The Temperate Agroforester

The newsletter of the Association For Temperate Agroforestry

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MISSION STATEMENT

The mission of AFTA is to advance the knowledge and application of agroforestry as an integrated land use approach to simultaneously meet economic, social and environmental needs. AFTA focuses on temperate agroforestry, with an emphasis on North America. Agroforestry draws upon, and synthesizes, ideas and techniques from agriculture, forestry, range management, environmental and social sciences. To foster integrated land management, the association intends to bridge existing gaps between these land use disciplines and organizations.

Goal

AFTA's goal is to catalyze technical innovation and adoption of agroforestry in the temperate zone through networking, information exchange, public education, and policy dialogue and development.

Objectives

- Develop a temperate-zone network of agroforestry practitioners, technical specialists, and researchers, through a newsletter, membership directory, and other information services.
- Promote applied interdisciplinary research to develop and test new or improved agroforestry technologies.
- Promote a policy environment conducive to agroforestry adoption.
- Sponsor a biennial North American conference on temperate agroforestry for practitioners, researchers and policymakers, as well as other meetings on regional and topical issues.
- Promote public awareness and education about agroforestry.

EDITORIAL

Dr. Michael A. Gold - President

In the coming months, AFTA will be undertaking two major agroforestry studies in our efforts to continue to move agroforestry forward on national scene. AFTA will develop a report on national agroforestry research, technology transfer, and educational needs and priorities; and also will work to help develop a framework for establishing regional agroforestry associations under the umbrella of AFTA. The regional associations are intended to provide a structured forum for agroforestry practitioners and scientists to communicate ideas and coordinate activities, work with other interest groups, and develop activities that address regional needs.

AFTA has been working to develop a concise policy statement to coincide with the reworking of the 1995 Farm Bill. In March, 1995, AFTA completed and released a policy paper outlining national needs that can be addressed through agroforestry "Agroforestry: Blending Agriculture and Forestry Production and Conservation Practices." Needs include (in no special order of priority): (1) rural economic development; (2) field and landscape buffer zones; (3) land retirement programs; (4) integrated production systems; and (5) resolving rural/urban interface conflicts. Recommended policy actions are: (1) USDA leadership and coordination; (2) research and development; (3) technology transfer and application; and (4) technical assistance and landowner incentives. This document reflects the combined effort of an alliance representing forestry, agronomy, range, agroforestry, conservation, and sustainable agriculture organizations. The text of the policy paper is reprinted within this issue of the Temperate Agroforester and separate copies can be obtained from Dr. Gene Garrett at the University of Missouri.

What can you do as a member of AFTA? Contact your congressman or senator and encourage him or her to support the AFTA policy recommendations in order to energize and promote the use of agroforestry in the U.S.

Currently, AFTA, NRCS, the National Agroforestry Center staff, and many others are actively working to increase interest in the establishment and integration of trees in agroforestry land use systems, and that, in and of itself is a challenge in a society with a tradition of land use separation (woodlots, feedlots, crop or orchard monocultures). However, we must learn from the experiences of others and should attempt to benefit from lessons learned by others with more years of experience with temperate agroforestry. The piece **"AGROFORESTRY: WORDS OF WISDOM AND WARNING FROM DOWN UNDER" by Rowan Reid** (found on page 9-10), presents some timely warnings that we must heed to find success in temperate agroforestry here in the U.S. and Canada.

It is not enough simply to get the trees into the ground, at this point our job has only begun. Consequently, we need to begin to collect and compile detailed and up-to-the-minute market data on the types and value of products that can be derived from agroforestry plantings. Market opportunities will vary locally, regionally nationally and internationally. In order to make realistic financial decisions vis a vis use of agroforestry practices, the bottom line, whether + or -, should and

will guide the actions of many who might commit to practicing agroforestry.

REMINDER: Please pay your AFTA dues for 1995 if you wish to continue to be a member of AFTA, receive this newsletter and other relevant publications. Show your continued support for temperate agroforestry.

REMINDER: The Fourth North American Agroforestry Conference, *Growing a Sustainable Future*, will be held in Boise, Idaho, from July 23-26, 1995. Approximately 75 oral presentations are planned for the conference. If you sent in a response to the conference announcement, you will be receiving registration information in the near future. The primary contact persons are:
Program Chair, Dr. Harry Lee, Dept. of Forestry, University of Idaho. Phone: 208-885-6900 (office); (208) 882-2114 (evenings).
Conference Organizer, Dr. John Ehrenreich, Dept. of Forestry, University of Idaho. Phone: 208-885-7600, Fax: 208-885-6226.
Local Arrangements Coordinator, Gary Kuhn, State Forester, Natural Resource Conservation Service (NRCS). Phone: 208-334-1336.

GUEST EDITORIAL

AFTA GOES WEST

Dr. Linda Hardesty - Washington State University

At last we are meeting as a group in the inland northwest, perhaps a new region for some of you and a chance for us to learn from your observations, questions and insights. And isn't that what a conference is all about? So what is different in the inland northwest?

Both our landscapes and institutions are younger than many in North America. As a frontier we developed an economy based on extraction of natural resources. In many areas, that economy, though imperiled, still exists and has come into conflict with society's evolving environmental consciousness and the desire of many to preserve the west as a playground for the nation. The high percentage of federal lands in the western states makes them more subject than some to political winds. In terms of population, our states are among the fastest growing in the nation. And so we struggle with controversies such as proposed restrictions on both public and private land uses that might further endanger salmon habitat, we have communities disintegrating over loss of jobs in the timber industry while immigrants from wealthier regions bring both their buying power and values into the fray. We are in a period of demographic and economic transition and are searching for ways to keep the best of our heritage and transform our problems into the foundation of a sustainable and desirable future.

Where does agroforestry fit into this big picture? In my biased view, everywhere! Properly designed agroforestry systems can help protect our water and our bankbooks by reducing soil erosion on croplands, rangelands and forests. Trees can improve the quality of life in growing communities. Agroforestry may provide more sustainable ways to produce both the goods and services we need. But a subtler contribution may be the integrative nature of agroforestry. Resource use conflicts thrive on divisions: ownership boundaries, single purpose land uses and single product economies. Now we need to learn to live on synergy and agroforestry offers many examples: biological, economic and cultural. All of us here in the inland northwest are excited about welcoming you to Boise and getting down to the business of pooling our insights, experiences, philosophies and dreams.

PARTING WORDS

Christof den Biggelaar -- (Past Editor, The Temperate Agroforester) International Center For Research in Agroforestry (ICRAF), Nairobi, Kenya

For the past two years, I served as your AFTA Newsletter editor. The initial steps towards a newsletter were set before I left to do my dissertation field research in Rwanda in 1992, but we (Michael Gold and myself) really did not get the first issue out until my return from the field in January 1993. I guess one always underestimates the amount of work that goes into such an undertaking: finding newsworthy items, choosing a format, fiddling with the layout while keeping your frustrations with software bugs and quirks under control, setting up your mailing list, finding the cheapest way to print and mail the newsletter, etc. During the two year period, we published 4 issues of the newsletter. With an increasing interest in temperate agroforestry as reflected in a growing number of conferences, workshops and seminars on the topic in Europe, North and South America, Australia and New Zealand, China, etc., the newsletter also expanded in size and was send to an ever increasing membership. It is an encouraging trend that farmers, researchers and policy makers are (re)discovering agroforestry as viable land use systems for the temperate zone.

In March 1994, I completed and successfully defended my dissertation with the terrific guidance of Michael Gold, my advisor and dissertation supervisor. Since January this year, I have returned to Africa, this time to Kenya. My spouse is working as a Rockefeller Postdoctoral Fellow at ICRAF in the East African Highlands Initiative for a two-year period. Since April 1, ICRAF has hired me as a consultant to study research-extension-farmer linkages at one of their sites in Kenya (Embu District, on the southern slopes of Mt. Kenya).

ICRAF has asked me to develop a model for inter-institutional collaboration to facilitate the development and adoption of agroforestry technologies in the district. While research and extension systems in other parts of the world are quite different from those in Kenya, I hope the experience I gain may be helpful for the development of temperate agroforestry systems. Perhaps even more so than in Kenya or Africa in

general, a collaborative effort by researchers, extension and farmers will be necessary to develop successful agroforestry technologies in the temperate zones.

I regret that I will not be able to attend the Fourth North American Agroforestry Conference. The travel costs are a bit too high for me, especially as I will be travelling to Tampere, Finland a few weeks later to present a paper at the IUFRO Conference. But perhaps I will see some of you in Tampere. Meanwhile, I wish you all a successful conference in Boise and also hope that you can make progress in establishing AFTA as a formal association. Being a member of a new and growing association and being its newsletter editor has been exciting and a learning experience. I hope to continue my active involvement in AFTA upon my return from Kenya in 1997, as I do believe that AFTA has an important role to play in the development and promotion of agroforestry as a sustainable alternative for temperate agriculture to go forward into the future.

AGROFORESTRY POLICY STATEMENT -- EXECUTIVE SUMMARY

Agroforestry: Blending Agriculture and Forestry Production and Conservation Practices

Agroforestry is the intentional blending of agriculture and forestry production and conservation practices. Such integrated systems bridge production agriculture and natural resource conservation with environmental protection and human needs.

Agroforestry practices include riparian buffer systems, streambank bioengineering, tree/pasture systems, tree/specialty crop systems, windbreaks and shelterbelts, wildlife habitat, living terraces, alley cropping, and forest farming.

Benefits of Agroforestry:

Benefits are increased crop production, alternative crops and diversified local economies, improved water quality, soil erosion and sediment control, filtering and biodegrading excess nutrients and pesticides, reduced flood damage, microclimate moderation, and diversified habitats for wildlife and humans. Key outcomes include:

•Viable alternatives to more onerous and costly regulatory approaches to address societal environmental concerns such as soil erosion, water quality, and biodiversity.

•Diverse, resilient, and sustainable farm enterprises and rural communities.

National Needs Addressed Through Agroforestry:

•Rural Economic Development.
Agroforestry practices should be used to develop new economic enterprises to supplement and diversify farm incomes and enhance local economies.

•Field and Landscape Buffer Zones.
Agroforestry buffer zones should be used to maintain water quality, limit flood damage, enhance biodiversity, provide wildlife corridors, and enhance aesthetic values at field, watershed, and landscape scales. A concerted effort is needed to restore or replace aging and declining windbreaks.

•Land Retirement Programs.
More emphasis should be placed on agroforestry practices to attain multiple and long-term benefits in Conservation Compliance, Conservation Reserve Program, Wetlands Reserve Program, and the Clean Water Act.

•Integrated Production Systems.
More emphasis should be placed on integrated tree/crop/livestock farming systems to optimize economic production and environmental protection.

•Resolving Rural/Urban Interface Conflicts.
Agroforestry technologies should be used to address rural/urban land use conflicts and the problems stemming from both urbanization and farming practices. Problems addressed include: stormwater runoff; lack of greenspace; streambank erosion and sedimentation; municipal wastewater and sludge disposal; confined livestock waste; and control of wind, noise, odors, dust and snow.

Policy Actions Needed:

•USDA Leadership and Coordination.
The Secretary of Agriculture should provide national leadership to catalyze cooperation, synergy, and partnerships among federal, state, and private interests to advance the science and practice of agroforestry.

•Research and Development.
To achieve the potential of the emerging science and practice of agroforestry, emphasis must be placed on interdisciplinary technology development and applications through a needs-driven program of basic and applied research.

• Technology Transfer and Application.
A focused technology transfer effort is required to develop understanding, acceptance, and broader use of agroforestry technologies. Application of appropriate technologies needs to be supported by analyses of alternative land-uses in relation to markets and landowner acceptance.

•Technical Assistance and Landowner Incentives.
More emphasis is needed on interdisciplinary watershed-level diagnosis, planning, and program delivery to achieve natural resource conservation. Technical assistance and incentives should be targeted to attain cost-effective watershed-scale goals. Technical assistance providers need to be trained in new and integrated conservation technologies.

The following "Issue Papers" were written to provide background to the Executive Summary

RURAL ECONOMIC DEVELOPMENT

Agroforestry practices integrated into existing agricultural land-use systems provide multiple crops and services to supplement and diversify farm income.

Examples of products from managed tree/crop systems include lumber and veneer logs, fuelwood, nursery stock, Christmas trees, nuts, fruits, and foliage. Specialty crops grown with the microclimate protection of trees include herbs, flowers, fruits, and vegetables. Forest farming specialty crops include ginseng, mushrooms, and foliage.

Agroforestry adds economic diversity to an agricultural system. It provides a landowner with the opportunity to develop a portfolio of short- and long-term investments to spread economic risk through diversification. For portions of farms that are unsuitable for annual crop production, woodlots and strip plantings provide an alternative productive land use. For example, wooded riparian corridors and "timberbelts" can produce sawlogs, wildlife, and recreational opportunities, while ensuring resource conservation.

Recent sharp increases in prices paid for trees from private lands has heightened interest in forest stewardship. But many landowners are unsure how to capitalize on the potential for generating income from trees. Agroforestry provides a way to plan for the future while meeting the needs of the present. By integrating agroforestry practices into the farming system, trees meet multiple economic, conservation, and social needs. The design and level of management must be tailored to meet each landowner's objectives.

Policy Actions Needed:

•Establish sustainable economic uses of CRP lands, e.g., hay and grazing enterprises, high-value tree crops, tree products (nuts, foliage, etc), Christmas trees, woodlands, biomass, and tourism/recreation enterprises. Conversion should require a management plan and managed harvesting. Allow a 10-year contract extension if existing cover on CRP lands is converted to alternative managed economic use. Provide additional cost-share for tree planting on existing high priority CRP lands, in combination with contract extensions or easements.

•Focus Small Business Administration grants to develop landowner enterprises and local/regional markets based on agroforestry systems that provide alternative sources of farm income. SBA support should be linked to technical assistance and cost-share programs delivered by other agencies.

FIELD AND LANDSCAPE BUFFER ZONES

The 1993 NRC report entitled: "Soil and Water Quality: An Agenda for Agriculture" recommends greater use of buffer zones. Agroforestry systems are the most appropriate means to attain the desired buffer zones.

Buffer zones should be part of the infrastructure of agricultural production systems. Their functions are to: (1) provide protection from environmental extremes; (2) reduce storm water runoff, (3) trap, filter, break down, and consume sediments and excess nutrients, fertilizers, pesticides, and animal wastes in runoff water; (4) enhance landscape- and bio-diversity, and (5) provide numerous environmental and social benefits.

Examples include windbreaks, shelterbelts, riparian buffer systems, living snowfences, contour hedgerows, and wildlife habitat plantings.

A Win-Win Situation

Agriculture-derived contaminants are the Nation's number one source of water quality impairment. Producers talk of being proactive in order to avoid regulation, but they need to act. The public needs to share the responsibility and cost. Establishing buffer zones are a way to work together to create a safety net, used in combination with judicious application of farm chemicals and fertilizers, to minimize the impacts of agricultural nonpoint source pollution.

Riparian Buffer Strips are Urgently Needed

There are 737,000 miles of streambank nationally without woody riparian vegetation. These aquatic environments are unprotected from adjacent land uses. Alternatively, riparian buffer strips are capable of removing 80% of the sediment and chemical contaminants in surface and shallow groundwater. Buffer strips also hold water during peak flows, reduce bank cutting, and enhance aquatic environments.

Windbreak Establishment and Renovation are Needed

The existing 175,000 miles of windbreaks are at a steady-state level, but 75% need renovation to maintain their health and function. A concerted effort is needed to restore or replace aging and declining windbreaks and establish new ones. The beneficial effects of windbreaks on soil retention and crop yields are well documented in over 80 studies.

Management is Needed

Trees are an effective sequestering system to remove excess nutrients and carbon dioxide and store them on-site in the form of wood. Partial tree harvesting in buffer zones is necessary to clean the "bio-filter", remove valuable products, and maintain their long-term effectiveness.

LAND RETIREMENT PROGRAMS

More emphasis should be placed on multiple and long-term benefits in the Conservation Reserve Program, Wetlands Reserve Program, and other land retirement and conservation programs. In CRP, most of the enrolled lands are planted to grass cover that can easily be plowed, whereas in the Soil Bank Program 80% of the trees planted are still at work today. Trees have staying power and provide multiple benefits.

Policy Actions Needed in CRP:

•Seek contracts that optimize a mix of conservation benefits, e.g., soil erosion, water quality, and wildlife benefits. Bids should continue to be ranked through the use of an Environmental Benefits Index (EBI), as initiated after the 1990 Farm Bill.

•More focus is needed on partial field conservation practices and other practices in priority areas with high environmental pay-offs, including riparian buffer systems streambank bioengineering, windbreaks, living terraces (contour hedgerows), wellhead protection zones, and wildlife habitat.

•Convert CRP to a long-term protection program by using long-term easements to protect only the most environmentally sensitive agricultural lands. The cost-benefits are low for continuing enrollment of lands in Land Capability Classes I-III (about 60% of the current enrollment). These productive lands should be allowed to be returned to cropping under Conservation Compliance.

•Special consideration should be given to enrollment offers that incorporate multiple resource protection objectives, cooperative bids submitted by landowners with adjoining parcels, and practices that increase the effectiveness of other conservation practices. Joint bids linking across farms provide opportunities for enhanced environmental benefits at the watershed and landscape levels, for example, extending riparian buffer strips along a greater number of stream or lakeshore miles.

•Establish sustainable economic uses of CRP lands, e.g., hay and grazing enterprises, high-value tree crops, tree products (nuts, foliage, etc), Christmas trees, woodlands, biomass, and tourism/recreation enterprises. Conversion should require a management plan and managed harvesting. Allow a 10-year contract extension if existing cover on CRP lands is converted to alternative managed economic use. Provide additional cost-share for tree planting on existing high priority CRP lands, in combination with contract extensions or easements.

•Allow CRP land to be used as set-aside acres.

INTEGRATED PRODUCTION SYSTEMS

More emphasis should be placed on integrated tree/crop/livestock farming systems that optimize economic production and environmental protection. Integrating tree, crop, and livestock production provides a means to expand and optimize farm products and income, while at the same time establish more sustainable systems.

Examples include silvopastoral systems, livestock windbreaks, living fences, livestock havens, buffer systems for confined livestock, alley cropping, tree/specialty crop systems, and forest/specialty crop systems.

Benefits accrue to animals, crops, ecosystems, and farmer income. Examples include livestock protection from environmental extremes, increased forage production, lower feed costs, increased survival of newborns, increased milk and wool production, alternative high-value crops, diversified income, buffering of pollutants in runoff water, and more sustainable production systems.

Tree/Livestock Systems

Silvopastoral systems (scattered trees in pastures) increase forage and animal production. Living fences separate pastures and provide both animal protection and tree products. Livestock windbreaks protect confined livestock in the farmstead, reducing feed costs. Clusters of trees in open ranges provide shelter from environmental extremes, especially during spring calving. Tree/shrub/grass buffer systems located between confined livestock operations and surface water help maintain water quality and convert excess nutrients into valuable tree products.

Tree/Crop Systems

Alley cropping is strips of trees or shrubs with crops grown in the alleys between the strips. Agricultural crops grown between tree/shrub rows provides annual income from the land during the early years while the longer-term nut or wood crop is establishing itself. In tree/specialty crop systems, the microclimate protection of trees enables the production of sensitive high-value crops in arduous environments, for example windbreak systems protecting herbs, fruits, vegetables, nursery stock, or flowers.

Forest/Crop Systems

Forest farming is managed systems where a high-value crop is grown under an existing forest overstory. Examples include ginseng, shiitake mushrooms, and certain foliage plants. These systems are distinguished from forest products in that the systems are intentionally established and intensively managed.

RESOLVING RURAL/URBAN INTERFACE CONFLICTS

Agroforestry technologies should be utilized to address rural/urban land-use conflicts and the problems stemming from both urbanization and farming practices. Problems addressed include: stormwater runoff; lack of greenspace; streambank erosion and sedimentation; municipal wastewater and sludge disposal; confined livestock waste; and control of wind, noise, odors, dust, and snow.

Appropriate technologies include streambank bioengineering, riparian buffer systems, living terraces, windbreaks to protect fields and screen confined livestock, living snowfences, tree/specialty crop systems, and wildlife habitat enhancement.

A Win-Win Situation

Land-use conflicts are particularly acute at the rural/urban interface, and problems are shared by both rural and urban populations. Soil and Water Conservation Districts and State Conservation Agencies need to be more responsive to divergent rural/urban priorities. Agroforestry technologies can resolve the environmental

conflicts between rural and urban land-uses, and at the same time establish stable, diverse, and aesthetic systems. Opportunities exist to establish new tree/specialty crop enterprises adjacent to urban markets. Tree planting in interface zones and urban watersheds provides an excellent opportunity to involve volunteer groups from both rural and urban areas to work together to achieve environmental protection goals.

More Bio-Engineering is Needed
*Treatment strategies need to go beyond constructed structures, such as channelization and floodwater impoundments. Integrating agroforestry technologies into farms, watersheds, and landscapes establishes a "green infrastructure" that protects system components, buffers environmental impacts, and retards stormwater runoff. Examples include streambank bioengineering as an alternative to rock gabions, multiple farm ponds and wildlife habitat plantings as an alternative to flood control dams, and windbreaks and riparian buffer strips as an alternative to channelization. Vegetative approaches enhance water infiltration and retard runoff, rather than speed its disposal.

Take Land Stewardship to the People
Nearly 70% of the U.S. population lives in our cities and communities. Thus, the rural/urban interface is an ideal high-visibility location to demonstrate agroforestry technologies, and involve rural and urban stakeholders in the process. Such a focus will help build understanding and acceptance of the complexities of land stewardship in agricultural regions and develop stronger working relationships.

BASED ON THE POLICY STATEMENT AND ISSUE PAPERS, THE FOLLOWING POLICY ACTIONS ARE NEEDED:

Partnerships! Partnerships! Partnerships!
Agroforestry is a hybrid, applied science and practice. Much emphasis is needed on building interdisciplinary teamwork, interagency partnerships, stakeholder participation in planning and delivery, and an ecosystem-based approach at farm, watershed, and landscape scales.

USDA Leadership is Needed
Cross-agency and cross-disciplinary cooperation needs to be catalyzed to effectively develop and apply agroforestry. Federal agencies need to cooperate and provide national leadership. Specifically:

•Establish an Interagency Coordinating Committee for Agroforestry to: (1) build understanding and support for agroforestry across agencies; (2) coordinate existing and new programs; and (3) identify needs, priorities and direction.

•Expand the National Agroforestry Center (FACTA Section 1243) to an interagency joint-venture. The Center must work interactively with the existing national network of cooperators to catalyze partnerships, cooperation, and synergy.

Research and Development
In order to achieve the full potential of agroforestry, emphasis needs to be placed on needs-driven technology development. Decisions to implement costly incentive programs must be based on sound scientific information. Technology needs include improved practices and plant materials, quantifying the benefits of agroforestry, developing integrated production/ conservation systems, developing information integration systems to support ecosystem-based/watershed scale planning and program delivery, and socio-economic analyses.

Technology Transfer and Applications
Focused programs are needed to support the development and application of appropriate conservation technologies to meet the needs of multiple stakeholders. Programs should be needs-driven, competitive, and should encourage multidisciplinary teamwork that results in integration of technologies, involvement of stakeholders, and leveraging of funding through partnerships.

Technical Assistance and Landowner Incentives
More emphasis is needed on watershed-level diagnosis, planning, and program delivery to achieve natural resource conservation. Technology assistance and cost-share programs should be targeted to attain the most cost-effective watershed-scale goals, rather than be approached on a first come/first served basis.

AGROFORESTRY COMES TO IDAHO

(Reprinted with slight modification from the Idaho Farmer, November 1994)

Every once in a while new terms evolve in agricultural jargon. Some stay, some fade. but a relatively new term -- agroforestry-- is definitely taking root in Idaho.

Gary Kuhn, state staff forester with the Natural Resources Conservation Service in Boise, explained that agroforestry is the use of trees to enhance and sustain agriculture. "These are called working trees. You don't plant trees in agriculture unless they're going to do something for you."

Recent plantings in Idaho are being used to protect agricultural land from wind erosion using windbreaks and to protect roads from blowing snow using "living snow fences."

Among the cropland windbreaks planted in recent months is a group effort involving 10 farmers in the Plano area (see following Farmer Profile). At 11½ miles and 10,000 trees the effort may seem huge, but a new agroforestry project in the works along Interstate 84 east of Burley will make the Plano effort seem puny.

Kuhn said the interstate between Burley and Odgen, Utah is considered the most dangerous stretch of highway in the entire U.S. interstate system, largely because of howling winds that cover it with snow and soil. The agroforestry project planned includes a combination of windbreaks and living snow fences.

Slated to kick off the spring of 1995, the project will involve landowners and nearly a dozen organizations, including NRCS, Idaho Dept. of Transportation, Idaho Fish & Game, Pheasants Forever, Idaho Dept. of Lands, U.S. Forest Service, ASCS and the local SCD and RC&D.

The first phase will be a demonstration project with a landowner planting four miles of filed windbreaks around center-pivot-irrigated fields and two miles of living snow fence near the highway. That should give other landowners an idea of what can be done. According to Kuhn, "There could end up being 50 miles or more of trees. It just depends on the other agricultural practices employed." He said that the project will take 5-10 years to complete and cost over a million dollars.

Kuhn noted that a living snow fence two miles long was recently planted along a county road east of Idaho Falls. It should start reducing snow-removal expenses within the next few years.

Kuhn joined the then SCS in Idaho in 1992 after spending four years doing similar work in the Midwest. He hit the ground running in Idaho. Working within his own agency and with several other agencies around the state, he has conducted two training workshops to get NRCS conservationists in Idaho up to speed on the latest technology involving agroforestry. He said there are new techniques and new species for use in tree planting around farmsteads, as field windbreaks, for wildlife habitat and as living snow fences. In addition, he indicated that use of a six-foot-wide fabric mulch can protect against weeds and water loss, will help get trees established and is "really catching on with landowners."

Adding stimulus to the tree-planting resurgence has been the Idaho Department of Lands, which broadened its program last year to include windbreaks. Further, in February of 1994, the Idaho Agroforestry Coalition was formed (*see page 9*), comprising many of the same agencies working on the I-84 project. Kuhn said the coalition will meet to assure they're all working together and to try to stimulate grassroots support for planting working trees in Idaho.

That support is really building. Kuhn feels good about the response from NRCS employees and farmers around the state as demand for agroforestry services is stretching the resources available. "I think we're paving the way for the Northwest here in Idaho," he said.

FARMER PROFILE -- Dennis Hymas

(Reprinted with slight modification from the Idaho Farmer, November 1994)

Of all the uncertainties facing eastern Idaho farmers looms at least one thing of which they can be certain: the incessant winds that sweep across their fields whisking away tiny particles of valuable soil. In a year, those particles add up to tons, 20 or more.

In a bid to take back their soil, 10 farmers in eastern Idaho have joined forces to battle the wind. They've planted roughly 10,000 trees to create more than 11 miles of living windbreak. It's the biggest group planting in Idaho, and possibly in the nation. Dennis Hymas, who grows wheat, potatoes and pasture on 500 acres, estimated that in one year the wind swept away more than a foot of sand from his fields. "It's unreal what we get in wind erosion in the Plano area," he said. When he cleared his fields several years ago to accommodate four center pivots, he opened the window for the wind to do its work. For his part to counter the wind, Hymas planted 1,200 trees in 2 miles of windbreak on the southwest edge of his pivots. "As far as we know this is the first time in Idaho and maybe the first time in the nation to get farmers working together like this to plant windbreaks," Hymas said. The U.S. Forest Service thought enough of his and fellow farmers' efforts to invite Hymas and his wife, Susan, to speak at the agroforestry symposium in Colorado. "They were very excited about our project and asked a lot of questions," he said of the forestry specialists who attended.

Hymas credits Lloyd Bradshaw, district conservationist in the Rexburg office of the Natural Resource Conservation Service, with bringing the farmers together. "I think Lloyd's prodding was the ticket to it," said Hymas. "To get eight farmers together is a pretty good challenge." For his part Bradshaw credited the farmers for their cooperative attitude ("It was as much their idea as it was mine") and Brent Mendenhall of the ASCS for coming up with extra funds for cost sharing.

In 1992, Bradshaw recalled, several area farmers were installing center pivots, and he talked a few into planting windbreaks as part of their contracts. The next winter found Bradshaw meeting with a group of farmers where the plans with the windbreaks were hatched.

"I was really impressed. I thought it would be kind of a hard thing to do," he said of having the farmers cooperate to tie in the windbreaks effectively. The group kicked off their project the following spring with trees purchased from Lawyers Nursery, a planter furnished by Fish & Game and four college students (tree planting came at the same time as potato planting).

Trees were planted on the south and west sides of fields in two rows 16 feet apart. The first row is a mix of two conifer species, Rocky Mountain juniper (*Juniperus scopulorum)* and Eastern red cedar (*Juniperus virginiana)*, planted 6 feet apart. The second row is Robusta poplars, planted 12 feet apart.

The poplars, 12-24 inches tall when planted, have grown to 10-12 feet tall in a year and a half and should reach 30-40 feet at maturity. According to Bradshaw, in five years the poplars will alter the wind and remain effective for another 30-40 years, giving the conifers a chance to mature to 25 feet high in about 20 years.

The planting process involved several steps: planting the trees into the ground, laying a fabric mulch over them, cutting holes in the mulch and pulling the trees through. Hymas emphasized the

importance of the fabric mulch, which helps protect against weeds and moisture loss. The mulch was obtained through the local soil conservation district. "Without that mulch," said Hymas, "the trees would never have survived."

For the most part, the trees are irrigated with the end guns on the center pivots. The trees have also received the same fertilizer applied to the crops through the pivots, although the farmers are careful to shut off the gun when applying pesticides.

The program was funded through cost sharing, with ASCS picking up 75% and the farmers 25%. The estimated total cost, including the labor for planting, is around 50¢ a foot, or just over $30,000 total. (Bradshaw said the cost is about $1 a foot when drip irrigation is laid for water).

That cost is small when compared with the long-term potential benefit. Bradshaw estimated wind borne erosion is causing a loss of up to 19 tons of soil per acre per year on fields in this area. Once the windbreaks have matured, the annual soil loss should fall to around 4 tons per acre.

In addition to reducing soil erosion, windbreaks also reduce moisture loss and may help reduce the effects of frost. Both Hymas and Bradshaw noted when frost hit in the spring, it appeared to cause less damage close to the windbreaks.

Windbreaks are nothing new to Idaho. Early settlers knew the value of windbreaks, often planting trees along field edges and around homesteads. But over the years, many of the windbreaks have deteriorated from neglect or been removed to accommodate new farming practices, particularly irrigation.

"When they came in with center pivots we lost a lot of tree lines," said Hymas, who farms 140 acres of pasture, 175 acres of potatoes and 175 acres of wheat. In addition to planting the trees at the edges of his circles, Hymas is using the corners of the fields for a tree farm, planting several varieties he hopes to sell into the high end of the landscape market.

Bradshaw noted that the Plano effort is just one of a number of new windbreaks being installed around the state. One reason for the resurgence, Bradshaw said, was the hiring of Gary Kuhn, NRCS state staff forester two years earlier. "He's been a real catalyst for a lot of it."

AGROFORESTRY OPPORTUNITIES IN NORTHERN CALIFORNIA, OREGON, AND WASHINGTON

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(Abstract) The Pacific Northwest offers a dramatic range of landscapes and land uses in which agroforestry may further economic and resource conservation goals. Agroforestry practices common here are forest grazing, windbreaks and shelterbelts, and harvest of special forest products. Windbreaks and shelterbelts are vastly underutilized. Cultivation of hybrid poplar and woody riparian buffer strips hold untapped promise for improving landscape sustainability. Silvopasture and enrichment plantings are not widely known, but may become so in the future.

The greatest potential for realizing the full benefits of agroforestry exist on private land due to landowner's greater decision making flexibility. We see lack of technical assistance and demonstration areas as the greatest obstacles to increasing landowner's use of agroforestry. A number of economic factors will affect the future use of agroforestry. Scarce research ***within the region*** on use of woody riparian buffer strips is a cause for concern as results extrapolated from other regions may not represent Northwest conditions. Riparian restoration is a priority on public and private lands, therefore, developing this research base is a high priority. Hybrid poplar will probably become increasingly common in agricultural landscapes, and hard data are needed on the environmental influence of these plantations.

AGROFORESTRY SYSTEMS FOR WESTERN OREGON --

Witham Hill Agroforestry Site

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There are approximately one million acres of hill lands in the Pacific Northwest. Much of this land historically supported oak woodland. Steep slopes and shallow soils limit the usefulness of hill lands as croplands. Livestock grazing and farm woodlots are their primary agricultural uses. Hill lands will support conifer forests. Agroforestry may present some opportunities to increase productivity by intensifying management on these lands.

Three replications each of improved pasture, forest, and agroforest (pasture+forest) systems were established on a hill land site near Corvallis, Oregon, so that their total production of forest and forage outputs may be compared. Pastures and agroforests were plowed and planted with 20 kg/ha of inoculated subclover (Trifolium subterraneum) in fall 1988, and have been grazed by sheep in spring each year beginning in 1990. Forest and agroforest plantations were planted with 570 Douglas-fir (Pseudotsuga menziesii) seedlings (1-1) in 1988-1989. Five-year average (1990-1994) forage production was 4400, 4900, and 3000 kg/ha for agroforests, pastures, and forests, respectively. Approximately 50% of the forage produced each year was consumed by sheep grazing pastures or agroforests. Agroforest trees were approximately 14 cm taller than were forest trees in November 1994. Average annual tree diameter growth was 14% greater in agroforests than in forests during 1990-1994. Height growth differences between forest and agroforest trees were concentrated in the spring (April-June) which accounted for 75% of the total annual height growth each year. Mean annual tree diameter increase (1990-1993) was greater in agroforests than in forests during spring, summer, and fall, being 5.8 vs 5.0, 1.1 vs 0.5, and

0.7 vs 0.4 mm, respectively. Increased growth of agroforest trees may reflect reduced tree/herbage competition due to grazing, faster soil warming in spring on grazed areas, or increased soil nitrogen available from N-fixing clovers. Seasonality of treatment responses suggest that reduced competition between trees and grass for both soil nutrients (in the spring) and soil moisture (during fall-summer) contribute to increased tree growth in agroforests compared to forests.

IDAHO AGROFORESTRY COALITION FORMED

The Idaho Agroforestry coalition is a collaborative public/private partnership that serves to help landowners enhance natural resources conservation while sustaining agricultural production through the establishment of working trees.

Goals

Programs and Funding

- Improve coordination of incentive programs to maximize cost-share funds available for landowners to implement agroforestry plantings

Information and Education

- Increase landowner awareness of the benefits of agroforestry, emphasizing the conservation and economic dimensions
- Increase agency and organization recognition of agroforestry benefits

Technology Transfer

- Improve communication, cooperation, and collaboration among research agencies and institutions, delivery agencies, agribusiness, and users of technologies
- Improve delivery and accessibility of technology by landowners
- Increase pilot and demonstration projects to promote landowner adoption

Training

- Enhance new technology transfer through increased training opportunities for landowners
- Provide training to private and public sector technical personnel to improve their skills in planning and installation of agroforestry practices

Leadership

Two organizations provide co-leadership for the Coalition. The Idaho Association of Soil Conservation Districts, representing the state's 51 soil and water conservation districts, advocates the wise use and management of Idaho's soil, water, and related resources. The Idaho Resource Conservation and Development Association, Inc., representing the state's nine RC&D councils, seeks to improve the quality of life in Idaho through resource development and conservation, community improvement, and economic development.

Coalition Members

- Idaho Assn of Soil Conservation Districts
- Idaho Dept. of Agriculture
- Idaho Dept. of Fish and Game
- Idaho Dept. of Lands
- Idaho Resource Conservation and Development Assn, Inc.
- Idaho Rural Development Council
- Idaho Soil Conservation Commission
- Pheasants Forever
- U. of Idaho-College of Forestry
- U. of Idaho-Coop. Extn. System
- USDA-ASCS
- USDA-Forest Service
- USDA-NRCS

AGROFORESTRY: WORDS OF WISDOM AND WARNING FROM DOWN UNDER

by Rowan Reid

(reprinted from Agroforestry News, Volume 4, Issue 1 March 1995. PO Box 41, East Melbourne Victoria Australia 3002)

The interest in agroforestry is greater than ever as demonstrated by the success of the constant stream of field days, seminars and books on the subject. Certainly, the recent funding from Canberra has helped but the interest was there and growing anyway.

The Agroforestry Extension Groups work over almost 10 years has provided us with an excellent seedbed of experience on which the recent funding has been able to blossom. Other states are envious of our progress.

The money is available from a range of sources including Landcare, for the establishment of demonstrations and trials on agroforestry. The number of new "commercial" plantings on farmland reported by the networks is staggering. It suddenly appears like commercial timber production will become an accepted part of farming.

My concern is that most of the plantings are new. Agroforestry is a long term venture which requires a commitment by the grower long after the planting. In fact, establishing a commercial agroforest (in all of its definitions) is the easiest part.

More than ten years ago I set out in search of every farmer and scientist who was involved in agroforestry. It wasn't a big job. The enthusiasm for agroforestry was enormous and everyone involved back then anticipated the great interest we are experiencing today. But I also unearthed a small problem that I am concerned is about to grow and threaten our achievements: Extension officers and scientists interested in demonstrating agroforestry had set up "demonstration sites" to display "best-bets". They were usually roadside plantings with high exposure. In Victoria they were largely pine but eucalypts were included. When I visited the sites in 1984 almost all (I am trying to think of an exception) were poorly managed and left unpruned. The signs remained: "Agroforestry Demonstration", little wonder that passing farmers were skeptical.

After 1984 more agroforestry sites were funded on farm sites, some on a large scale. I know of one large pine planting that was widely publicized in the early days but now remains unpruned - the landowner just hasn't the time it seems. The old farm forestry loan scheme sites are similar in that they demonstrate problems. Almost every small pine plantation in the Otways remains unthinned with very little prospect for good silviculture and farmers in the area know it.

With the current enthusiasm amongst landowners to get involved in agroforestry it is no surprise that much of the extension effort is going into site establishment and early growth. The task of planting is made easier still with offers of funding for site preparation and seedlings. Project coordinators are keen to announce that they have assisted in the establishment of thousands, if not hundreds of thousands, of trees as part of their farm forestry programs.

But, for many of us, our programs are running down and the scramble for more funding is beginning. Whereas agroforestry grabbed the spotlight from issues like "direct seeding" and "wildlife corridors" I see some changes occurring and the introduction of a new revegetation fad - probably along the lines of catchment water quality. Of course agroforestry is a part of good catchment management and is a useful tool in improving water quality but as the spotlight shifts agroforestry will fall off the front pages and getting the message across will be harder.

So, if now is our chance what is our message? If we only have landowner interest for a year or so what should we offer them? Because most have bare paddocks the effort has been directed into new plantings but haven't we been showing landowners how to plant trees for 15 years?

What distinguishes an agroforester from other tree growers is their understanding on the principles of silviculture and markets. They know how a tree grows and how to manipulate the growth to produce the products in greatest demand. You don't have to establish too many new sites to demonstrate how tree management (pruning and thinning) can increase yields - go back to the old landcare plantings and direct seeding sites which are crying out for good management.

It is good to see networks supporting training programs and the success of the Melbourne University Graduate Certificate course for extension officers and leading farmers. But to really spread the word we need farmers to be seen making money from agroforestry.

Pulling not pushing

This year we will hear of more funding for agroforestry. Most will be directed into new plantings as if the number of trees planted is the only measure of success in extension. Meanwhile, the innovative landholders who acted early and are looking to harvest timber find that their plantations are too small, or too far from the markets. Rather than pushing farmers into agroforestry with subsidies for planting - and very likely ending up with a great number of poorly managed plantations - let's spend the same funding on "pulling" those landowners who have done the work through.

What about subsidizing harvesting and transport costs or encouraging the development of timber agents who can buy timber from a range of sources and mix and match for the markets.

This would provide more examples of farmers making money from trees, sure they could have made more if they'd managed the trees better but for other landowners watching this, this will be the greatest encouragement to give agroforestry a go. It will also encourage planting whereas I am concerned that many landowners have the feeling they will not plant until they get a handout to help.

Assisting successful growers will also mean that the extension effort and money is spent in areas where agroforestry has a real long-term potential and not on marginal sites where we don't really know whether or not the trees will survive or even produce a saleable product. The measure of our success will be evident by what happens when the money runs dry not by what we are doing now. *(NOTE: Rowan Reid is co-author of Agroforestry in Australia and New Zealand, 1986; and also Agroforestry - Productive Trees for Shelter and Land Protection in the Otways, 1994.)*

PUBLICATIONS

Reid, R. and A. Stewart. 1994. Agroforestry - Productive Trees for Shelter and Land Protection in the Otways. 130 pp. ISBN 0 646 20726 1
Available from:
The Otway Agroforestry Network
c/o Bambra Agroforestry Farm
RSD Boonah Road
Birregurra 3242
Victoria, Australia
Cost: $18.00 (Australian) payable to "Otway Agroforestry Network"

Hardesty, L.H. and L.M. Lyon. 1995. Agroforestry opportunities in northern California, Oregon, and Washington. In: Proceedings, Agroforestry and Sustainable Systems, Ft. Collins, CO August 7-10, 1994.

Sharrow, S.H. 1993. Agroforestry systems for western Oregon hill lands. p. 1-7. IN: S.H. Sharrow (editor). Livestock and Forest Renewal. Rangeland Science Series Rep. #2, Corvallis, OR. 19p.

Sharrow, S.H. 1993. Animal grazing in forest vegetation management: a research synthesis. pp. 53-60. IN: T.B. Harrington and L.A. Parendes (Eds.). Forest vegetation management without herbicides. Proc. Forest Manage. Workshop. Corvallis, Oregon, Feb. 1992.

Sharrow, S.H. and R.A. Fletcher. 1994. Trees and pastures: 40 years of agrosilvopastoral experience in Western Oregon. IN: Proceedings, Agroforestry and sustainable systems symposium, Fort Collins, Co. 7-10 August.

PROCEEDINGS

Proceedings available via e-mail:
Proceedings of the Agroforestry Workshop. 1993. Webb, K.T. (ed.). Nova Scotia Soils Institute, March 29-30, 1993, Truro, NS. 104 pp. (no hard copies left) Electronic version available from Dennis Moerman, at the following email address: Dmoerman@gus.nsac.ns.ca

Proceedings forthcoming, Spring, 1995: Agroforestry and Sustainable Systems Proceedings, Aug. 7-10, 1994, Ft. Collins, CO. Proceedings details **Spring, 1995**
For more information, contact:
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Lincoln, NE 68583-0822 USA
Phone: 402-437-5178 ext. 13
Fax: 402-437-5712

Proceedings available:
Proceedings of the Fourth International Symposium on Windbreaks and Agroforestry, July 26-30, 1993 in Viborg, Denmark. 242 pp.
For more information contact:
Chr. Als
Hedeselskabet, P.O. Box 12
DK-8800 Viborg, Denmark
Tel. 4586676111 Fax: 4586671293
Cost: 200 Danish Kroner, about US$35

Proceedings available:
Willow Vegetation Filters for Municipal Wastewaters and Sludges : A Biological Purification System. Report No. 50. Proceedings of a study tour, conference and workshop, Sweden, June 5-10, 1994. Pär Aronsson and Kurth Perttu (eds). 230 pages.
Proceeding consists of 6 chapters and 34 individual contributions. Overall aim was to present the state of the art and the future possibilities of using vegetation filters for purification of different types of wastes.
For details contact:
Marianne Mattsson
Swedish Univ. of Agricultural Sciences
Short Rotation Forestry Section
P.O. Box 7072, S-75007, Uppsala, Sweden
Fax: 46 18 673440

JOURNAL ARTICLES

Sharrow, S.H. 1991. Tree planting pattern effects on forage production in a Douglas-fir agroforest. Agroforestry Systems 16:167-175.

Sharrow, S.H., W.C. Leininger, and K.A. Osman. 1992. Sheep grazing effects on coastal Douglas-fir growth: a ten-year perspective. Forest Ecology and Management 50:75-84.

Sharrow, S. H., D. H. Carlson, W. H. Emmingham, and D. P. Lavender. 1992. Direct impacts of sheep upon Douglas-fir trees in two agrosilvopastoral systems. Agroforestry Systems 19:223-232.

Carlson, D.H., S.H. Sharrow, W.H. Emmingham, and D.P. Lavender. 1994. Plant-soil-water relations in forestry and silvopastoral systems in Oregon. Agroforestry Systems 25:1-12.

Sharrow, S.H. 1994. Sheep as a silvicultural management tool on temperate conifer forest. Sheep Res. J. , Special issue 1994. pp. 97-104.

NEWSLETTERS AND JOURNALS

The National Agroforestry Center will soon be publishing a new technical series publicaiton entitled: *Agroforestry Notes*. This publication will be distributed to natural resource professionals (field and academic) across the nation, to serve as a learning tool and guidebook for them the cooperators they work with. For details contact:
Kris M. Irwin, Editor
Agroforestry Notes
National Agroforestry Center
East Campus - UNL
P.O. Box 8300822
Lincoln, NE 68583-0822

UPCOMING EVENTS

August, 1995. XXth IUFRO World Congress, August 7-11, Tampere, Finland. The agroforestry working group, P.1.15-00 has a full slate of technical papers throughout the week. Sessions (18 total presentations) include: 1) Fundamental research and modeling in agroforestry; 2) Adaptive and social research in agroforestry; 3) an open technical session; and 4) a technical synthesis session.
For details contact Dr. Michael Gold or:
Dr. Fergus Sinclair
Chair, Agroforestry Working Group
School of Agricultural and Forest Sciences
University of Wales, Bangor
Gwynedd LL57 2UW
Phone: 011-44-1248-351151
Fax: 011-44-1248-354-997

November, 1995. *Environmental Enhancement through Agriculture* conference, November 16-17, 1995. Conference will address ways that agriculture can offer environmental benefits, rather than simply reducing the damage it imposes on the environment. Conference goal is to foster a new kind of strategic thinking about agriculture based on "win-win" approaches that jointly serve both agricultural and environmental interests. For details contact:
William Lockeretz
School of Nutrition
Tufts University
Medford, MA 02155
617-627-3223 (phone) 617-627-3887 (fax)
wlockeretz@infonet.tufts.edu

October 28 - November 1, 1995. Society of American Foresters National Conference. Maine. Agroforestry Working Group B-4 Technical Session. For details contact:
Russ Hatz Ph: (503) 326-2991
USDA-NRCS Rm. 1640
1220 SW 3rd Ave.
Portland, OR 97204-2881

October 29 - November 3, 1995. An agroforestry poster session is being scheduled to take place at the American Society of Agronomy (ASA) meeting meeting in St. Louis, Missouri. For details regarding the agroforestry poster session contact Dr. Bill Rietveld, National Agroforestry Center, Linclon, NE.

NETWORKING

Henderson, D.R. and T.A. Maurer. 1993. Mid-South Directory of Agroforestry Producers and Researchers. Winrock International and ATTRA.

The aim of this directory is to enable individuals and organizations with practical experience or interest in agroforestry to learn about each other. The directory reflects responses of 278 farmers, extensionists, consultants and researchers who participated in a questionnaire-based survey in 1990. It provides an initial overview of the spectrum and distribution of agroforestry practices, research and interest within the region.
For copies contact:
Winrock International
Route 3, Box 376
Morrilton, Arkansas 7210-9537
or
ATTRA
1-800-346-9140

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