

# **Integrating Agroforestry Into USDA Programs**

A Task Force Report to the  
USDA Interagency Working Group on Agroforestry

May 1997

## TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	3
FINDINGS	
Significance of Agroforestry to Sustainable Land-Use	5
Potential Roles and Functions of Agroforestry in Sustainable Land-Use Systems	6
Inventory of Existing Agroforestry Activities	6
Agroforestry Research, Education, Extension, and International Exchange	6
Agroforestry Technical Assistance	7
Agroforestry Cooperators, Stakeholders, and Customers	9
Barriers to Adoption of Agroforestry	10
Disciplinary and Institutional Barriers to Agroforestry Development	12
Potential Benefits From International Exchanges on Agroforestry	13
RECOMMENDATIONS	
1. Institutionalize agroforestry and incorporate it into USDA's philosophy, concepts, and principles of sustainable development.	15
2. Provide leadership to catalyze interdisciplinary, interagency, and inter-sector collaboration to incorporate agroforestry into USDA programs.	16
3. Clearly define and apply agroforestry principles through training and technology transfer.	18
4. Fully research and develop agroforestry practices, application guidelines and tools, and document benefits	19
5. Stimulate research to understand the roles and functions of agroforestry within the context of an ecological systems-based approach to sustainable land use.	20
6. Focus attention on overcoming the real and perceived social and economic limitations to the adoption of agroforestry practices by the agricultural community.	21

7. Foster collaborative efforts with international organizations focused on agroforestry development and integration into sustainable land-use systems.	23
APPENDIX A: Agroforestry Task Force Work Assignments	24
APPENDIX B: Members of the Task Force	25
APPENDIX C: Key Policy Publications Relevant to Agroforestry	27
APPENDIX D:	
Survey Questionnaire on Agroforestry, Research, Education, Extension, and International Exchange Activities.	28
Summary of Agroforestry Activities	32
Survey Questionnaire on Agroforestry Technical Assistance	33
Agroforestry Technical Assistance Survey Responses	35

# Integrating Agroforestry Into USDA Programs

## EXECUTIVE SUMMARY

**Purpose:** The Task Force collected and synthesized information and recommended actions to develop the potential of agroforestry to help attain USDA sustainable development goals.

**Findings:**

- Agroforestry practices are highly relevant to sustainable land use, and need to be incorporated with other technologies into appropriate conservation and production systems for farms, ranches, and communities.
- Roles and functions of agroforestry in land use systems include soil quality/productivity, water management, microclimate moderation, waste management, pest management, economic diversification, ecological stability, and aesthetic/intrinsic values.
- Currently there are approximately 146 individuals in 56 institutions involved in 680 agroforestry education, research, extension, and international activities. Agroforestry is emerging from the definition phase and entering a phase of widespread interest.
- Local agroforestry technical assistance is minimal, and delivered by a variety of agencies and organizations. In general, agroforestry practices are not well understood, misconceptions are common, and numerous technology transfer needs exist.
- The array of agroforestry cooperators, stakeholders, and customers is extremely broad and diverse, reflecting the interdisciplinary, integrative, and cross-cutting nature of agroforestry.
- Barriers to agroforestry adoption include lack of technical and economic information, perceived complexity and risks, and fear of regulation or loss of property rights.
- International agroforestry science is about 10 years ahead of that in the U.S.. We stand to benefit substantially from focused exchanges on agroforestry science and technology.
- Agroforestry provides one of the best concrete examples of how the principles of sustainable development can be implemented. It is an integrative subject area that brings disciplines, agencies, and sectors together to focus on an ecological systems approach to attaining healthy and sustainable land use systems.
- The major barrier to agroforestry development and acceptance, and effectively attaining the goals of sustainable development, is the existing institutional and disciplinary segregation of agriculture and forestry.

## Recommendations:

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 inter-sector collaboration to incorporate agroforestry into USDA programs.** -- There are presently 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 systems, 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 context 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 practices, and conservation practices in general. Furthermore, the value of externalities needs to be understood, and 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, and there are many possibilities for collaboration and exchange.

# Integrating Agroforestry Into USDA Programs

## INTRODUCTION

Agroforestry is defined by the Association for Temperate Agroforestry as *an intensive land-management system that optimizes the benefits from the biological interactions created when trees and/or shrubs are deliberately combined with crops and/or livestock*. Key components of this definition are: (1) trees and/or shrubs are intentionally combined with crops and/or livestock, (2) land-use is intensive, (3) integrated systems are created, and (4) positive interactions are increased and utilized. Five basic types of practices are: windbreaks, riparian buffer strips, alley cropping, silvopasture, and forest farming.

A USDA Working Group on Agroforestry was established in July 1996 under the leadership of the USDA Director of Sustainable Development Programs. The purpose of the Working Group is to assess the potential of agroforestry to help attain USDA sustainable development goals, and to develop a strategy to realize that potential. The agencies currently participating in the Working Group are Forest Service (FS), Natural Resources Conservation Service (NRCS), Agricultural Research Service (ARS), Cooperative State Research, Education, and Extension Service (CSREES), and the US Environmental Protection Agency (EPA).

Over the course of four meetings, the Working Group identified 14 information-gathering and synthesis tasks (Appendix A) needed to accomplish its purpose. In November, 1996 the Working Group commissioned a special Task Force (Appendix B) to complete these tasks and report its findings and recommendations to the Working Group for its consideration. This report responds to that charge.

## FINDINGS

### Significance of Agroforestry to Sustainable Land Use

- USDA programs are in transition from an era of efficient production to an era of system-based sustainable development. This includes sustainable agriculture, sustainable forestry, and sustainable communities.
- Agriculture and forestry agencies and institutions are restructuring programs, mostly within the existing institutional and disciplinary framework, to better address sustainable development goals. However, science programs are still largely focused on the production of specific commodities.

- In general, it is widely recognized that an ecological systems approach is needed to progress toward the goal of sustainable land use systems that meet society's multiple needs. This approach should encompass: integration and diversity, balancing productivity and profitability with environmental stewardship, integrated science and practice, utilization of natural processes, interdisciplinary and interagency collaboration, public/private partnerships, producer and public participation and involvement, and the vitality of rural communities
- The relevance of agroforestry has been enhanced by the emergence of the sustainable development operating paradigm. Agroforestry concepts and practices directly address all of the attributes of sustainable development stated above. (See Appendix C for key policy publications relevant to agroforestry).
- Agroforestry is not an end in itself. Rather, agroforestry concepts and practices should be integrated with other technologies in appropriate conservation and production systems for farms, ranches, and communities.
- The significance of agroforestry is that it is an "integrating subject area" that can act as a driving force to catalyze interdisciplinary, interagency, and inter-sector efforts to develop land use options and integrated production and conservation systems that are economically viable, socially acceptable, and environmentally sound.
- The concepts and practices of agroforestry have emerged predominantly in the forestry/natural resources community, and have evolved in parallel with sustainable agriculture and agroecology. Logically, these concepts should be merged to advance toward sustainability goals. There is a clear need for the forestry and agriculture communities to work together to develop and integrate agroforestry concepts and practices into sustainable agricultural land use systems.
- Agroforestry concepts and technologies are also relevant to sustainable communities, particularly in the interface between agriculture and smaller communities. Within this interface zone, there is high potential for land use conflicts, providing opportunities for rural-based and community-based organizations to cooperate to resolve shared problems.

## Potential Roles and Functions of Agroforestry in Sustainable Land Use Systems

An important contribution of agroforestry to sustainable development is restoring and enhancing vital roles and functions of agroecosystems. These roles are physical, biological, ecological, economic, and social, and they accrue from the interactions generated through agroforestry application. The potential roles and functions are:

- **Soil Quality/Productivity** -- Keep soil in place, maintain depth and fertility, increase organic matter content and water holding capacity, restore and maintain soil micro- and macro-organisms.
- **Water Management** -- Increase water cycling within and infiltration and filtering of water through the soil rather than increased runoff, flooding, soil erosion, and non-point source pollution.
- **Microclimate Moderation** -- Reduce wind damage and stress to crops, control wind erosion, protect livestock from severe weather, reduce feed costs, increase crop and livestock production, control snow, dust, noise, odors, and reduce energy costs.
- **Waste Management** -- Intercept, fix, and biodegrade excess nutrients, pesticides, sediments, and biological pollutants in runoff water, and provide for on-farm disposal of animal wastes.
- **Pest Management** -- Provide habitat for natural enemies of crop pests and weeds, interrupt pest cycles.
- **Economic Diversification** -- Generate alternative sources of income for the landowner. Examples are wood products, specialty products, hay/grazing, fee hunting, and recreation.
- **Ecological Stability** -- Increase system resilience and ability to absorb and recover from disturbances and stresses.
- **Aesthetic/Intrinsic Values** -- Increased biological and landscape diversity and other factors generate an improved sense of system health, well-being, and "place" for residents and visitors.

These roles and functions are vital to ecosystem health and sustainability. There is a growing trend in agricultural science to utilize natural processes to a greater extent, in preference to chemical and mechanical interventions. These natural processes are often gained with increased biodiversity. Agroforestry can contribute to regaining or enhancing these processes and functions, but 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.



## **Inventory of Existing Agroforestry Activities**

The Task Force conducted two separate national surveys to determine the extent of existing agroforestry activities. The first focused on agroforestry research, education, extension, and international exchange, primarily in universities and government agencies. The second estimated the extent of local agroforestry technical assistance, and focused on federal and state agencies and their cooperators. Survey questionnaires and tabulated responses are attached in Appendix D; detailed information on responses is available upon request from the National Agroforestry Center.

### **Agroforestry Research, Education, Extension, and International Exchange**

The survey attempted to determine only the number of activities existing, who is involved, and sources of funding. Of 300 institutions surveyed, 146 individuals in 56 institutions in 37 states and one territory reported agroforestry activities. The criteria used to qualify activities as agroforestry were:

- A course must be at least 20% agroforestry.
- Teaching, research, and extension activities must be domestic agroforestry.
- The activity must be focused on one or more agroforestry practices.
- The activity must be current, completed within the past year, or scheduled to begin within one year.

It should be emphasized that the number of activities reported does not accurately indicate the size of the agroforestry program at an individual institution. The size of individual projects varies tremendously, and institutions varied in their tendency to lump or split the activities they reported. For example, the University of Idaho currently has 35 Ph.D. students in agroforestry, and each is required to complete three projects. Thus, the University of Idaho accounted for 27% of the teaching activities, 44% of the research activities, and 52% of the international exchange activities (Appendix D). Iowa State University listed 47 extension activities, accounting for 34% of the total. At the other extreme, Cornell University listed one international activity that consisted of a 17-member working group.

Institutional agroforestry activities are summarized as follows:

#### Teaching Activities:

- 132 different courses focused entirely or partially (at least 20%) on agroforestry.
- 37 institutions in 28 states and one territory reported at least one course.
- Course syllabus varied with the institution and faculty specialties.
- About one-sixth of the reported courses focused primarily on international agroforestry.
- Most courses were open to both graduate and undergraduate students.
- Most courses were 2-3 semester hours credit.

#### Research Projects:

- 308 projects were reported by 43 organizations in 35 states.
- 131 scientists reported research projects. Most projects involved co-investigators and cooperators.
- Scientists in Georgia, Idaho, Iowa, and Nebraska reported over 10 research projects.
- Scientists in Arkansas, Illinois, Kansas, Louisiana, Missouri, Oregon, and Texas reported at least 5 research projects.
- The predominant agroforestry practice varied with the institution's agroforestry specialty and the region.

#### Extension Activities:

- 138 activities were reported by 29 organizations in 23 states and one territory.
- Idaho, Iowa, and Nebraska reported the majority of the extension activities.
- Some institutions (e.g. University of Idaho) grouped their extension activities by subject area; most organizations reported each activity separately.
- Workshops, publications and field days were the predominant activities used to transfer information.
- In Iowa, most extension activities were workshops and field days on riparian forest buffers.

#### International Activities:

- 104 activities were reported by 24 institutions in 22 states.
- There were 54 lead scientists involved.
- Projects covered a variety of agroforestry practices and disciplines.
- Idaho, Maryland, Nebraska, and Texas reported the majority of the international activities.

### **Agroforestry Technical Assistance**

The Task Force elected to survey the extent of local agroforestry technical assistance that is currently being requested and who is providing it. To determine the extent of understanding of agroforestry, we intentionally provided only a minimal definition of agroforestry on the survey form (Appendix D), and listed the five types of practices. A total of 290 surveys were sent to State Foresters, FS-S&PF Regional Stewardship Coordinators, NRCS Foresters, NRCS State Conservationists, and Soil & Water Conservation State Offices. A total of 143 completed surveys were returned (Appendix D). Summarized responses by NRCS Region are available upon request.

This survey was not comprehensive, but it did provide an indication of the level of understanding of agroforestry practices and the current extent of agroforestry technical assistance. The following general themes emerged from the responses:

- Agroforestry practices are frequently misunderstood and need more promotion.
- Each agroforestry practice is more relevant to certain regions of the country. Overall, one or more practices are relevant in each region.
- Agroforestry practices should be adapted to existing programs for wildlife habitat, environmental protection, etc. In many regions, coordination is needed among agencies.

- A wide diversity of federal, state, and private programs and personnel are available to assist landowners on agroforestry practices; however, landowners need help finding the appropriate agency to apply for assistance under specific programs.
- Local Information is needed on site preparation, species selection, establishment, insect/disease/weed management, etc. for each agroforestry practice.
- Cost-share funds are a widely used and needed incentive to facilitate establishment of agroforestry practices. All existing federal and state programs are fully utilized.
- Information is needed on the economic and the environmental benefits of agroforestry practices.
- Special programs, like the Chesapeake Bay Program, and the threat of regulation can effectively encourage the establishment and maintenance of agroforestry practices, especially riparian forest buffers.
- Training and information provided as workshops, demonstrations, promotional materials, general brochures, technical literature, videos, computer programs, and internet sites are all viewed as beneficial/essential to establishing successful agroforestry practices.
- Windbreaks are widely practiced in the West, Northern Plains, and Midwest, but renovation is needed for many existing windbreaks and shelterbelts. Living snowfences are important in the northern states.
- Interest in riparian buffer strips continues to increase. Information is needed on planting design, width, species composition, etc. There was some confusion of riparian buffer strips with streamside management zones retained after forest harvesting.
- Alley cropping is not widely practiced except for fruit trees, vegetables, coffee, forage, etc.
- There is a general misunderstanding of silvopastoral practices. Most respondents interpreted it as woodland grazing with minimal management.
- Except in the Northeast, forest farming was often misinterpreted as farm forestry, i.e., Christmas trees, walnut plantations, block plantings of hybrid poplars, traditional hardwood and conifer plantation forestry, and farm woodlots.
- Short-rotation woody crops (i.e., poplar and willow) are becoming major practices for fiber and fuel production in the Pacific Northwest, North Central, Northeast, and Southeast United States.

## Agroforestry Cooperators, Stakeholders, and Customers

The community of interest for agroforestry technologies and information is broad and diverse. The Task Force assembled the following lists:

**Cooperators** – doers; organizations and institutions with technical capabilities that are actively involved in developing and applying agroforestry

- USDA agencies (FS, NRCS, ARS, CSREES)
- Universities (45 identified in survey)
- State Agencies (State Forestry)
- Local Conservation Organizations (Conservation Districts, RC&D's, Winrock International, Rodale Institute, Conservation Technology Information Center, etc)
- University Centers (sustainable agriculture, environmental, international agriculture)

**Stakeholders** – Organizations/institutions that have a vested interest in, or are impacted by, the adoption of agroforestry practices. These groups may establish policy positions either for or against agroforestry, and actively promote or discourage it.

- All of the above
- Other federal agencies (EPA, Fish & Wildlife Service, Bureau of Land Management, Farm Service Agency, Economic Research Service)
- Other state agencies (Fish & Game, Department of Environmental Quality, Department of Agriculture)
- Agribusiness (farm equipment manufacturers, fertilizer manufacturers, pesticide manufacturers)
- Agricultural commodity organizations (Corn Growers, Soybean Growers, etc.)
- Agricultural professional organizations (American Society of Agronomy, Soil & Water Conservation Society, etc.)
- Forestry and natural resource professional organizations (Society of American Foresters, Association for Temperate Agroforestry, etc.)
- Federal, state, and local government (Congress, state legislatures, local boards and councils)
- Local businesses
- Environmental organizations (American Rivers, The Nature Conservancy, Environmental Defense Fund, etc.)
- Conservation organizations (National Association of Conservation Districts, National Association of RC&D Councils, National Arbor Day Foundation, American Forests, etc.)
- Information Centers (Conservation Technology Information Center, ATTRA, etc.)
- Landowner Groups (Farm Bureau, Grange, Woodland Owners, sustainable agriculture, etc.)
- Special Interest Groups (Wildlife Groups, Water Quality Groups, Biomass Groups, Land Trusts, Ginseng Growers, Walnut Council, American Farmland Trust, etc.)

**Customers** – Consumers; those who receive the technologies and information and put them to use either scientifically or on the ground.

- Field professionals who provide landowner technical assistance (State Forestry agencies, NRCS, Conservation Districts)
- Scientists (federal, university, state agency)
- Educators (colleges and universities)
- Extension Specialists (university, county)
- Landowners (agriculture producers, private forest, industrial, urban/community)
- Community forestry and conservation (developers, contractors, schools)
- State-level producer-driven Sustainable Agriculture programs
- Consultants

The Task Force identified several key points regarding the community of interest for agroforestry:

- By far, the highest level of understanding and support for agroforestry resides in the land-grant university forestry/natural resources departments and in certain USDA agencies.
- Outside of the forestry/natural resources community, the level of understanding of agroforestry is highly variable, but increasing. Several sustainable agriculture programs and special interest groups are becoming interested in agroforestry.
- In spite of these trends, a major gap in understanding and interest in agroforestry still exists between the forestry/natural resources and agriculture communities of interest.
- Agroforestry should be made more clear and understandable. In particular, it needs to be translated into concepts and terms familiar to the agriculture community. The new NRCS National Conservation Buffers Initiative is a good example. It includes several agroforestry practices, and has generated remarkable broad-based interest.

### **Barriers to Adoption of Agroforestry**

The barriers identified by the Task Force are not new and pertain to a variety of conservation practices and programs. The fundamental barrier to adoption of conservation practices is lack of socio-economic acceptance. The limited success of past land stewardship programs can be traced to the lack of up-front participation and buy-in by the very group the programs were developed for -- the private landowner. Consequently, these programs have repeatedly demonstrated that farmers are reluctant to adopt conservation practices without compensation.

Adoption of agroforestry practices is a special case in point. Tree-based conservation practices are especially hard to sell because of the element of permanence and perceived problems, yet establishing permanent vegetative buffers in the system is exactly what we want to achieve! This is

exacerbated by the 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. Specific barriers to adoption of agroforestry are:

- Trees are perceived to take land out of production, so there is a net loss of cropland yields.
- Landowners and other stakeholders have not been adequately involved in shaping conservation practices and programs, so there is limited buy-in or ownership by the groups they are intended to serve.
- There is a lack of information, understanding, and appreciation of the product and non-product benefits of agroforestry.
- Farmers are reluctant to put trees back into the landscape, after they have historically gone through a lot of effort to remove them. We have developed systems and perceptions based on the belief that we need to keep trees in woodlots away from productive agricultural lands.
- Strip plantings of permanent vegetation create smaller fields, and are incompatible with production agriculture's emphasis on large equipment, large farms, and high productivity.
- Agroforestry practices are perceived to create havens for insect, disease, and weed pests.
- There is too much risk and uncertainty, and permanent vegetation (especially trees) limits short-term options. There is less flexibility with permanent vegetation, compared to annual crops or grass.
- Modern farming has acquired such a short-term outlook, it is hard to understand, value, and accept the long-term benefits of any land-use practice. Lenders, and other driving forces, emphasize a short-term cash flow.
- Farmers perceive that the costs of agroforestry and other conservation practices outweigh the benefits. Costs include inconvenience and maintenance.
- There is a lack of technical information and technical assistance for agroforestry practices. Often, technical assistance providers are either not familiar with agroforestry practices, have misconceptions, perceive that the practices will introduce problems, or prefer to promote other practices that are easier to design, unless the landowner requests an agroforestry practice.

- There continues to be a focus on component practices and not on developing whole farm systems, so many of the benefits of agroforestry and other integrative land-use practices go unrecognized.
- Farmers fear that land put into permanent vegetation will be subject to mandated preservation after the program ends. This concern is related to a general loss of confidentiality and property rights and fear of regulation.

These specific barriers can be summarized into five categories:

- Lack of technical information and assistance
- Economics
- Complexity
- Risks/uncertainties
- Public/Private Relations

### **Disciplinary and Institutional Barriers to Agroforestry Development**

In the wake of growing international concern about the future of our planet, a “sustainability paradigm” has emerged in the United States’ industrial and academic communities. In recognition of this new approach to development, the USDA has established a policy on sustainable development and a Director of Sustainable Development Programs to represent and coordinate its interests and efforts in this area. USDA has also established an interagency council for policy and program development, implementation, and evaluation on issues related to sustainable development.

The widespread acceptance of sustainability as the new operating paradigm provides an excellent national context for continued growth and development. As a consequence, changes are occurring at the agency and university levels to adjust to these new approaches to land management. Agriculture colleges are developing sustainable agriculture and agroecology as rigorous new integrative disciplines, and forestry colleges are broadening their perspectives and orienting to more holistic natural resource management approaches. Both are developing unique new interdisciplinary courses, training and education programs, and research projects. Comparable changes are occurring within federal and state agencies responsible for land use management. Hence, the general climate with respect to adopting an “integrative paradigm” for land use practices is greatly improved over just a few years ago.

Key points relative to agroforestry development are:

- Large-scale restructuring of institutional resources is unlikely, owing to the strong infrastructure of our current institutions and the apparent lack of urgency (i.e., national security). Instead, a more modest but steady development effort is underway within the

existing research-development-application infrastructure that is in place for both agriculture and forestry.

- Substantial progress on sustainable agriculture and sustainable forestry is being made within the disciplinary and institutional boundaries of agriculture and forestry, respectively. However, progress on agroforestry is very constrained across the boundary between agriculture and forestry. Because it is cross-cutting, agroforestry is a lower priority in both situations.
- Agroforestry lacks a well-developed research-education-application infrastructure of its own. Under the existing infrastructure, the majority of the agroforestry development effort is “bootlegged” within existing forestry (predominantly) and agriculture programs, and meets strong institutional resistance because it crosses traditional boundaries.
- The bottom line is that agroforestry must obtain the understanding, acceptance, and support of the agriculture community if it is to receive widespread adoption. Agroforestry will only develop if it is practiced, but it cannot be practiced to a great extent without an adequate scientific basis. This presents a “chicken and egg” dilemma that must be addressed before agroforestry will progress past the conceptual stage.
- The keystone for agroforestry development is to bridge the gap between agriculture and forestry in our agencies and institutions, and on the ground.
- Sustainable development in agroecosystems faces the same challenge. The desired changes necessitate integrating agriculture and forestry to effectively attain the goal of balancing productivity and profitability, environmental stewardship, and the health and vitality of people and communities.
- To surmount these hurdles, and capture the potential of agroforestry, we believe that USDA should identify, promote, and support specific “integrating subject areas”, like agroforestry, that transcend disciplinary, agency, and land-use boundaries.
- Such “integrating subject areas” can be a source of innovation and a driving force to catalyze interdisciplinary efforts to develop land use options and integrated production and conservation systems that are economically viable, socially acceptable, and ecologically sustainable.

### **Potential Benefits From International Exchanges on Agroforestry**

The American agricultural community provided the research and development energy needed to fuel the “Green Revolution” of the 1960s. Despite its many successes worldwide, however, this process of exporting intensive agricultural production to the developing world has been recognized for its short-comings. As a consequence, greater efforts have been focused on involving local people in the development process, and on developing integrated forms of agriculture that better mimic ongoing indigenous land use practices. Thus, the field of



participatory rural development and agroforestry have flourished as governmental agencies, non-governmental organizations, and the research community became aware that most “top-down” intensive agriculture and forestry development programs were not sustainable.

The importance of agroforestry was formally recognized by the international research community with the establishment of the International Council for Research in Agroforestry (ICRAF) in 1978 in Kenya, which later became a formal part of the International Agricultural Research Centers system in 1994. Additional agroforestry centers for education, development, and/or research have developed elsewhere (e.g., CATIE in Costa Rica). It was the growing body of information about agroforestry that was coming from the international community that stimulated widespread interest in examining the applicability of agroforestry practices to American agriculture in the mid-1980s. This time-lag means that there is currently much more research and development information available from the international community than from those working on agroforestry in the U.S.

Another assumption basic to the “Green Revolution” that was later found wanting was the idea that information and technology flowed primarily in one direction -- from developed to developing countries and from national-level research-educational institutions to local rural communities. Collectively this is often referred to as “North-South Technology Transfer” meaning quite literally from the “haves” to the “have-nots.” However, it is now widely recognized that such a view is greatly limiting and that to be successful, development projects must establish working partnerships at all levels which has led to new and innovative approaches to participatory development.

The Task Force believes that substantial benefits can be realized from focused interactions on agroforestry with international institutions. Key points are:

- International agroforestry science is about 10 years ahead of that in the United States. Many institutions are now producing excellent research information, which can be readily utilized in the United States.
- Issues like rural decline are not restricted to developing countries; many other countries are experiencing the same sustainable development issues faced in the United States.
- Science programs in many developed countries are not necessarily attached to specific commodities as they are in the United States, and have been successful in developing and implementing integrated production and conservation systems. There is much that the American agroforestry community can learn from their accomplishments.
- We must be very selective in targeting international exchanges in an environment of restricted budgets.

## RECOMMENDATIONS

The Task Force identified seven key recommendations that must be addressed to accomplish the Working Group's goal "to assess the potential of agroforestry to help attain USDA sustainable development objectives, and implement a strategy to realize that potential".

Recommendations 1 and 2 pertain to the need for USDA to create a clear path and encourage/reward desired approaches to attain agroforestry and sustainable development goals.

### **1. Institutionalize Agroforestry and Incorporate it into USDA's Concepts, Philosophy, and Principles of Sustainable Development.**

USDA's policy on sustainable development states: "USDA is committed to working toward the economic, environmental, and social sustainability of diverse food, fiber, agriculture, forest, and range systems. USDA will balance goals of improved production and profitability, stewardship of the natural resource base and ecological systems, and enhancement of the vitality of rural communities. USDA will integrate these goals into its policies and programs, particularly through interagency collaboration, partnerships and outreach."

Agroforestry addresses all of these stated goals and approaches, and provides one of the best concrete examples of how we can implement the principles of sustainable development.

Although USDA's sustainable development policy can be inferred to support agroforestry, there is currently no clear USDA policy that recognizes agroforestry or provides specific direction for agroforestry. The lack of recognition of agroforestry is most apparent in the translation of authorizing bill language into program guidelines, where agroforestry practices are played down or lose their identity.

#### **Recommended Actions:**

- USDA should adopt a policy statement that recognizes agroforestry, identifies the linkage between agroforestry and sustainable development, and identifies what needs to be done to incorporate agroforestry into programs.
- Recognize agroforestry options in the formulation of new programs and their guidelines, and revise existing program guidelines to identify agroforestry options.
- Adequately provide agroforestry input to the USDA Council on Sustainable Development.

## **2. Provide Leadership to Catalyze Interdisciplinary, Interagency, and Inter-sector Collaboration to Incorporate Agroforestry into Programs.**

Prior to the present sustainable development operating paradigm, the socio-economic conditions needed for agroforestry development, or development of any integrating subject area, were absent. The simplification of agriculture and forestry through mechanization, monoculture, heavy use of chemicals (pesticides and fertilizers), and the development of high yielding crop varieties were favored by the government-industrial complex. The results were increased crop production at a high input cost, reduced environmental quality, reduced bio- and landscape diversity, reduced stability of production systems, and compromised quality of life.

With dwindling resources and mounting environmental degradation, sustainability has become the overriding issue. The right conditions for agroforestry development have finally arrived. However, agroforestry development continues to be constrained by agency and disciplinary walls. The dilemma is that agroforestry is an interdisciplinary cross-cutting applied science and does not reside neatly within the mission of any one USDA agency. Presently, several agencies are directly or indirectly involved with agroforestry development and application. Agroforestry is a lower priority in research agencies, but is a higher priority in management agencies, and none of the agencies effectively communicate or consult with each other relative to their agroforestry agendas. Consequently, priorities differ, programs have been implemented in a fragmentary manner, and coordination is minimal. The same situation exists in the land-grant university system.

There are presently no compelling institutional reasons for scientists to depart from familiar and secure traditional lines of research and their sources of funding, which are still predominantly commodity-based. Agroforestry projects generally rank low in funding priorities, and are frequently bootlegged within USDA, university, and other research institutions organized along traditional disciplinary lines. In particular, the segregation of agriculture and forestry is a major constraint to agroforestry development. Agroforestry does not directly support commodities, and is not mainstream in either agriculture or forestry. Consequently it ranks a low priority in both sectors.

Agroforestry is a good example of the challenges faced by an integrative, cross-cutting subject area emerging within the present institutional and disciplinary infrastructure. To adequately address agroforestry, and other emerging integrative cross-cutting subject areas, and effectively address the goals of sustainable development, it is imperative that USDA provide leadership to bridge agency, institutional, and disciplinary walls. USDA has the capacity to influence the pace of agroforestry development and must provide the needed leadership and resources to promote interdisciplinary, interagency, and inter-sector collaborations in research, education, and extension.

### **Recommended Actions:**

- Commission a “Blue Ribbon” panel to review policies and programs for inconsistencies that result in barriers to the development of agroforestry.

- Identify integrating subject areas, including agroforestry, that link agencies, programs, and disciplines in a common effort to attain Departmental sustainable development goals.
- Restructure programs to promote and reward innovative interdisciplinary efforts, such as collaborate stewardship, watershed analysis, integrated agricultural systems, agroecology, landscape management, conservation buffers, and integrated pest management.
- Integrate the social and economic dimensions of agroforestry in research and applications.
- Continue the USDA Interagency Agroforestry Working Group to:
  - build understanding, acceptance, and support for agroforestry across agencies.
  - coordinate existing and new programs.
  - identify needs, priorities, and directions.
  - provide agroforestry input to the USDA Council on Sustainable Development.
  - interact with stakeholders outside of USDA.
- Include agroforestry as a specific priority area in existing research and development programs, i.e. Sustainable Agriculture Research and Education (SARE), Hatch, McIntire-Stennis, National Research Initiative, USDA Capacity Building Grants, USDA Competitive Grants.
- Recognize and emphasize agroforestry practices in existing and new conservation programs such as CRP, EQIP, WHIP, WHP, and SIP.
- Seek Congressional support for increased USDA emphasis on agroforestry.
- Establish a competitive grants program targeting agroforestry needs in research, development, and application.
- Seek funding for agroforestry research and development from non-traditional sources such as the NRCS Foundation, Kellogg Foundation, Winrock International, private endowments, and others.
- Establish a liaison position to work with foundations to develop a consortium of funding sources.
- Request the Secretary of Agriculture to allocate a portion of the discretionary funds from the Fund for Rural America to support and implement recommendations of the USDA Agroforestry Working Group.

Recommendations 3-7 identify areas of emphasis and actions for USDA agencies and their partners to incorporate agroforestry into programs.

### **3. Clearly Define and Apply Agroforestry Principles Through Training and Technology Transfer**

Within our delivery systems, there is a lack of technical information and assistance for agroforestry. Currently most technical assistance providers in agriculture and forestry are unfamiliar with agroforestry and its associated practices, have misconceptions of what agroforestry is, perceive that costs outweigh benefits, perceive problems resulting from the practices, or prefer to promote other practices that are more familiar or easier to design.

There is much to be gained from putting what we already know into practice. A concerted effort is needed to incorporate appropriate technologies and tools, including agroforestry, into the delivery system. Agroforestry needs to be added to the list of available options, and needs to be blended and balanced with other technologies into appropriate conservation and production systems for farms, ranches, and communities. A wealth of knowledge resides in the literature, as well as in the experiences of field professionals and innovative producers. It is also imperative that we explore new avenues for learning and technology exchange, recognizing and validating the experience of practitioners and making their information more widely available to other clients.

There continues to be confusion about what agroforestry is and how it meshes with American agriculture. The confusion is increased by the use of the term “agroforestry system”. While an application of agroforestry at the field level does create a tree/crop or tree/livestock system with component interdependence and interactions, agroforestry applied at the farm or landscape level is part of a larger agricultural land use system. The term “system” is used differently in forestry and agriculture. In forestry, the term “agroforestry system” is consistent with the nomenclature for silvicultural systems, e.g., the shelterwood system. However, in agriculture it is a practice, and systems are aggregations of practices. Since the bottom line for agroforestry is obtaining the acceptance of the agriculture community, agroforestry should be presented as a suite of practices, to be combined with other appropriate practices to create agricultural land use systems.

The widespread support for the new “National Conservation Buffers Initiative” is an excellent example of the acceptance that can be attained when conservation practices are translated into more producer-friendly terms and communicated as part of broader themes. Half of the designated conservation buffers practices are agroforestry practices. The inclusion of agroforestry practices in the Conservation Buffers Initiative is a major step in the right direction, and the agroforestry community should utilize the opportunity to further educate people on the concepts and benefits of agroforestry, within the context of conservation buffers in the landscape.

#### **Recommended Actions:**

- Clearly define agroforestry concepts and practices. Synthesize existing knowledge of specific benefits, their value, and who they accrue to. Synthesize existing knowledge of the

interactions created when trees and/or shrubs are deliberately combined with crops and/or livestock.

- Facilitate discussions with stakeholders about costs, benefits, and ecological functions of specific applications of agroforestry practices in rural landscapes and farming systems.
- Establish information exchange programs among technical assistance providers, the research community, and innovative producers.
- Establish interdisciplinary teams within and between NRCS, Extension Service, and state natural resource agencies to develop integrated approaches to providing technical assistance.
- Establish on-farm research networks to involve producers, and encourage practitioners and technical assistance providers to explore innovative ways for applying agroforestry practices.
- Inventory and describe on-farm agroforestry innovations and make the information available to the farming community, technical assistance providers, and researchers.
- Develop comprehensive training opportunities for technical assistance providers and practitioners that include agroforestry concepts and practices, and how to apply them.
- Set up a network of demonstration sites on private lands that provide working examples of successful agroforestry practices, especially as part of whole-farm systems.
- Incorporate agroforestry concepts and practices as integral parts of sustainable agriculture training for Extension, NRCS, and other providers of technical information and assistance.
- Coordinate agency programs for implementing agroforestry practices at the federal, state, and local levels.

#### **4. Fully Research and Develop Agroforestry Practices, Application Guidelines and Tools, and Document Benefits.**

In concert with the need to incorporate agroforestry concepts and practices into delivery systems and get agroforestry applied on the ground (recommendation 3), research and development is needed to identify and fill knowledge gaps, develop appropriate tools and guidelines to facilitate delivery of technical assistance, and document the benefits of agroforestry.

The need varies by individual practice and regional/local situation. Certain practices have been in existence for a long time (e.g., windbreaks), and have a substantial amount of supporting research data, while others (e.g., silvopasture and forest farming) have a very limited research base. Technical information must be developed regionally and locally, information that is too general or based on studies in other regions may not fit local needs and/or conditions. Agroforestry practices should be adapted to special programs, such as wildlife habitat and environmental protection.

Field personnel must have appropriate standards, guidelines, and other application tools to help them guide landowners through the decision-making process and adapting practices to specific site conditions.

**Recommended Actions:**

- Identify and fill knowledge gaps that limit development of technical guides and practice standards.
- Synthesize existing documentation of the benefits of agroforestry practices, and build on that base through research, development, assessments, and case studies.
- Develop technical guidance information (e.g., NRCS Field Office Technical Guides) for applying agroforestry practices at the local level. Specific information is needed for site preparation, species selection, establishment, and maintenance for each agroforestry practice at the local level.
- Survey farmer groups and other landowner organizations to identify agroforestry-type practices that have been used in the past, are currently being used, and are planned to be used in the future.
- Emphasize on-farm research to involve producers in the development and adaptation of technologies and sharing them with others.
- Develop information on the economic and social benefits of agroforestry practices and incorporate it into decision-support tools and delivery systems.
- Develop decision-support models that facilitate comparing available options and their outcomes.

**5. Stimulate Research to Understand the Roles and Functions of Agroforestry Within the Context of an Ecological Systems Approach to Sustainable Land Use.**

Our present knowledge of agroforestry's role in ecological systems represents only a beginning. We are recognizing the importance of context, and that the agricultural system is much more than a composite of its component crops and technologies. In building a better understanding of the functioning of systems, we can begin to develop new approaches based on integrated systems and utilization of natural processes in preference to chemical or mechanical interventions.

While much is known about the structure and function of natural ecosystems, comparatively little is known about agroecosystems. Such ecosystems are human-dominated and highly-disturbed, and exist by design as land use systems to meet the needs of people. Our challenge is to restore/enhance certain natural functions and processes to sufficient levels to maintain system health and sustainability.

Our educational specialization in disciplines, and agency focus on narrow questions, have provided limited guidance for professionals to deal with system-level challenges. This dominant research and learning paradigm has prepared scientists and educators to deal well with components of technology and their applications, but not the higher level challenges such as the healthy functioning of agricultural and forest ecosystems.

The fields of agroforestry, agroecology, and sustainable agriculture share common principles, and are idea-rich in helping us advance toward the goal of sustainable land use. USDA needs to conduct and stimulate interdisciplinary research that involves stakeholders to integrate and evaluate agroforestry with other approaches and practices. Equally important, the effort should evaluate integrated systems beyond traditional production parameters, and explore how the integrative approach can benefit people and communities.

### **Recommended Actions:**

- Use whole-farm planning as the first step to an integrative ecological approach to resource planning, then expand to include linkages between the subject farm and adjacent farms.
- Add agroforestry practices to existing agriculture system models for predicting non-point source pollution and water quality.
- Emphasize landscape design when applying agroforestry practices and associated buffer practices. Use existing knowledge to associate and connect practices and technologies based on complementarity and ability to achieve desired functions. Substantial gains in environmental quality, such as reduced soil erosion, improved water quality, enhanced wildlife, and landscape diversity, can be achieved through proper landscape design.
- Initiate focused efforts to involve landowners, communities, and stakeholders in watershed diagnosis and design relative to people's economic, environmental, and social needs. This effort can readily work in concert with other objectives to encourage the development of locally-led collaborative efforts.
- Request the National Academy of Science to assess the feasibility of ecological systems-based approaches to attain healthy and sustainable agricultural land use systems, including interdisciplinary and inter-institutional approaches needed, and how to achieve them.

### **6. Focus Attention on Overcoming the Real and Perceived Social and Economic Limitations to the Adoption of Agroforestry Practices by the Agricultural Community.**

Despite the many environmental, social, and economic benefits acclaimed for agroforestry by the natural resource community, agroforestry will only prosper if it is accepted by the agricultural community. As an emerging applied science, agroforestry carries with it many concerns and misconceptions by the potential user. Trees in isolated woodlots where soil characteristics and/or topography are usually not conducive to the production of annual crops are generally acceptable



to farmers, but trees mixed into agricultural landscapes are another issue. Most see the addition of trees as taking up valuable space that could be used for crops, and reduces the economic returns from a given area of land. Trees also subdivide parcels of land (e.g., windbreaks) which can interfere with large equipment and decrease farming efficiencies. Many believe that trees and shrubs harbor pests potentially damaging to crops instead of providing havens for valuable predators and insects. This attitude was developed within the farming community during the era of intensification of agricultural production systems, and it is now part of the common knowledge among farmers.

This social attitude within the farming community can be traced to a perception about the overall economic benefits of agroforestry practices. Although most farmers value the aesthetics, environmental benefits, and products from trees and woodlots, agroforestry practices in production systems must be seen to add value or be a viable economic alternative if it is to supplement or replace current traditional agricultural practices. There is concern that the costs of implementing agroforestry practices might exceed the eventual financial returns. The difficulties of fiscally valuing externalities arising from agroforestry practices complicates this problem further. However, it is important to realize that the externalities associated with agroforestry may have long-term benefits to society, but these may not help a farmer meet the short-term economics needed to stay financially solvent.

Research, development, and extension are urgently needed to address the social and economic barriers to adoption of agroforestry practices, and conservation practices in general. Furthermore, we need to understand the value of externalities, and to whom they accrue, in order to deal with questions of environmental justice.

### **Recommended Actions:**

- Encourage research and extension efforts to assemble information on factors that influence landowner decisions to adopt/not adopt conservation practices, the effects of incentive programs, and the role and influence of locally-led collaborative groups (representing community and societal needs for land stewardship) on individual landowner decisions.
- Encourage research and development to quantify and value the product and non-product benefits of agroforestry at the practice and system levels.
- Develop long-term demonstration areas regionally to illustrate how agroforestry practices can fit into agricultural landscapes.
- Involve innovators within the farming community in the development of on-farm case studies illustrating the feasibility and economic viability of agroforestry options.
- Hold agroforestry “field days” involving the wider rural community.
- Evaluate existing cost-sharing programs for applying agroforestry practices, and explore alternative means of support.

- Request Cooperative Extension to incorporate agroforestry into its program planning, and focus on building collaborative groups that include producer organizations.

## **7. Foster Collaborative Efforts With International Organizations Focused on Agroforestry Development and Integration Into Sustainable Land Use Systems.**

The United States is not the only developed country working to identify more sustainable land use practices. Agroforestry has similarly been recognized in a number of other countries (e.g., Australia, New Zealand, the United Kingdom, and Canada) as holding promise for use in sustainable agricultural systems. This means that there are many possibilities for collaboration and mutual support among countries with similar research infrastructures and capabilities.

The international community can be a great resource for not only technical agroforestry information, but also for viable approaches to its implementation at local levels. Hence, opportunities exist for meaningful collaboration that can prove beneficial to American agriculture.

### **Recommended Actions:**

- Develop mechanisms for enhancing the exchange of agroforestry information and people including farmers, extensionists, and scientists (e.g., workshops, on-farm tours, etc.)
- Strengthen collaborative linkages with USAID.
- Strengthen formal working relationships with International Agricultural Research Centers, especially ICRAF.
- Support the implementation of a report outlining future collaborative efforts between NASULGC's Board on Agriculture's International Committee on Organizational Policy (ICOP) and USDA-CSREES's Globalizing Agricultural Science and Education Programs in America (GASEPA) task force.
- Strengthen working relationships with IUFRO's agroforestry working groups.
- Build a network of international agroforestry professionals educated in the United States.

## APPENDIX A

### Agroforestry Task Force Work Assignments

1. Inventory existing agroforestry research, education, and extension activities, identify gaps, and create a database.
2. Identify the functions, roles, and benefits that agroforestry technologies can potentially bring to sustainable systems.
3. Identify the cooperators, stakeholders, and customers for agroforestry.
4. Consult with agroforestry cooperators, stakeholders, and customers and analyze input.
5. Identify what we know and what we don't know about agroforestry practices and their roles and benefits
6. Assess how U.S. agroforestry can benefit from scientific and technical exchanges with international agroforestry institutions.
7. Identify assessments, case studies, and other information-gathering activities needed to assess how effectively agroforestry can attain sustainability objectives.
8. Recommend an approach to publish an "Agroforestry in the USDA" leaflet
9. Identify technology transfer, applications, and training activities and delivery systems needed to enhance awareness and improve technical assistance for agroforestry.
10. Recommend how agroforestry concepts and practices can be incorporated into educational programs for professionals.
11. Identify research and development needed to develop improved agroforestry technologies and information, integrate into land-use systems, and understand system interactions.
12. Recommend how agroforestry research and technology transfer can be incorporated and encouraged in competitive grant programs.
13. Recommend how the USDA Agroforestry Cooperative Program can improve connections between USDA and the university community and private sector.
14. Prepare a draft USDA Agroforestry Action Plan and Implementation Plan.

## APPENDIX B

### Members of the Task Force

Dr. W.J. (Bill) Rietveld, Program Manager, Task Force Chair  
USDA-Forest Service  
National Agroforestry Center  
East Campus-UNL  
Lincoln, NE 68583-0822  
Phone: 402-437-5178 ext 27  
Fax: -5712  
e-mail: /s=b.rietveld/oul=s28104a@mhs-fswa.attmail.

Dr. James P. (Jim) Lassoie, Professor and Chair  
Dept. of Natural Resources  
College of Agriculture and Life Sciences  
Cornell University  
118 Fernow Hall  
Ithaca, NY 14853-3001  
Phone: 607-255-2810  
Fax: -0349  
e-mail: jpl4@cornell.edu

Dr. Charles A. (Chuck) Francis, Professor and Director  
Center for Sustainable Agricultural Systems  
Institute of Agriculture and Natural Resources  
University of Nebraska  
225 Keim Hall  
Lincoln, NE 68583-0949  
Phone: 402-472-1581  
Fax: -4104  
e-mail: csas002@unlvm.unl.edu

William (Bill) Farris, State Forester  
Division of Forestry  
IA Dept. of Natural Resources  
Wallace State Office Building  
East 9th and Grand Ave.  
Des Moines, IA 50319  
Phone: 515-281-8656  
Fax: -6794  
e-mail: wfarris@max.state.ia.us

Dr. Catalino Blanche, Research Scientist  
USDA-Agricultural Research Service  
6883 South State Hwy. 23  
Booneville, AR 72927-9214  
Phone: 501-675-3834  
Fax: -2940  
e-mail: cblanche@yell.com

Bruce Wight, Lead Agroforester  
USDA-Natural Resources Conservation Service  
National Agroforestry Center  
East Campus-UNL  
Lincoln, NE 68583-0822  
Phone: 402-437-5178 ext 36  
Fax: -5712  
e-mail: /s=b.wight/oul=s28l04a@mhs-fswa.attmail.com

## APPENDIX C

### Key Policy Publications Relevant to Agroforestry

Association for Temperate Agroforestry. 1994. Agroforestry for sustainable development: a national strategy to develop and implement agroforestry. White paper.

Association for Temperate Agroforestry. 1995. Opportunities for agroforestry in the 1995 Farm Bill. White paper.

Association for Temperate Agroforestry. 1997. The status, opportunities, and needs for agroforestry in the United States: a national report. White paper.

National Research Council. 1993. Soil and water quality: an agenda for agriculture. National Academy Press, Washington, DC.

The President's Council on Sustainable Development. 1996. Sustainable America: a new consensus for prosperity, opportunity, and a healthy environment for the future. U.S. Government Printing Office, Washington, DC.

USDA Soil Conservation Service. 1994. Agroforestry: an integrated land-use management system for production and farmland conservation. Resource Conservation Act appraisal of agroforestry.

USDA. 1996. Sustainable development. Secretary's Memorandum 9500-6. USDA, Office of the Secretary, Washington, DC.

APPENDIX D

Inventory of Existing Agroforestry  
Research, Education, Extension, and International Exchange Activities

1 Institution / Department or Agency: \_\_\_\_\_  
Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_  
Zip code: \_\_\_\_\_

2. Contact person  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_ Fax #: \_\_\_\_\_  
E-mail address: \_\_\_\_\_

3. Agroforestry research: (For each project:)  
a. Name of project (descriptive name): \_\_\_\_\_  
b. Type of agroforestry practice: \_\_\_\_\_  
c. Investigators Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
d. Sources of funding: \_\_\_\_\_  
e. Partners/ Cooperators: \_\_\_\_\_

3. Agroforestry research: (For each project:)  
a. Name of project (descriptive name): \_\_\_\_\_  
b. Type of agroforestry practice: \_\_\_\_\_  
c. Investigators Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
d. Sources of funding: \_\_\_\_\_  
e. Partners/ Cooperators: \_\_\_\_\_

3. Agroforestry research: (For each project:)  
a. Name of project (descriptive name): \_\_\_\_\_  
b. Type of agroforestry practice: \_\_\_\_\_  
c. Investigators Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
d. Sources of funding: \_\_\_\_\_  
e. Partners/ Cooperators: \_\_\_\_\_

3. Agroforestry research: (For each project:)  
a. Name of project (descriptive name): \_\_\_\_\_  
b. Type of agroforestry practice: \_\_\_\_\_  
c. Investigators Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
d. Sources of funding: \_\_\_\_\_  
e. Partners/ Cooperators: \_\_\_\_\_

3. Agroforestry research: (For each project:)  
a. Name of project (descriptive name): \_\_\_\_\_  
b. Type of agroforestry practice: \_\_\_\_\_  
c. Investigators Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
d. Sources of funding: \_\_\_\_\_  
e. Partners/ Cooperators: \_\_\_\_\_

4. Agroforestry extension: (For each project:)  
a. Name of activity (descriptive name): \_\_\_\_\_  
b. Type of agroforestry practice: \_\_\_\_\_  
c. Type of activity (workshop, publication, video, display, field days): \_\_\_\_\_  
d. Faculty members involved Name : \_\_\_\_\_  
Phone #: \_\_\_\_\_  
e. Sources of funding: \_\_\_\_\_  
f. Partners/ Cooperators: \_\_\_\_\_

4. Agroforestry extension: (For each project:)  
a. Name of activity (descriptive name): \_\_\_\_\_  
b. Type of agroforestry practice: \_\_\_\_\_

- c. Type of activity (workshop, publication, video, display, field days): \_\_\_\_\_
- d. Faculty members involved Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_
- e. Sources of funding: \_\_\_\_\_
- f. Partners/ Cooperators: \_\_\_\_\_

4. Agroforestry extension: (For each project:)

- a. Name of activity (descriptive name): \_\_\_\_\_
- b. Type of agroforestry practice: \_\_\_\_\_
- c. Type of activity (workshop, publication, video, display, field days): \_\_\_\_\_
- d. Faculty members involved Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_
- e. Sources of funding: \_\_\_\_\_
- f. Partners/ Cooperators: \_\_\_\_\_

4. Agroforestry extension: (For each project:)

- a. Name of activity (descriptive name): \_\_\_\_\_
- b. Type of agroforestry practice: \_\_\_\_\_
- c. Type of activity (workshop, publication, video, display, field days): \_\_\_\_\_
- d. Faculty members involved Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_
- e. Sources of funding: \_\_\_\_\_
- f. Partners/ Cooperators: \_\_\_\_\_

4. Agroforestry extension: (For each project:)

- a. Name of activity (descriptive name): \_\_\_\_\_
- b. Type of agroforestry practice: \_\_\_\_\_
- c. Type of activity (workshop, publication, video, display, field days): \_\_\_\_\_
- d. Faculty members involved Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_
- e. Sources of funding: \_\_\_\_\_
- f. Partners/ Cooperators: \_\_\_\_\_

5. International Activities (For each project:)

- a. Name of activity (descriptive name): \_\_\_\_\_
- b. Type of agroforestry practice: \_\_\_\_\_
- c. Type of activity (research, teaching, extension, training, scientific exchange, etc.): \_\_\_\_\_
- d. Faculty members involved Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_
- e. Sources of funding: \_\_\_\_\_
- f. Partners/ Cooperators: \_\_\_\_\_

5. International Activities (For each project:)

- a. Name of activity (descriptive name): \_\_\_\_\_
- b. Type of agroforestry practice: \_\_\_\_\_
- c. Type of activity (research, teaching, extension, training, scientific exchange, etc.): \_\_\_\_\_
- d. Faculty members involved Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_
- e. Sources of funding: \_\_\_\_\_



f. Partners/ Cooperators: \_\_\_\_\_

5. International Activities (For each project):

a. Name of activity (descriptive name): \_\_\_\_\_

b. Type of agroforestry practice: \_\_\_\_\_

c. Type of activity (research, teaching, extension, training, scientific exchange, etc.): \_\_\_\_\_

d. Faculty members involved Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

e. Sources of funding: \_\_\_\_\_

f. Partners/ Cooperators: \_\_\_\_\_

6. Agroforestry teaching (For each course)

a. Name of course: \_\_\_\_\_

b. Type of agroforestry practice: \_\_\_\_\_

c. Type of course (classroom, seminar, short course, field course, etc.): \_\_\_\_\_

d. Contents of course (short narrative): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

e. Graduate \_\_, Undergraduate \_\_, or Both \_\_ f. Number of credits \_\_\_\_.

d. Faculty members involved Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

e. Sources of funding: \_\_\_\_\_

f. Partners/ Cooperators: \_\_\_\_\_

6. Agroforestry teaching (For each course)

a. Name of course: \_\_\_\_\_

b. Type of agroforestry practice: \_\_\_\_\_

c. Type of course (classroom, seminar, short course, field course, etc.): \_\_\_\_\_

d. Contents of course (short narrative): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

e. Graduate \_\_, Undergraduate \_\_, or Both \_\_ f. Number of credits \_\_\_\_.

d. Faculty members involved Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

e. Sources of funding: \_\_\_\_\_

f. Partners/ Cooperators: \_\_\_\_\_

6. Agroforestry teaching (For each course)

a. Name of course: \_\_\_\_\_

b. Type of agroforestry practice: \_\_\_\_\_

c. Type of course (classroom, seminar, short course, field course, etc.): \_\_\_\_\_

d. Contents of course (short narrative): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

d. Graduate \_\_, Undergraduate \_\_, or Both \_\_ f. Number of credits \_\_\_\_\_.

d. Faculty members involved Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Name: \_\_\_\_\_  
Phone #: \_\_\_\_\_

e. Sources of funding: \_\_\_\_\_

f. Partners/ Cooperators: \_\_\_\_\_  
\_\_\_\_\_

## Summary of Agroforestry Activities

### Existing Agroforestry Education, Research, Extension, and International Exchange Activities

State	Institution	Number of Activities			
		Education	Research	Extension	International Exchange
AL	Alabama A&M Univ.	1	2	-	-
	Auburn University	-	-	-	2
AR	USDA-ARS	-	6	1	1
AZ	University of Arizona	2	3	-	1
	Northern Arizona University	1	-	-	1
CA	University of California-Davis	1	-	-	-
	California Polytechnic State University	2	2	1	1
CO	Colorado Forest Service	-	-	1	1
	Colorado State University	1	1	2	-
CT	Yale University	4	3	-	1
FL	University of Florida	1	1	-	-
GA	University of Georgia	10	13	7	3
	USDA-ARS / SE Watershed Research Lab.	-	5	2	-
HI	University of Hawaii / University of Idaho	8	-	-	-
	USDA FS Institute of Pacific Island Forestry	1	2	3	1
IA	Iowa State University	6	19	47	1
ID	University of Idaho	36	135	17	55
	USDA NRCS / Plant Materials Center	2	2	-	-
IL	Southern Illinois University	1	-	-	-
	University of Illinois	4	5	1	-
IN	Purdue University	1	4	1	2
KS	Kansas State University	1	5	1	-
LA	Louisiana State University	-	4	1	-
	Southern Univ and A&M College	3	6	1	1
MD	University of Maryland	-	4	2	6
MI	Michigan Tech University	2	-	-	-
	Michigan State University	-	3	-	-
MN	University of Minnesota	2	3	-	-
MO	University of Missouri	1	8	6	-
MS	Mississippi State University	-	2	-	-
MT	University of Montana	3	1	-	-
NC	North Carolina State University	4	-	-	-
	NC A&T State University	1	1	1	1
	USDA-FS Southern Research Station	-	1	-	2
ND	North Dakota State University	-	4	-	-
NE	University of Nebraska	7	23	13	-
	USDA / National Agroforestry Center	-	7	10	8
NM	New Mexico State University	2	2	-	1
NY	State University of New York	6	2	1	-
	Cornell University	3	4	5	2
OR	Oregon State University	2	5	2	3
PR	University of Puerto Rico	2	-	1	1
RI	University of Rhode Island	2	1	-	-
SD	South Dakota State University	-	2	-	1
	USFS Rocky Mtn. For. & Range Expt. Stn.	-	1	-	-
TX	Stephen F. Austin State University	3	3	1	-
	Texas A&M University	1	4	-	7
UT	Utah State University	1	-	1	-
VA	Springtree Agroforestry Project	-	1	-	-
	Virginia State University	-	-	4	1
VT	University of Vermont	1	-	-	-
	USFS NE Forest Experiment Station	-	1	-	-
VI	University of the Virgin Island	-	3	3	-
WA	University of Washington	-	-	1	-
WI	University of Wisconsin-Madison	3	1	1	1
WV	USDA-ARS Appal. Soil & Water Cons. Lab.	-	3	-	-
<b>TOTALS</b>		<b>132</b>	<b>308</b>	<b>138</b>	<b>104</b>

This table is based on number of activities, and does not accurately indicate the size of the overall program at an individual institution. See summary on pages 6-7.

## Survey on Agroforestry Technical Assistance

**Purpose:** This survey is being conducted by a USDA Agroforestry Task Force to determine the extent of agroforestry technical assistance that is being requested, and provided, at the field level. The Task Force will use your input to base recommendations on how USDA agencies and their partners can better cooperate on agroforestry.

**Definition:** Agroforestry is a combination of agriculture and forestry production and conservation technologies. Practices are windbreaks, riparian forest buffers, alley cropping, silvopasture, and forest farming.

**Instructions:** Please provide a short answer to each question. If you are unfamiliar with the practice, or don't know the answer, leave it blank.

**Please Return the Completed Survey** (within 2 weeks, if possible) to Richard Carman, USDA Forest Service, National Agroforestry Center, East Campus - UNL, Lincoln, NE 68583-0822. **An addressed return envelope is provided.** Completed surveys can also be faxed to 402-437-5712.

\*\*\*\*\*

**1. Which agroforestry practices are being applied in your state?**

- Windbreaks
- Riparian Forest Buffers
- Alley Cropping
- Silvopasture
- Forest Farming

**Comments:**

**2. What types of technical assistance are being requested and provided for these practices (i.e., planning, design and application, management)?**

**3. Who is providing agroforestry technical assistance in your state?**

- District Foresters
- District Conservationists
- Conservation District Technicians
- Other conservation agencies (please list below)
- Private organizations (please list below)
- Other \_\_\_\_\_

**Comments:**

**4. What incentive programs (federal, state, local, or private) are being used to assist the adoption of agroforestry practices in your state?**

**5. What do field specialists need (i.e., incentives, training, technical literature, technical guidelines, application tools, etc.) to adequately provide agroforestry technical assistance to landowners and work with stakeholders?**

\*\*\*\*\*

Respondent's Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Would you like us to send you some information on agroforestry and add your name to our mailing list? \_\_\_\_\_**

**Thank you for responding to the survey!**

## Agroforestry Technical Assistance Survey Responses

State	# sent	# responses	State	# sent	# responses
AK	5	1	AL	6	2
AR	6	2	AZ	4	1
CA	7	1	CO	5	2
CT	5	2	DC	3	1
DE	5	2	FL	4	1
FMS	2	1	GA	6	3
GU	4	1	HI	6	4
IA	4	4	ID	6	5
IL	6	4	IN	5	5
KS	5	2	KY	5	2
LA	7	3	MA	4	2
MD	4	1	ME	4	2
MI	6	4	MN	6	4
MO	5	4	MS	8	4
MT	6	2	NC	6	2
ND	5	3	NE	7	4
NH	7	3	NJ	5	4
NM	6	3	NV	4	4
NY	5	2	OH	5	3
OK	5	4	OR	6	1
PA	5	2	PR	5	2
RI	3	2	SC	5	4
SD	5	3	TN	5	2
TX	9	4	UT	5	2
VA	6	5	VI	3	0
VT	4	0	WA	9	3
WI	5	1	WV	4	3
WY	5	5	NASF	1	0
Is. Republics	3	0	Other TT	1	0

---