftaweb.org/
*Nontimber Forest Products:*http://www.sfp.forprod.vt.edu/