

Inside

Agroforestry



National Agroforestry Center



Fall, 1996

ASA Agroforestry Symposium a Big Success

There were a total of five agroforestry sessions at this year's American Society of Agronomy (ASA) meetings held November 3-8 in Indianapolis, Indiana: a temperate agroforestry symposium, temperate agroforestry poster papers, a tropical agroforestry symposium, tropical agroforestry poster papers, and agroforestry volunteer papers.

The temperate agroforestry symposium: *Agroforestry: An Integrated Science*, was focused on agroforestry in the United States. It consisted of eight invited papers covering the emergence and development of agroforestry in the US, overviews of the five basic types of agroforestry practices, and the economic and social factors that affect adoption. The proceedings will come out as an ASA special publication, and will provide a much-needed textbook and desk reference on agroforestry in America.

The ASA meetings are a good forum for agroforestry. The meetings bring together professionals from a broad range of disciplines, institutions, and agencies. Division A-8 is very supportive of agroforestry and hopefully this will lead to more involvement of the agricultural community in agroforestry science; and co-sponsorship of activities with Division A-6 (International Agronomy) provides a good opportunity to interact with the international agroforestry community.

We hope to continue to hold agroforestry sessions at future ASA meetings, with a more major effort in years alternating with the biennial North American Agroforestry Conference.

Make plans to attend the 5th North American Agroforestry Conference in Ithaca, New York August 3-6, 1997

New Agroforestry Training Course

The Natural Resources Conservation Service (NRCS), through its National Employee Development Center is developing an agroforestry course to be offered nationwide to NRCS personnel and conservation partners.

Agroforestry: A Conservation Planning Opportunity will provide an introduction to agroforestry including a discussion on the ecological, economical and sociological principles to consider in agroforestry planning and application. Each agroforestry practice will be discussed including design and application of alley cropping, forest farming, riparian

forest buffers, silvopasture, and windbreaks.

This training course is intended to provide field specialists with knowledge and tools to integrate agroforestry practices into farm plans and landscape systems to meet conservation, economic, and social objectives. Training is also expected to help students begin to develop a network to promote and apply agroforestry principles in their work area.

Members of the design team developing this course are from the National Agroforestry Center, University of

(See Training on page 7)



The design team plans a new in-service training course on "Agroforestry: A Conservation Planning Opportunity." The first course is tentatively scheduled for October, 1997.

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Message From the Manager

A commentary on the status of agroforestry as reported by Program Manager, Bill Rietveld

Train the Trainers

The theme of this issue of IA is agroforestry education and training. This includes both formal training at the university level and informal training provided by agencies and private contractors. The increase in training activities is a strong indicator that agroforestry is recognized and in demand.

According to a fall 1995 survey conducted by the Center in cooperation with Oregon State University, there are 29 universities in the United States that have an agroforestry program. The majority of programs offer an agroforestry specialization rather than a degree in agroforestry. Several agroforestry books are already in print, and others are in progress. A textbook/desk reference entitled: "Agroforestry: An Integrated Science and Practice," which will come out next year, is specifically focused on US agroforestry and presents agroforestry within an ecological systems context.

On-the-job agroforestry training is also increasing. Over the past several years, the USDA Natural Resources Conservation Service's "Windbreak Technology" course has trained over 1,000 field specialists. Now NRCS is developing a new course entitled: "Agroforestry: A Conservation Planning Opportunity,"

which will begin next year. In addition, Cooperative Extension specialists supported by the USDA Cooperative Research, Education, and Extension Service have delivered agroforestry workshops throughout the country, and agroforestry has been incorporated into several sustainable agriculture training programs.

Technical guidelines are available for several agroforestry practices, windbreaks and riparian forest buffers in particular. Field specialists are asking for, and are getting, training on how to incorporate agroforestry practices into conservation and production systems for farms, ranches, and communities. Next March there will be a USDA satellite broadcast on agroforestry practices and how to incorporate them into farm and watershed plans. A video will be produced from the broadcast, which will provide an additional tool for informal training.

The National Agroforestry Center has played a key role in developing many of these activities. No, we didn't do it ourselves — all of us did it. The Center acts as a catalyst to stimulate things to happen, and we are proud to see what you have accomplished. Your success is our success.

International Agroforestry Technology Exchange Program

Since agroforestry science is quite developed in foreign countries, the National Agroforestry Center, as well as anyone interested in agroforestry, can benefit substantially from international cooperation. Through a partnership with the US Agency for International Development, the National Agroforestry Center's International Technology Exchange Program functions to provide technical assistance and facilitate exchange between practitioners and scientists in the United States and overseas. Expertise is drawn from the Forest Service (FS) and the Natural Resources Conservation Service (NRCS) for technical assistance efforts. The program focuses on the conservation of natural resources, environmental enhancement, and supply of natural resource products from agroforestry systems to households in both rural and urban settings. Scientific information from USDA and other governmental departments serves as a

resource for program planning and information exchange.

The goals of the program are to advance the science and practice of agroforestry in the United States and targeted countries through technology exchange,

to contribute to sustainable development through training practitioners in application of agroforestry technologies, and to develop working partnerships with organizations involved in application of agroforestry technologies worldwide. The International Agroforestry Program supports

the missions of the NRCS, and the Forest Service. Liaison activities with the International Centre for Research in Agroforestry (ICRAF) located in Nairobi Kenya, one of the centers in the

(See International on page 6)



The Agroforestry Center regularly hosts visitors from other countries. Visitors take home information and techniques to apply to their country and NAC gains knowledge about different agroforestry techniques.

Agroforestry Education in the United States

by Larry E. Biles, National Program Leader, Forest Management
USDA Cooperative State Research, Education, and Extension Service
Washington, DC

Several meetings have been convened in recent years in an effort to consider the form and content of possible options for different education and training require-

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—Larry Biles

ments for agroforestry, what professional outlets there are, and how best to introduce and support such initiatives. Agroforestry has been accepted enthusiastically by educators, who see in its breadth and complexity an exciting field to explore with students from a wide variety of backgrounds; this in itself is both a challenge and a reason for caution.

Currently the operative words I find to describe agroforestry education and training in the United States are “woefully inadequate” or “wretchedly deficient,” but “desparately needed” and “in high demand.” With only a few natural resource colleges and universities across the nation providing “professional training” in the discipline, students at these universities, with an interest in agroforestry, are encouraged to pursue this interest by drawing on the interdisciplinary offerings of various departments with individually designed programs. Such programs usually offer one or two regularly scheduled courses covering a variety of social, economic, ecological, technical, and institutional information.

Non-formal, extension education, is only slightly better. Although non-formal education is offered by more educational institutions, relatively little of what

appears to be the application of agroforestry in the United States is deliberately planned or managed.

A general observation mentioned by several noted agroforestry writers is that most private landowners are not familiar with the term “agroforestry” although they may recognize many of the practices that fall within the definition. They, in essence, are applied researchers, “going it alone,” and applying their own definition(s) to the subject. Many, are also demonstrating financial success.

For resource professionals there is a shortage of continuing education courses and demonstration areas available for learning and viewing the plethora of agroforestry concepts being touted. Consequently, scientists have identified training of extension, agency, and technical personnel as a priority need in agroforestry. A better understanding of the potential benefits and limitations of agroforestry practices, and under what circumstances to recommend them to landowners is necessary.

In summary, education and training in agroforestry are needed for college students, natural resource professionals, and landowners. College-level course curricula which covers both theoretical and applied aspects of agroforestry needs to be developed and offered at more of the nation’s colleges and universities.

Continuing education courses for resource professionals must follow. This will likely prompt guides to agroforestry information sources, resource packets for libraries and extension offices, and computerized “expert” systems for landowners and public agency advisors. Beyond printed information, is the development of on-farm demonstrations sites.

The growing demand for scientists, practitioners, and development specialists trained in agroforestry has encouraged universities around the world to develop agroforestry curricula. In the United States, this pressure first came from the inter-

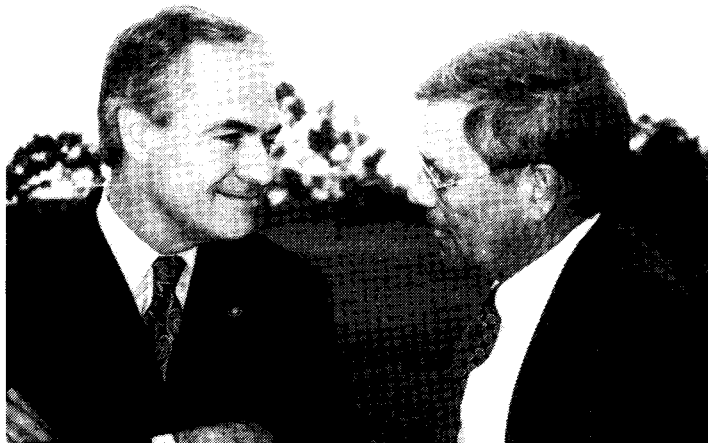
national development community, but students now demonstrate considerable interest in the domestic application of agroforestry as an approach to sustainable agriculture. An agroforestry curricula has been evolving at Cornell University that, according to Jim Lassoie, Chair of the Department of Natural Resources, typifies a process common to other institutions in developed countries. Starting first as a seminar for graduate students in 1985, agroforestry was discussed based on the experience of the participants. By the early 1990’s the demand from students without experience in agroforestry, including undergraduates, drove us to add a senior-level, ‘theories and practice’ course.

Agroforestry, in the United States, in its purest sense, is still young. Consequently, the application potential for agroforestry faces an interesting dichotomy. On the one hand, the application of agroforestry is dependent upon marketing the concepts. On the other hand the marketing of agroforestry is dependent upon the successful application of scientific principles. Striking a balance between these two variables will largely dictate the future of agroforestry practice in America.



Participants at a workshop on soil bioengineering take streambank slope measurements.

One Man, A Driving Force in Agroforestry Education



State Representative Phil Tate (L) and Gene Garrett (R) announce the Missouri Agroforestry Cost-Share Program for landowners.

Editor's Note: Strong leaders and knowledgeable educators are a driving force in the growth of agroforestry. Dr. Gene Garrett's efforts to educate landowner's and put agroforestry practices to work, must be commended.

He has been affectionately referred to as the "Father of U.S. Agroforestry." His leadership has introduced a new world of profitable conservation to landowners across the nation. As an educator, forester, and pioneer of the agroforestry movement in the United States, Dr. Gene Garrett has earned respect.

For over twenty years, Gene has helped open doors to landowners by teaching them how agroforestry can benefit them economically as well as environmentally.

"Multi-cropping" was the term used in the early 1970's, to describe the practice of combining agriculture with forestry. Agroforestry, or "working trees" as we call it today, isn't a new idea; it has been practiced in the tropics for many years. But trying to convince American landowners that trees and farming can work together, has been, and continues to be, a challenge.

"Most people's first thoughts are that agriculture and forestry just don't mix," Garrett said. "For generations, landowners have been trying to remove trees from their farmland. And, for that matter, foresters have been telling landowners to keep livestock away from their trees."

When Hammons Products Co. in Stockton, Mo., a leading producer and processor of black walnuts, began to blend crops and trees together on their farm, capturing both production and conservation benefits, Garrett saw an opportunity to help legitimize agroforestry's claim. Garrett and Jim Jones, who is now vice-president of Hammons began working together and were able to integrate ideas from both university and industry levels.

As alley cropping practices were put to work on the farm, awareness of agroforestry began to increase. The difficulty seemed to be getting word out to landowners. Hammons 400+ acres became the first major demonstration plot for agroforestry alley cropping practices, used to directly educate landowners who were reluctant to make such an investment in trees while "sacrificing" some of their cropland. Landowners, however, needed more than simple proof of the benefits. They wanted incentives.

As luck would have it, Garrett received a call from Kit Bond,

Senator for Missouri. After seeing the Hammons plantation, Bond was sure he had just got a glimpse of "the forestry of the future" and was ready to get directly involved. As a result, agroforestry was included in the 1990 Farm Bill, offering cost-share funds to landowners to encourage them to incorporate agroforestry practices onto their land.

Still, landowners were not adopting agroforestry to the extent that Garrett and his colleagues hoped. "Typically, professionals were helping CRP landowners with the one thing they knew - grass," Garrett said. "If Federal employees at the district level don't understand agroforestry practices, they can't promote them."

It then became obvious, after 15 years in the trenches, that agroforestry needed leadership from the USDA. Federal professionals had to get out and work directly with the landowners."

Eventually, this movement led the way for greater development and a stronger role for the USDA. The National Agroforestry Center which was authorized in the 1990 Farm Bill to serve as a catalyst to promote agroforestry.

In addition to Garrett's work with Hammons Products and the University of Missouri, he has been a major contributor, along with Jones, to a bi-ennial agroforestry landowner workshop in Missouri. For over 15 years, landowners and forestry professionals have attended these workshops, many returning several times. "Landowners are coming back and teaching us about the practices they've used. Now we're learning from the user," Garrett said. "Landowners continue to advance the learning curve."

Garrett continues to promote agroforestry. His most recent educational project is the development of an agroforestry farm near the University of Missouri called the Horticulture and Agroforestry Research Center. Found on the farm is the historic "Hickman House" that was built in 1819 and will provide a historic look back at the land and how it was used, as well as draw people onto the farm. But more importantly, the Center will have an example of every form of agroforestry. The 540 acres will include everything from forest farming to silvopastoral rotational grazing. Garrett intends for the home to draw people onto the farm by its beauty and historic appeal, and once they're there, "show off" agroforestry. "'Show and tell' is the best way to teach agroforestry," Garrett said. "Create the proper environment and bring the landowner in."

Dr. Garrett's thirst for knowledge and his desire to spread the word about the financial and environmental benefits of agroforestry, has been the focus of his career. Therefore, actually seeing landowners putting trees to work, is the mark of success.

Landowners have already begun to experiment with innovative agroforestry ideas - proof that Garrett's goals are beginning to be attained. He believes in a quote he once read. "Agroforestry is user-oriented. Because of this, sooner or later, it has to become user-driven."

"We have done an adequate job in preparing the road for the future, but at some point, the user must take over," Garrett said. "This behooves us to make sure that the landowner is directly involved in the process. We become facilitators or initiators, but the user drives the system."

Meet NAC's Technology Transfer Staff

Jim Robinson is a NRCS Agroforester located in Fort Worth, Texas. Jim has been employed by NRCS for 27 years. His specialty areas include: alley cropping, riparian forest buffers, and silvopastoral systems. He is the southeast regional contact for NAC.

Bill Rietveld, Center Director, is located in Lincoln. Bill has been with the Forest Service for 31 years. His areas of specialty include: black walnut and short rotation woody crop establishment and management. He also has experience with all types of agroforestry practices and their integration.

Jerry Bratton is the FS Lead Agroforester located at the Center in Lincoln. Jerry has 23 years of experience in hardwood management in Kansas before coming to the Center in 1990. Jerry's special interests are: hardwood management and riparian zone management. He is the northern plains regional contact for NAC.

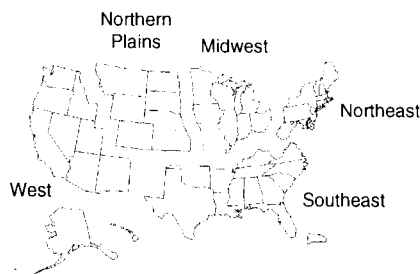
Gary Kuhn is a NRCS Agroforester located in Seattle, Washington. He has 16 years of experience as an NRCS Forester. His areas of expertise include: windbreaks and living snowfences, riparian buffers, and agroforestry applications of hybrid poplar. Gary is the western regional contact for the Center.



NAC Technology Transfer Staff. Left to Right: Back row: Gary Kuhn, Jim Robinson, Bill Rietveld, Jerry Bratton, Bruce Wight. Front row: Clover Shelton, Kim Isaacson.

Bruce Wight serves as the Lead Agroforester for NRCS and is located at the Center in Lincoln. Bruce has worked for NRCS for 24 years. His areas of expertise include: alley cropping, forest farming, and windbreaks. Bruce is both the mid-west and northeast regional contact for NAC.

Clover Shelton recently joined the Technology Transfer Staff as Technology Transfer Assistant. Clover assists the TT Staff with a variety of technology transfer activities including slide presentations and writing and designing material for the Center.



Kim Isaacson is a Technology Transfer Specialist at the Center in Lincoln. Kim has worked for the Center for four years and works with the TT staff in coordinating public affairs activities and producing materials for the Center.

The Center's Technology Transfer & Applications (TT&A) Program is sponsored by the USDA Forest Service, State & Private Forestry and the USDA Natural Resources Conservation Service. Its purpose is to serve as a contact point, clearinghouse, and catalyst to accelerate the development, application, and acceptance of agroforestry technologies for America's farms, ranches, and communities.

To carry out this national responsibility, the TT&A Program works with a

nationwide network of partners and cooperators to develop technical and educational information, media, guidelines, tools, and projects.

Our customers are natural resource professionals in federal and state agencies, who, in turn, deliver natural resource education, technical assistance, and incentive programs to landowners.

Through cooperation, teamwork, and networking our goal is to develop the full potential of agroforestry to help attain

more productive, profitable, environmentally-sound, resilient, and diverse rural enterprises and communities.

Some of NAC's technology transfer activities include our quarterly newsletter *Inside Agroforestry*; a technical note series *Agroforestry Notes*; conferences and workshops; technical support; demonstrations; applications projects; assessments; a variety of special projects; and a variety of informational brochures and tools.

USDA Satellite Broadcast and Agroforestry Video

A USDA satellite broadcast on agroforestry is being planned for March 1997. The broadcast will be targeted to field professionals, to provide information on the different types of agroforestry practices and how to incorporate them into conservation and production systems for farms, ranches, and communities. A planning team has been established to design the broadcast.

The program will be broadcast from the USDA studio in Washington, DC. Local groups who wish to receive the broadcast need to make advance arrangements for a local downlink.

The broadcast will also produce a much-needed agroforestry video. The video will be an edited version of the broadcast, and will be available at a later date. We will provide more details in the next issue of *Inside Agroforestry*.

In Praise of Ash

Beechwood fires are bright and clear
If the logs are kept a year
Chestnut only good, they say,
If for long 'tis laid away.
But ash new or ash old
Is fit for queen with crown of gold.

Birch and fir logs burn too fast.
Blaze up bright and do not last.
It is by the Irish said
Hawthorn bakes the sweetest bread.
Elm wood burns like churchyard mold,
E'en the very flames are cold.
But ash green or ash brown
Is fit for queen with golden crown.

Poplar gives a bitter smoke,
Fills your eyes and makes you choke.
Apple wood will scent your room
With an incense like perfume.
Oaken logs if dry and old,
Keep away the winter's cold
But ash wet or ash dry
A king shall warm his slippers by.

Crane, C.E. 1941. Winter in Vermont. Alfred A. Knopf, Inc., New York, NY

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**Working Trees for
Communities** brochure
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*Working Trees for
Communities* shows
how agroforestry
technologies can help make
community environments
more sustainable.

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a sample, or a supply
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Clover ext. 14

(International from page 2)

Consultative Group for International Agricultural Research centers, provide access to a network of natural resource professionals engaged in agroforestry research and training all over the world.

Since it's beginning early in 1996, the program has linked Forest Service personnel with collaborator organizations in Mexico and helped secure funds to pursue socio-economic research in Mexican states on the Yucatan peninsula. The Center's program coordinator, Sarah Workman, has lead a team in an evaluation of the Agroforestry Research Network program in Uganda and will be helping design agroforestry training for forestry officers working in the Albania Private Forestry Development Program. The training modules to be proposed for work in Albania will closely follow those that are scheduled to be provided to NRCS personnel beginning in the near future. The training also has potential to be extended to training others pursuing work in natural resource fields such as Peace Corps volunteers.

Future activities envisioned for the International Program include pursuit of funds to support graduate reaseach education in collaboration with ICRAF and the African Network for Agroforestry Education; promotion of silvopastoral research and technical assistance; interaction with organizations in Latin America and promotion of agroforestry through the publication *Revista Agroforesteria de las Americas*; and increased involvement with non-governmental organizations.

Continual advances are being made in temperate and tropical agroforestry systems. The wealth of knowledge that is being accumulated about traditional farming practices that have incorporated tree species, adaptations and modifications in existing farming systems, and methods of integrated farming to provide for sustained culture of food products is increasing at phenomenal rates. The International Agroforestry Program is one link in the chain for promotion and utilization of understandings gained through these advances.

(Training from page 1)

Missouri, Cornell University, and NRCS technical and field staff. Conservation partners from several other universities and agencies are assisting with the development of particular lesson plans.

Personnel from NRCS, USFS, conservation districts, extension, state forestry, and other conservation agencies or organizations are expected to benefit from the course. Each student will receive a text book and student handbook.

Plans are to present a pilot course in October 1997 and after evaluation and adjustments make this course available throughout the United States as requested by NRCS and conservation partners.

Some of the topics from the proposed course outline include:

- I *Introduction to Agroforestry* (context, definition, historical background, and general discussion of major agroforestry categories)
 - II *Principles to consider in agroforestry* (ecological, economical, and sociological).
 - III *General overview of agroforestry practices* (alley cropping, forest farming, riparian forest buffers, silvopasture, windbreaks). Each agroforestry practice module will include: design and description, benefits, biological and environmental characteristics, liabilities, (perceived and real), special considerations, farm-level and landscape-level applications.
 - IV *Integrating agroforestry into the landscape* (relationships with on-farm activities, landscapes, and natural resources). Included in this segment will be a field exercise with on-site inventory and development of alternative agroforestry systems.
 - V *The future of agroforestry*
 - VI *Making agroforestry work in your area* (network building, where to get help, influencing others, available resources, and outreach to the public).
- Plan now to put *Agroforestry: A Conservation Planning Opportunity* into your next training plan. Ask your NRCS State Conservationist about the possibility of hosting a course in your state.

Watch *IA* for more information on the upcoming Agroforestry Satellite Broadcast

Agroforestry Education and Training Institutions in the United States

- California Polytechnic State University, San Luis, Obispo, California
- Cornell University, Ithaca, New York
- Florida A&M University, Tallahassee, Florida
- Humboldt State University, Arcata, California
- Iowa State University, Ames, Iowa
- Kansas State University, Manhattan, Kansas
- Michigan State University, East Lansing, Michigan
- Michigan Technological University, Houghton, Michigan
- North Carolina State University, Raleigh, North Carolina
- Oregon State University, Corvallis, Oregon
- Purdue University, West Lafayette, Indiana
- Southern Illinois University, Carbondale, Illinois
- State University of New York, Syracuse, New York
- Texas A&M University, Centre for Semi-Arid Forest Resources, Texas A&M University, College Station, Texas
- University of California, Berkeley, California
- University of Florida, Gainesville, Florida
- University of Hawaii at Manoa, Hawaii
- University of Idaho, Moscow, Idaho
- University of Illinois, Urbana, Illinois
- University of Minnesota, St. Paul, Minnesota
- University of Missouri, Columbia, Missouri
- University of Montana, Missoula, Montana
- University of Nebraska, Lincoln, Nebraska
- USDA Forest Service, Institute of Pacific Islands, Hawaii
- USDA Forest Service, USDA Natural Resources Conservation Service National Agroforestry Center, Lincoln, Nebraska
- Utah State University, Logan, Utah
- Virginia Polytechnic Institute and State University, Blacksburg, Virginia
- Washington State University, Pullman, Washington
- Yale University, New Haven, Connecticut

Information is taken from the *Directory of Agroforestry Education and Training Institutions in the United States* compiled in October, 1995 by Badege Bishaw, PhD, Research Associate for the Department of Forest Science, Oregon State University, Corvallis in cooperation with the National Agroforestry Center.

This directory is available from the National Agroforestry Center if you're interested in more detailed information about each institution's program. The directory includes a comprehensive summary of all institutions, a contact person, and respective agroforestry education and training programs. Call Clover Shelton at the Center for a copy, 402-437-5178, ext. 14.