



## Small Farms in Appalachia Well-Suited for Agroforestry

by Dr. Carol Schumann, Research Horticulturist, USDA-ARS Appalachian Soil & Water Conservation Research Lab, Beaver, West Virginia

A typical farm in Appalachia is approximately 120 acres, composed of pasture and woodland in roughly equal proportions, and has topography that varies from gently rolling to steep. Most agricultural enterprises in the region depend on forage production from pasture, managed either for grazing livestock or hay production. Such operations are almost entirely part-time in nature, requiring off-farm employment to support the farm family.

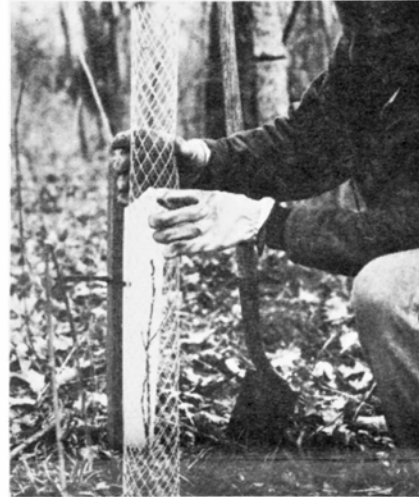
Agroforestry, with its emphasis on integrating components into diversified systems, is well-suited to the small-scale farms of Appalachia. Although not widely practiced in the region at present, agroforestry technologies offer tremendous potential for enhancing the economic viability of Appalachian farms, both through net increases in production and through diversification of marketable products. As with any new technology, a key to realizing agroforestry's potential in the region is the establishment of successful research and demonstration projects, so that people can observe the practices firsthand in settings that might be similar to what they have at home.

Demonstrating innovative and sustainable agricultural practices is one of the cornerstones of the Lightstone Foundation. The Lightstone Foundation is a nonprofit organization that serves as an education and demonstration center for practicing and supporting sustainable family farming, natural resource manage-

(See Appalachia on page 6)

## Agroforestry: An Opportunity for Small Farms With Big Needs

Editorial opinion by Jerry Bratton, Forest Service Lead Agroforester, NAC, Lincoln, Nebraska



An increasingly popular way to help diversify small farms is to introduce tree crops or special forest products into the system.

Just what are "small farms" anyway? When I first heard this term I wondered, "do they mean miniature farms?" Are small farmers people that are less than five feet tall? Of course, I'm only joking. But, when I went to a very good source of information... The National Commission on Small Farms report to the Secretary of Agriculture, I got the answers I wanted. They suggest a small farm is a farm "with less than \$250,000 gross receipts annually on which day-to-day labor and management are provided by the farmer and/or the farm family that owns the pro-

duction or owns, or leases, the productive assets." Well, \$250K seems like a lot of money! What's small about that? But the Commission points out that this is to be used as a general description only and is not intended as an eligibility guideline. They further clarify by stating, "One must recognize that the economic effect of \$250,000 varies regionally. It is a large sum in some regions, while barely sufficient to provide a reasonable living in others." So, \$250K might be a lot of money in the delta of Mississippi but small in the panhandle of Nebraska.

Are small farms an "endangered species?" I've heard this question being asked repeatedly and with considerable concern. All across our nation small farm operators struggle to make a living from the land and in some cases money isn't the only reason to farm. Sometimes it's just to keep the "farming way of life."

The Commission report went on to state:

- Today, farmers are receiving 13 percent less for every consumer dollar than they did 20 years ago.
- Approximately 94 percent of all present U.S. farms are considered small farms. Today's small farm operators own 75 percent of the total productive agricultural assets and receive only 41 percent of all agricultural receipts.

(See Opportunity on page 8)

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## NAC Director's Corner

*A commentary on the status of agroforestry  
by Center Director, Dr. Greg Ruark*

### Small Farms and Agroforestry

When the USDA National Commission on Small Farms Report was issued in January 1998, it listed four recommendations on agroforestry and concluded that .... "USDA extension, conservation, and forestry services should make greater efforts to promote and support agroforestry as part of an economic and ecological strategy for a healthy agriculture."

Approximately 60 percent of all U.S. farms are less than 180 acres in size. However, 60 percent of farm receipts are attributed to only six percent of farms with gross sales in excess of \$250,000. Over the past 20 years 300,000 small farms have been lost in the U.S.

Today many farmers and ranchers are struggling to make a livelihood on small acreage farms. They often have limited financial means and are seeking ways to maximize their income-per-acre, while keeping their requirement for purchased inputs low. Agroforestry technologies offer a suite of practices that can readily be integrated into many small farm operations. These practices can provide for product diversification and increased income, while simultaneously enhancing natural resource conservation and helping rural communities remain viable.

Although some agroforestry practices, like alley cropping, require a lengthy time period to establish and realize a return on investment or, like tree-based riparian buffers, are primarily designed to provide environmental benefits, there are several agroforestry practices that can be used to rapidly generate income. Farmers and ranchers who have existing farm woodlots can often thin these stands to allow sufficient light to penetrate into the understory for the purpose of growing speciality

or forage crops. The thinning also improves the growth and quality of the remaining trees, for example:

**Silvopasture** — Recent research has shown that many forage grasses produce equivalent or greater biomass when grown with up to 50 percent shade, and in many cases this forage is more digestible than forage grown in an open pasture. This knowledge is helping to further the design of integrated timber/grazing systems that allow high value sawlogs to be grown as a long-term product, while on the same acre annual income can be realized from livestock production. The trees also reduce stress on livestock by providing shade and shelter. These "silvopasture" agroforestry systems are normally developed for conifer stands and require careful management to insure compatibility of livestock and trees.

**Forest Farming** — Many high-value speciality crops are now being cultivated under the protection of a forest canopy that has been modified to provide the appropriate microclimate and light conditions. Meanwhile quality sawlogs are being produced as a long-term economic strategy. Crops like ginseng, shiitake mushrooms, and decorative ferns are being grown and sold for medicinal, culinary, or ornamental uses.

Where trees are not already present there are also numerous special applications that can be considered. Tree and shrub plantings may be used to provide cost-effective solutions to on-farm problems like disposal of animal wastes, odor reduction, visual screening, and filtering irrigation water. Where markets exist for biofuels or pulp wood chips, fast growing hybrid poplar trees (five- to 15-year rotations) are now being planted to provide added farm income. **NAC**

## Working Trees for Livestock Brochures

Traditional thinking has been that livestock and trees can't co-exist. Yet modern agricultural practice is showing that livestock and trees not only can co-exist but, if properly managed, can provide additional income from land formerly used for a single crop.

Our new *Working Trees for Livestock* brochure is now available. It will acquaint you with some of the specific ways you and your land can benefit by putting trees to work for your livestock. Trees can provide livestock with protection from cold

wind and blowing snow in winter, as well as from the hot sun and drying winds of summer. And, if commercially desirable timber or nut trees are planted, landowners can enjoy significant additional income from this diverse use of their land.

Also available is our *Working Trees for Livestock: Silvopasture in the Southeast* brochure.

E-mail Nancy at the Center to obtain either of these brochures: [nhammond/rmrs\\_lincoln@fs.fed.us](mailto:nhammond/rmrs_lincoln@fs.fed.us). **NAC**





# Sustaining the Small Farm—A Role For Agroforestry

by Adela Backiel, Director, USDA Office of Sustainable Development and Small Farms, Washington, D.C.

As a nation, achieving sustainable development will mean finding ways to successfully incorporate social, economic, and environmental factors into the many decisions that impact our rural enterprises

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*“Small farms play an important role in sustaining the fabric of rural America.”*

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and communities. We must balance the goals of improved production and profitability with good stewardship of our natural resources while enhancing the vitality of our rural communities. Small farms play an important role in sustaining the fabric of rural America. Unfortunately, small, family owned and operated farms are facing serious challenges. For many of these producers economic diversification has come to mean taking a second job off-farm to help support the farm or ranch enterprise.

Agroforestry technologies could provide a key component to help these enterprises to become more self-sufficient. Agroforestry is one of the best examples of putting sustainable development into practice. It is an integrated, interdisciplinary science which strives to provide alternatives for economic diversification, while also contributing environmental benefits. Agroforestry is seldom a stand-alone enterprise but can and should be integrated into existing farm operations. It can help keep producers producing, while also improving the health of rural communities and conserving natural resources.

Using agroforestry practices to help sustain small farms will require an investment in people, places, and markets:

*People* — There is a need to improve the infrastructure for providing information and education on agroforestry. Agroforestry crosses multiple technical

disciplines, so foresters, agronomists, economists, soil scientists, entomologists, and others will need to work together to develop effective systems that can incorporate the uses of trees and shrubs with crops and livestock production. Natural resource professionals will need to be equipped with sufficient technical information to allow them to work with landowners in exploring a fuller set of agricultural options that include agroforestry practices. Even consumers will need to be educated on the potential benefits and uses of agroforestry products.

*Places* — Amidst all the current talk about an emerging global economy, there

is growing interest in building and strengthening local and regional agricultural production systems - systems where small farms can produce food and materials for local communities. This would allow local communities to meet their own consumption needs in ways that would require less energy for transportation and processing. Communities could develop businesses to manufacture value-added products for resale in regional, national, and global markets. All this would lead to a strengthening of relationships between farmers and citizens of rural communities. Additionally, direct marketing activities like farmer's markets can help forge an alliance between rural and urban populations.

*Markets* — This decade has witnessed a dramatic increase in the demand for natural products. New or expanded markets for agroforestry derived products like ginseng, shiitake mushrooms, and decorative ferns have created economic opportunities for farmers. Individuals are beginning to market these products directly and some local communities are developing small businesses. One way to give support for rural enterprise development includes improving the ability of local producers and entrepreneurs to obtain credit from local lenders, who themselves often need reliable statistical data on the performance of agroforestry systems before they can loan money. Often new or alternative crops are not eligible for crop insurance or disaster payments, thereby placing all of the risk on the producer

USDA recognizes the need for strong leadership and has made a commitment “...to working toward the economic, environmental, and social sustainability of diverse food, fiber, agriculture, forest and range systems.” We must improve the coordination among USDA agencies and look for additional opportunities to include agroforestry options into programs, such as the Conservation Reserve Program, Stewardship Incentives Program, Environmental Quality Incentives Program, and others.

The arbitrary segregation between

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## Adela Backiel becomes Director of new USDA Office of Sustainable Development and Small Farms

On October 6, 1998 Secretary Glickman established the USDA Office of Sustainable Development and Small Farms within the Office of the Chief Economist and named Adela Backiel as its Director. She will serve as the Executive Director of the USDA Council on Small Farms, as well as continue to chair the USDA Council on Sustainable Development. For the past three years Backiel had been the USDA Director of Sustainable Development.

This new office recognizes that many of the issues related to small farms are, in fact, aspects of sustainability and specifically links the issue of small farms to the larger issue of sustainable development. The office also includes new positions for a Deputy Director for Small Farms and a Deputy Director for Sustainable Development.

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(See Sustaining on page 9)



## “Comprehensive Integrated Agroforestry”

by Tom Wahl and Kathy Dice, Owners of Red Fern Farm, Wapello, Iowa



**These tree plantings are arranged in 1/10th acre blocks with one species to a block. With up to 10 species of trees per acre, this arrangement, plus the natural vegetative ground cover results in high biodiversity.**

Comprehensive Integrated Agroforestry is a system of sustainable agriculture I established on my farm near Wapello in southeast Iowa. It combines a number of agroforestry practices including forest farming, shelterbelts, riparian buffer strips, silvopasture, and a few others which have yet to be named.

The project, which was funded in part by the USDA's Sustainable Agriculture Research and Education (SARE) program and the Practical Farmers of Iowa, consists of plantings of fruit and nut trees arranged in 1/10th acre blocks, one species to a block. Adjacent blocks contain different and preferably unrelated species.

Up to 10 species of trees may be planted on each acre. This arrangement plus the natural vegetative ground cover results in high biodiversity. The diversity prevents serious outbreaks of pests and diseases and provides excellent habitat for wild plants and animals.

The plantings are on level ridge tops, one to three acres in size. Between the ridges are steep-sloped drainages left in native


timber. The drainages serve several purposes, including shelterbelts for the tree plantings, riparian buffer strips, and wildlife travel corridors.

High-value medicinal plants such as ginseng, goldenseal, and Echinacea are interplanted under and between the trees on ridge tops and drainages. The soil is kept covered by vegetation and mulch. The ground cover is initially managed by mowing. As the trees mature, rotational grazing may be used. Fertilization is by animal manure and wood ashes. Most of the tree species produce valuable wood, and are managed for both fruit/nut production and for lumber/vener. The intensive management yields crops at four levels: underground (medicinal roots), ground level (medicinal plant tops and livestock forage), in the trunks of the trees (fuel, lumber, veneer), and at the tips of the twigs (fruit, nuts, leaves).

Tree species included in the system so far are black walnut, hazelnut, chestnut, pecan, shellbark and shagbark hickories, heartnut, nut pines, ginkgo, persimmon, and pawpaw. Some species which may be added in the future are kiwi, medlar, may-pop, passionflower, and grapes.

The agroforestry system has several advantages over conventional agriculture, including: negligible soil erosion; little or no use of chemical fertilizers and pesticides; low fossil fuel consumption; no need for expensive, high-tech equipment; high biodiversity; excellent habitat for wild plants and animals; a positive balance between energy produced and energy consumed; efficient use of solar energy; a carbon sink (CO<sub>2</sub> removed from the atmosphere and put in long term storage); a durable system requiring little or no human intervention once established; diversified income sources; high profit potential from a small area of land (potentially more than \$20,000 per acre per year at maturity); and a healthier, more aesthetically pleasing environment for humans.

The system has some major disadvantages. A large investment in capital, labor and time are needed for establishment. There is a long lag time between that initial investment and the first returns, the break-even point, and the mature level of production.

In spite of these disadvantages, I am confident this system will prove to be a viable alternative to conventional agriculture. 

### Biotechnical Streambank Protection Measures Workshops

March 22-23 and March 24-25, 1999

Two workshops will be held at the Arbor Day Farm in Nebraska City, Nebraska. The workshops will consist of a half-day classroom introduction to biotechnical streambank protection measures. Participants will then be taught how to install several measures on a stream running through the farm. For more information,

e-mail Nancy Hammond at [nhammond@rmps.lincoln.afs.fed.us](mailto:nhammond@rmps.lincoln.afs.fed.us) or fax her at 402-437-5712.

# Conventional or Agroforestry Farming?


by Richard Olson, Research Associate, Center for Sustainable Agricultural Systems, UNL, Lincoln, Nebraska

Diversified farming systems emphasizing high-value crops and direct marketing offer a third alternative to the choice between getting bigger or getting out that faces many Midwestern farmers. The incorporation of agroforestry practices is a promising approach for increasing agronomic and economic diversity. However, as with any innovative practice, farmers want to see evidence that success is likely before they will accept the risk of adopting a new strategy.

A successful demonstration by a neighbor is the best evidence, but in the absence of nearby examples or any example at all, farm models offer a risk-free method of conducting a preliminary assessment of alternative systems. Throughout 1998, I evaluated five alternative farming systems in eastern Nebraska using economic and environmental models. Characteristics of each system including size, amount of land rented, and equipment were defined based on the results of a survey of 381 Nebraska farms conducted by the University of Nebraska Department of Agricultural Economics. Crop rotations, inputs, and field operation schedules were derived from a variety of other sources. Economic performance was assessed for the period 1985 through 1994

using average annual yields for Saunders County, Nebraska and historic market year prices for eastern Nebraska deflated to constant 1996 dollars. Highlights from the results for two of the systems, a conventional corn/soybean farm and a smaller diversified farm including agroforestry components, are presented in Table 1.

Due to the greater diversity of crops, the seasonal distribution of labor requirements was more even for the agroforestry farm than for the conventional farm. Increased yields of crops sheltered by windbreaks more than compensated for land removed from production for windbreaks.

The results of this modeling exercise suggest that a smaller diversified farm that includes agroforestry practices can be competitive with larger conventional farms as measured by both economic and environmental indicators. Widespread adoption of such systems could help to slow the trend toward fewer and larger farms, and the associated decline of rural communities in the Midwest. For more information contact Richard at 402-472-0917 or [csas005@unlvm.unl.edu](mailto:csas005@unlvm.unl.edu). 

Based on previous research "Procedures for Evaluating Alternative Farming Systems: A Case Study for Eastern Nebraska." by Richard Olson

**Table 1: Comparison of Selected Structural Characteristics.**

Characteristic	Conventional Farm	Agroforestry Farm
Size (acres)	650	425
Percent of land rented	55	40
Crops (acres)	Corn (325), soybean (325)	Corn (83), Soybean (151), Sorghum (83), Alfalfa (60) Christmas tree (9), American Hazel* (16), Windbreaks (23)

\*Nuts sold for seed.

**Table 2: Comparison of Selected Performance Characteristics.**

Characteristic	Conventional Farm	Agroforestry Farm
Net annual income 1985-1994	\$28,905	\$33,453
Average annual returns to land (\$/Acre)	\$109/Acre	\$137/Acre
Total labor for field operations and preparation (hours)	994 Hours	2485 Hours
Erosion (tons/acre)	5 Tons/Acre	3.5 Tons/Acre
Energy intensity *	6.5 Mega-calories	4.5 Mega-calories

\*Mega-calories of cultural (non-solar) energy input per dollar of gross income -- a measure of the energy use efficiency of the system.

## Sixth Annual Agroforestry Conference in 1999

### *Sustainable Land-Use Management for the 21st Century*

The sixth conference on agroforestry in North America will be held June 12-16, 1999 at the Arlington Resort Hotel in Hot Springs, Arkansas

Anyone involved in research, technology development, or implementation of agroforestry practices in North America or other temperate regions is invited to submit titles for proposed presentations to conference organizers. Submissions should include title, agroforestry category (alley cropping, forest farming, riparian zones, silvopasture, windbreaks, or general) and subject area (management, biology, economics, environmental, societal, policy, modeling or general).

**For more information about the conference program, contact:**

Dr. Catalino Blanche  
Dale Bumpers Small Farms  
Research Center  
6883 South State Hwy 23  
Booneville, Arkansas 72927-9214.  
E-mail: [cblanche@yell.com](mailto:cblanche@yell.com)

**Co-Hosts of Conference**

- Dale Bumpers Small Farms Research Center
- Hill Farm Research Station.



ment and rural community-based development in Appalachia. Located in the Potomac Highlands region of West Virginia, Lightstone's 562-acre certified organic farm provides a terrific living laboratory for demonstrating the Foundation's programs in organic and sustainable agriculture, watershed protection, wetlands restoration, and sustainable forest management. Although four to five times larger than a typical Appalachian farm, the Lightstone farm in many ways is representative of farms in Appalachia, as it is made up of a mosaic of woodland (approximately 50 percent of total acreage), prime hayfields, and upland pasture in various stages of woody encroachment. Its topography ranges from gently rolling to rugged.

The Lightstone staff believe agroforestry can contribute to the economic health and sustainability of farms in Appalachia, and intend to demonstrate that belief by installing several agroforestry practices on their farm. A year ago they seeded a small area of woodland with ginseng and goldenseal to show visitors the possibilities for non-timber sources of income from woodlands. Given the success of that planting, they plan to expand their forest farming venture and integrate it into their farm's sustainable forest management plan. They are currently recruiting a horse logger to implement the plan and further develop their forestry programs.

Now they are ready to add agroforestry to the pastured areas of the farm as well. "We don't need to demonstrate practices that already work well in the region," says Lightstone Executive Director Tony Smith. "There isn't much we can teach farmers here about growing hay or raising cattle and sheep, and we wouldn't want to try." But demonstrating the potential of small-scale, value-added enterprises that are compatible with existing production systems is more up their alley. After talking with scientists at the USDA, ARS, Appalachian Farming Systems Research Center, plans are underway for a cooperative project to establish two distinctly different agroforestry plantings on the Lightstone farm.


One planting will involve adding widely-spaced black walnut and paw paw



*The landscape on Appalachia's Lightstone Farm is made up of a mosaic of woodlands, prime hayfields, and upland pasture in various stages of woody encroachment. The Lightstone staff believe that incorporating agroforestry practices onto the landscape can help contribute to the economic health and sustainability of the area's farms.*

trees to a highly productive hay field, to develop a system that produces high-value fruit and nut crops in addition to hay. The other planting will involve adding black locust, a nitrogen-fixing tree, to a marginal hillside pasture to produce fence posts while improving the soil and botanical composition of the site. The biggest challenge in establishing both of these plantings will be to work within the constraints of maintaining organic certification for the farm, meaning no herbicide can be used to suppress competing vegetation around the trees. Another challenge will be to minimize damage from browsing deer, as white-tail populations are quite high in the region. A combination of mechanical control (weed-whipping down to bare soil

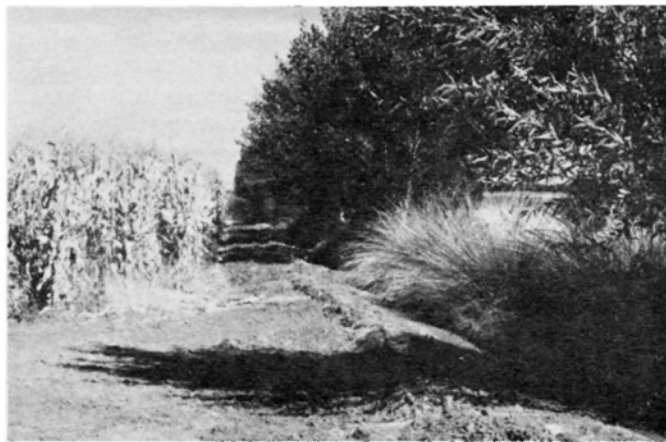
prior to planting), vegetation suppression mats, and tree shelters will be tested for effectiveness in meeting these challenges. A key objective of the project is to develop techniques that are successful for tree establishment in these systems but minimize labor and cost inputs.

Given the numerous students, interns, and workshop participants that visit the Lightstone farm each year, the projects already underway and those currently being planned should have high visibility and be effective in demonstrating the contributions that agroforestry can make to the success of small farms in Appalachia. This in turn should lead to wider adoption of agroforestry practices in the region. 

**NAC Partnership Highlight** — NAC has joined in a partnership with the USDA Sustainable Agriculture Research and Education (SARE) program to provide a special opportunity for the *SARE Farmer Grant Program* in fiscal year 1999. The four SARE regional offices will solicit and fund proposals for agroforestry demonstration projects. Projects may be either initiated and managed by a producer or can be coordinated by a technical professional, if carried out on a farm with significant farmer involvement. Farmers, ranchers, or tribes may propose projects that either install established agroforestry practices or explore novel ways of integrating trees and shrubs into agricultural systems. Contact regional SARE offices for details: North Central: 402-472-0265; Northeast: 802-656-0471; Southern: 770-412-4787; and Western: 801-797-2257.

## Agroforestry Can Help Control Weeds, Attract Wildlife and Beneficial Insects

by Kim Isaacson, Technology Transfer Specialist, NAC, Lincoln, Nebraska



Here, native grasses and trees are adjacent to a conventional corn field. This riparian corridor helps to catch sediment that runs off of the field into the irrigation canal.



One of Anderson's irrigation canals is vegetated with native grasses, sedges, and rushes. This riparian corridor of shrubs and trees border a conventional agricultural field on the left.

Hedgerow Farms, located near Davis, California in the southern Sacramento Valley, is surrounded by row crop farms and orchards. Hedgerow Farms is a 600-acre row crop and grass seed production facility.

For the past 18 years, John Anderson, his wife Marsha and daughters Jennifer and Anne, owners and managers of Hedgerow Farms, have developed and demonstrated the use of on-farm vegetation practices that completely reverse the concept of "clean farming," a common practice that farmers use to keep non-farmed areas devoid of vegetation through a costly and labor-intensive combination of tillage and herbicides. These intensive farming practices have essentially eliminated wildlife habitat and ecosystem functions on the majority of farmland in the area. It has also increased the severity of soil erosion, sediment deposition, and flooding. It also locks farmers into a never-ending cycle of seasonal weed abatement.

Rather than eliminating vegetation, the Andersons have restored and cultivated native California vegetation on roadsides, irrigation canals, drainage ditches, field borders, and along a natural riparian corridor. Every non-farmed area is a complex mixture of native plants, including perennial grasses, sedges, rushes, forbs, shrubs, vines, and trees, that competitively suppress invasive weeds while at the same time provide a biologically diverse community of plants and animals.

Today, Hedgerow Farms supports multiple, interconnected corridors that have eliminated erosion, reduced the need for tillage and herbicides, and may even be assimilating agricultural nutrient run-off. The benefits to wildlife are tremendous. Over 110 species of birds have been recorded on the property. Game species are now regularly harvested, including dove, pheasant, quail, turkey, wood ducks, and mallards. Reptile and amphibian populations have made dramatic recoveries. And, a myriad of

beneficial insects and spiders inhabit the diverse vegetation complexes.

This boom to wildlife has not compromised farm productivity. Adjacent fields of corn, wheat, sunflowers, safflower, alfalfa, and tomatoes have not been negatively impacted and may even benefit from certain insects and abundant predators associated with the restored habitat.

John Anderson explains, "The visual image of 'clean farming' for the future should be borders of perennial grasslands rather than borders of bare dirt. Clean should mean 'weed-free' and not 'vegetation-free.' Quality of the environment and quality of life would be significantly enhanced, especially for those of us that live and work in the agricultural landscape."

The Andersons have worked with numerous local agencies including the Yolo County Public Works Agency and the County Flood Control and Water Conservation District, California Water Resources Control Board, University of California-Davis, and University of California Cooperative Extension. They have also relied on several cost-share programs including USDA ACP funds, US Fish and Wildlife "Partners for Wildlife" Program, and EPA 319 Funds. The farm hosts an average of two tours each month. Hedgerow Farms success has heightened local awareness and interest in conservation practices on farmland. NAC

### Working Trees for Livestock Display Has Arrived

Contact Clover Shelton for more information, or to reserve a display, at 402-437-5178 Ext. 14.

## Agroforestry on Small Farms on the Southeastern U.S.

by Peter R. Mount, Extension Forester, Tuskegee University, Tuskegee, Alabama


In Alabama forestry planning committees are set up at the county level. This is a good place to start when trying to introduce a program. These committees are composed of landowners, as well as agency representatives who conduct educational programs such as field days and tours.

To have a small farmer adopt any form of agroforestry practice, it helps to work with peer group leaders to demonstrate the profitability of the practice. One of the best ways to reach underserved farmers is through the local community structure. In Alabama, local churches and ministers are an excellent way of making contact with many communities. There is a great

deal of opportunity to develop the various phases of agroforestry in the southeast and it is the responsibility of natural resource professionals to make these known to local residents, many times, through creative channels.

Small farmers in this area of the country are most apt to work on part-time operations, with the major source of their income being derived off-farm. This well often dictate which types of farming practices are used. The main agroforestry emphasis tends to be silvopastoral situations, grazing cattle in pine woodlands. While this is a common practice, it is often not practiced as a designed agroforestry system. Increased use of agro-

forestry technologies could greatly improve the economic performance of these grazing/timber systems.

There are many barriers to the adoption of most agroforestry practices. These include, among others: available financing, lack of a well-defined market, reluctance to change, and lack of knowledge about opportunities which might exist. Probably the greatest untapped agroforestry opportunity for small farmers in the South is with forest farming-- raking pine straw, growing medicinal plants, growing shiitake mushrooms, gathering decorative materials, or other such specialized operations. 

(Opportunity from page 1)

- Approximately 40 percent of these farmers consider farming as their primary occupation. Another 41 percent farm part-time and rely on non-farm jobs as their primary source of income.

Most of these farms are referred to as "family farms." One might ask, are these farms in economic jeopardy? Is the small farm "way of life" in peril? The answer would have to be YES.

Some schools of thought recommend that small farms should go the "way of the dinosaur." If they can't survive in an open, competitive market they should disappear. In my opinion this thinking needs to be altered or reversed. Small farms are more than mere rural entrepreneurship. They represent a way of life that has set many of our rural values and determined much of our land management or conservation agendas. I sincerely believe that small farm operations remain the cornerstone of our nations agricultural system. We need to do all we can to keep them operating effectively and efficiently. We have a historical commitment of promoting small farm ideals dating back to the time of Thomas Jefferson. Jefferson recognized the importance of small farms and made conserving them the core of his

agricultural policy. This commitment should not be abandoned. It's time small farm operators and under-served minority farmers are recognized for their contribution to our nation.

The title of the Commission on Small Farms Report is *A Time To Act*. This is a

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*"All of the five major agroforestry practices have the potential to assist the small farm operator become more versatile and sustainable."*

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most appropriate title as many small farms are experiencing desperate times and it is, indeed time to do something about it. Most agroforestry specialists and proponents suggest that agroforestry systems and practices are tailor-made solutions to some of the small farm dilemma. Agroforestry can address many of the social, economic, and environmental challenges that face small farms and ranches. When adopted into a system with other

economic and conservation practices, agroforestry can assist small farm agriculture in becoming sustainable.

Small farms are well-positioned to respond to change. They can not only produce foodstuffs, but also a variety of specialty products. They are especially adapted to producing exclusive products for niche markets. When small farm operators adopt agroforestry practices they develop ways of enhancing or diversifying their farm products. That means they don't have to rely on just one or two farm products for their livelihood. As the old saying goes, "they won't have all their eggs in one basket." Economic diversification allows the farm operator the ability to derive income from multiple sources and still reduce erosion, improve utilization of nutrients, increase production, improve wildlife habitat, and enhance farm aesthetics.

All of the five major agroforestry practices (alley cropping, riparian forest buffers, silvopasture, windbreaks, and forest farming) have potential to assist the small farm operator become more versatile and sustainable. All we need to do is be creative with USDA farm programs to find better ways to get technology to them! 



agriculture and forestry must be dismantled. Approximately 80 percent of our nation's land resource is devoted to either agriculture or forestry. A high percentage of our watersheds are an interwoven mosaic of forests and agriculture. Yet, we (agencies/universities/resource specialists) have traditionally insisted on addressing their economic and environmental concerns separately. If we do not

learn to treat them together, we will miss some wonderful opportunities to address common resource concerns.

Achieving sustainable development will take time and a concerted effort. Many will remember when reduced tillage was first introduced as a new practice to improve both economic and conservation efforts on farms. It took many years to be accepted and is still in differ-

ent stages of adoption. We must recognize that increasing the adoption of agroforestry technologies will likely take the same level of perseverance, but that will be time and effort well spent if it leads to a more sustainable rural America. **NAC**

This article is extracted from a keynote address at the *North American Conference on Enterprise Development Through Agroforestry: Farming the Agroforest for Specialty Products*.

## International Links

by Sarah Workman,  
NAC International Coordinator

The incorporation of trees can provide attractive economic returns in small farm operations. This is especially true during years when crop harvest is less than ideal and on marginal cropland. An article in *Agroforestry Today* by Snook and Zapata discusses the south-central portion of Mexico's Yucatán Peninsula. This area is adjacent to the largest continuous forest in Central America and at times, is subject to wide fluctuation in rainfall. The article describes how some farmers have adopted a diversified production strategy to harvest tree products and other produce from their lands for consumption and sale. The majority of farmers said "they would participate in an agroforestry project even with no material support... to improve their family's well-being and security" because trees "...provide food, cash, and services for rural families."

While reading this article, I was struck by the reasons farmers gave for choosing to adopt practices or not to participate. Many of these reasons were very similar to those heard in the U.S. Much like comments we hear about our CRP program, the two "reasons cited most often for trying agroforestry options were the opportunity to try out new crops and trees and the prospect of receiving free services or materials." Reasons not to participate included lack or uncertainty of a product market, insufficient financial

resources or technical expertise, and not enough labor to invest. Sound familiar?

Over the five years described in the article, farmers and project staff observed what did and did not work. They modified designs and/or management to allow the agroforestry systems to evolve to suit particular needs and preferences. "Collaboration between researchers, farmers, agricultural and forestry technicians has proved to be a dynamic process that is effective in generating, testing and refining agroforestry innovations - which contribute to the production and conservation agenda." We at NAC are working domestically to do the same thing. And, we do not have to be in the middle of large expanses of forest to profitably grow trees.

There are many agroforestry examples around the world we can learn from. A link I will leave you with is the Australian Master TreeGrower website at [www.mtg.unimelb.edu.au/](http://www.mtg.unimelb.edu.au/). It provides information for those "interested in the integration of commercial tree-growing with farming systems, small scale private forestry, private native forest management, and multipurpose tree growing." The Aussies are taking the idea of Tree Farmer to great heights. Take a look. **NAC**

\**Agroforestry Today* (Jan-March 1998) published quarterly by the International Centre for Research in Agroforestry (ICRAF).

## 1999 National Small Farm Conference October 12-15, 1999 St. Louis, Missouri

Planning is underway for the second National Small Farm Conference. The meeting will provide a forum for state and county extension faculty, small farmers, community leaders, and non-governmental organizations to share new approaches to small farm programs. Participants may wish to consider the conference as a possible inservice training opportunity.

For additional information, contact:

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The conference will be sponsored by CSREES in collaboration with other USDA agencies, the EPA, land-grant universities and colleges, community-based and non-profit organizations.



## —Agroforestry—

### A Plane Example

by Greg Ruark

*When I fly I still ask for a window seat. I like looking down at the landscape and studying its patterns, but some of what I see troubles me.*

*I see lakes and rivers intruded by large sediment plumes.*

*I see bodies of water choked with vegetation.*

*I see whole vistas that are cropped with no trees in sight.*

*I see no place for birds to perch or wildlife to dwell.*

*I ask myself why do I see these things. I don't understand how the land got so out of hand.*

*We know what causes soil erosion and about its detrimental effects.*

*We know what nutrient and pesticide loading does to aquatic systems.*

*We know from the "dust bowl" era the value of windbreaks.*

*We know the value of trees for wildlife.*

*Then I wonder what could be. Looking down I try to image a different view.*

*Where could trees be located to protect soil and water resources?*

*Where could trees provide communities shelter from harsh climates?*

*Where could trees add recreation opportunities and aesthetic beauty?*

*Where could trees provide habitat for wildlife?*

*The next time you fly get a window seat. The benefits of agroforestry are plane to see.*

## Forest Farming Conference Held

by Clover Shelton, Technology Transfer Assistant,  
NAC, Lincoln, Nebraska


Minneapolis, Minnesota was the setting for the *North American Conference on Enterprise Development Through Agroforestry: Farming the Agroforest for Specialty Products*, held October 4-7. There were 166 participants representing all aspects of the special forest products industries (large and small company representatives and entrepreneurs, agency folks, university researchers, non-profit organizations, Native American tribes, landowners, and producers.)

According to Scott Josiah from the Center for Integrated Natural Resources and Agricultural Management (CINRAM) at the University of Minnesota and Planning Committee Chair, the conference was successful and beneficial.

"I think (and I believe most of those attending also thought) that it was a great success. While we would have liked to see more people attend, we did attract those from around North America that are the most involved in specialty forest products. Thus, this turned out to be a superb opportunity for networking, making new contacts, and learning of new and sustainable land use approaches and income opportunities."

Following the conference, some registrants attended a field tour.

"The field tours went very well and opened all of our eyes to both the opportunities and the complexities of running a business based on specialty forest products," Josiah said. "I think the highlight for many was a goldenseal and ginseng planting under mature oak hickory forest, as it really was a true representation of what forest farming is."

Proceedings will include all presentations, and are currently under development. Conference registrants will receive a free copy. Others interested in purchasing a copy can contact Erik Streed at CINRAM 612-624-4299, e-mail [CINRAM@forestry.umn.edu](mailto:CINRAM@forestry.umn.edu) or write to CINRAM, University of Minnesota, 1530 Cleveland Ave. N., 115 Green Hall, St. Paul, MN 55108-1027. 





## The USDA National Agroforestry Center A Forest Service — Natural Resources Conservation Service Partnership

**Purpose:** NAC is a pioneering program to accelerate the development of agroforestry, a science and practice that integrates agriculture and forestry land uses. The partnership combines resources of the two agencies to develop and apply agroforestry technologies in appropriate conservation and/or production systems for farms, ranches, and communities.

**Role:** The Center serves as a catalyst to form partnerships, promote cooperation, and leverage resources. NAC cooperates with a national network of agencies, universities, and organizations to encourage agroforestry research and technology transfer. The Center strives to develop and deliver agroforestry technologies based on the needs of resource professionals who assist landowners.

### Programs:

**Research & Development:** Forest Service scientists and co-located NRCS scientists from the Watershed Sciences Institute work with university cooperators to develop and integrate agroforestry technologies to attain more economically, environmentally, and socially sustainable ecosystems.

**Technology Transfer & Applications:** Forest Service and NRCS Agroforesters work with a national network of cooperators to develop and distribute agroforestry technical information.

**International Exchange:** An International Coordinator facilitates the development of agroforestry projects with international cooperators and selectively involves agency and university professionals for mutual benefit.

### For more information, call 402-437-5178 (extensions listed below):

#### Administration

- Dr. Greg Ruark, Center Director, ext. 27

#### Research & Development

- Dr. Michele Schoeneberger, FS Research Leader and Soil Scientist, ext. 21

#### Technology Transfer & Applications

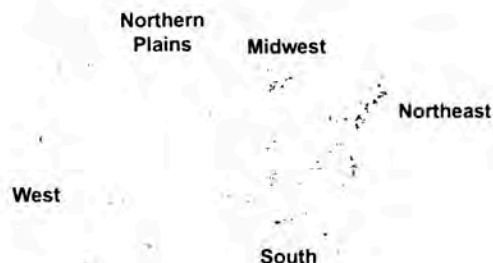
- Jerry Bratton, FS Lead Agroforester, ext. 24
- Bruce Wight, NRCS Lead Agroforester, ext. 36.
- Gary Kuhn, NRCS Agroforester, located Spokane, WA. Phone: 509-358-7946.
- Jim Robinson, NRCS Agroforester, located in Ft. Worth, TX. Phone: 817-509-3215.

#### International Technology Exchange

- Dr. Sarah Workman, International Coordinator, ext. 40

#### Geographic Contacts

- Northeast, Bruce Wight
- Southeast, Jim Robinson
- Midwest, Bruce Wight
- Northern Plains, Jerry Bratton
- West, Gary Kuhn



## Upcoming Events

### March 22-23 and March 24-25, 1999

*Biotechnical Streambank Protection Workshop*, Nebraska City, NE. Contact Nancy Hammond, fax: 402-437-5178.

### April 7-9, 1999

*Regional Agroforestry Workshop*, Ruston, LA. Contact Terry Clason, 318-927-2578.

### April 7-9, 1999

*Hybrid Poplars in the Pacific*

*Northwest: Culture, Commerce, and Capability*, Pasco, WA. Contact, Keith Blatner, 509-335-6166.

### June 12-16, 1999

*Sixth Conference on Agroforestry in North America -- Sustainable Land-Use Management for the 21st Century*, Hot Springs, AR. Contact, Dr. Catalino A. Blanche, 501-675-3834.

### October 12-15, 1999

*Second National Small Farm Conference: Building Partnerships for the 21st Century*, St. Louis, MO. Contact Dyremple Marsh, 573-681-5550.

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Web Site: [www.unl.edu/nae](http://www.unl.edu/nae)

## Mission

The National Agroforestry Center (NAC) is a partnership of the USDA Forest Service, Research & Development (Rocky Mountain Research Station) and State & Private Forestry and the USDA Natural Resources Conservation Service. The Center's purpose is to accelerate the development and application of agroforestry technologies to attain more economically, environmentally, and socially sustainable land-use systems. To accomplish its mission, the Center interacts with a national network of partners and cooperators to conduct research, develop technologies and tools, establish demonstrations, and provide useful information to natural resource professionals.

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Opinions expressed in *Inside Agroforestry* are those of the author and do not necessarily represent the policy of the USDA Forest Service and the USDA Natural Resources Conservation Service.

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