



# Inside Agroforestry

# FIRE & Silvopasture



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Silvopasture systems attempt to optimize the production of both wood products and forage. Where did these concepts and ideas come from?

Grazing animals and fire played major roles in the development and maintenance of naturally occurring savannahs throughout North America. A savannah is defined as a vegetative cover type comprised of open-grown trees or shrubs with an understory composed primarily of grasses and grass-like plants. Savannahs were typically void of dense woody undergrowth made up of shrubs and young trees that are commonly found in the fire-protected forests and woodlands of today. Silvopasture systems create a vegetative structure, similar to the historical savannahs, that can carry a ground fire but does not have the heavy fuel loads that often

lead to destructive crown fires. Grazing animals and fire are increasingly used today in the development, maintenance and management of silvopasture systems.

There are several production and conservation reasons for using fire in silvopasture management:

**1. Wildfire fuels management** – This objective is becoming more and more important and common. As wildfires across the country become larger and harder to contain, fuels management is becoming a very important objective of silvopasture management. The main objective of fuels management is to control the amount, structure and distribution of fuels available for wildfires. By managing these characteristics of available fuels, the frequency and severity of wildfires can be greatly reduced. The reduction of fuel loads, developing discontinuities in the fuel beds and eliminating ladder fuels are the main goals in silvopasture fuels management schemes.

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# NAC Director's Corner

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

## Silvopasture is on the mooooooove!

This issue of *Inside Agroforestry* again visits the topic of silvopasture. In the past few years the demand for and recognition of silvopasture has grown tremendously, especially in the southeastern United States, where southern pine and forage systems composed of both cool and warm season grasses are being successfully blended on the land. This growth is due to several factors: **1)** numerous workshops have been conducted to train natural resource professionals and landowners in the region along with **2)** specific effort to train faculty at the 1890 Universities; **3)** two cost-share programs in the new Farm Bill, the Environmental Quality Incentives Program (EQIP) and the Forest Land

Enhancement Program (FLEP), can be used to foster the adoption of silvopasture; **4)** silvopasture systems are increasingly valued by landowners for their potential to diversify on-farm income by providing for an annual income from grazing, while trees are grown for long-term profits; **5)** managed silvopasture systems are at a low risk for catastrophic fire due to their low understory fuel loads and the low stocking density of trees which are often arrayed in widely spaced rows; and **6)** regional markets for high quality veneer and sawtimber softwood logs continue to expand.



### 3rd Annual 1890 University Faculty Training Workshop on Agroforestry

To date, three 1890 faculty agroforestry workshops have been held at Alabama A&M University. The first workshop was held in June 2000 and provided a general overview of all agroforestry practices. The following year focused on the technical design of riparian forest buffers for water quality. The third workshop was held this June and focused on the technical design of silvopasture systems, that combine timber production with livestock grazing of understory forage. Silvopasture is especially attractive to minority and limited resource farmers in the Southeast who are looking for ways to generate an annual income from grazing, while producing high quality timber for long-term profits.

This year, 27 individuals participated, including faculty from twelve of the eighteen 1890 universities and staff from the Alabama Farmers Federation, the Alabama

Workshop participants received both classroom instruction and hands-on field examples.



Forestry Commission (Outreach Foresters), Auburn University, and the U.S. Forest Service. Many of the participants at this year's workshop noted the increasing demand for goat products in the Southeast due to the influx of immigrants from cultures where goats are a primary source of food and other products. Faculty from eight of the 1890 institutions agreed to jointly write and submit a research grant proposal to study the potential of silvopasture systems for goat production.

The workshops are designed to enable 1890 university faculty to incorporate agroforestry technology into their teaching, research, and extension efforts. Participants

are provided a detailed technical workbook, videotapes, and a CD ROM with corresponding Power Point slide presentations. Funding is provided to defray the cost of participation.

*This year's workshop was designed and coordinated by the USDA National Agroforestry Center. Additional funding was provided by the USDA Forest Service, Washington Office of Civil Rights; USDA Natural Resources Conservation Service, USDA Forest Service, Southern Research Station; USDA Forest Service, Region 8, State & Private Forestry; and the USDA Cooperative States Research Education and Extension Service, Sustainable Agriculture Research and Education.*





**Silvopasture combines forage and livestock production, maximizing the yield of both enterprises.**

# Silvopasture

## Gaining Momentum in the South

**Kimberly Stuhr**  
Technology Transfer Specialist, NAC  
Lincoln, Nebraska

People are learning and silvopasture use is growing! This year the National Agroforestry Center (NAC) and its conservation partners provided technical training to over 300 natural resource professionals. Trainees included staff from Natural Resources Conservation Service (NRCS), State and County Extension, State Forestry and Conservation Agencies, 1890 Universities, Conservation Districts, Non-Government Organizations (NGOs), private consultants, and landowners.

According to Jim Robinson, NAC NRCS Agroforester, "The objectives of these workshops are to increase silvopasture awareness and to encourage professionals to incorporate silvopasture into their courses, research, extension efforts, and ultimately on the ground."

Robinson continues, "The workshops are fine examples of how NAC works in partnerships. The workshop's are designed and coordinated by NAC with funding sup-

port from several groups. The bulk of the funding is used to defray the meeting cost of workshop participants." Technical training was primarily held in Alabama, Florida, Georgia, and South Carolina. At each site, professionals from the local area assisted with training. Included among NAC's silvopasture cooperators are: University of Florida-Gainesville, Florida Cooperative



Extension Service, Auburn State University, Grazing Lands Conservation Initiative, NRCS from South Carolina, Alabama, Florida and Georgia, Clemson University, Georgia Forestry Commission, and

Louisiana State University Hill Farm Research.

Over 250 landowners attended three workshops and a tour on silvopasture. The good word is getting out to landowners. These meetings were held in Alabama, Mississippi, Louisiana, and Texas and were sponsored by a wide array of organizations. For example, the Mississippi workshop was co-sponsored by NRCS, Southeast RC&D, Mississippi Cooperative Extension, US Fish and Wildlife Service, Appropriate Technology Transfer for Rural Areas (ATTRA), Federal Land Bank, Soil and Water Conservation Districts, US Forest Service and Commissioners from nine counties, and rural fire protection. The Federation of Southern Cooperatives in Epps, Alabama, the Stephen F. Austin University and Piney Woods RC&D in Nacadoches, Texas, sponsored the other workshops.

Grazing Lands Conservation Initiative sponsored a July tour for landowners and technical assistance staff from various agencies at the Louisiana State University (LSU) Hill Farm Research Station near Homer, Louisiana to see a working silvopasture system.





“It’s got everything that a normal veneer plant has,” says Will Possinger, Jr., of Lincoln Industrial Corporation, Inc. in Port Angeles, Washington. He continues, “It’s efficient to operate even while other mills have shut down.” Possinger is the owner of this one-of-a-kind mill and has received a lot of positive response from interested producers. He is proud of the mill, which has quickly become a model for others.

Currently, good quality hybrid poplar is being used for high-valued molding, paneling, and furniture stock. While low-quality poplar is being sold for \$30 or less per green ton for pulp. This new veneer mill can take low-quality, unpruned logs and produce veneer sheets. Possinger says that the price for veneer is down right now, but typically four-foot veneer sells for \$140 to \$200 per green ton.

# A VENEER MILL ON WHEELS

BY GARY KUHN, NAC NRCS AGROFORESTER, SPOKANE, WASHINGTON

**EASY ACCESS AND THE HIGH QUALITY TREES GROWN IN SILVOPASTURE SYSTEMS MAKE HARVESTING OR THINNING USING A PORTABLE VENEER MILL AN ATTRACTIVE OPTION**



The portable veneer mill produces peeled four-foot-wide veneer at the harvesting site and eliminates the need for long distance trucking of raw material. The mill can easily peel cottonwood, hybrid poplar, Douglas fir, ponderosa pine, larch, and hemlock. It is constructed on a 26-foot semi-truck trailer and is ideal for entering poplar plantations and silvopasture sites. It handles logs as small as five-inch diameter cut to four-foot lengths, producing 48-inch by 54-inch veneer. The mill recovery rate ranges from 60 to 75 percent. The remaining core, after peeling, can be used for fencing, firewood, handicrafts, or ground for fiber products. According to Possinger, under normal conditions, the Pacific Northwest consumes 240 loads of veneer core per day.

Currently, the veneer panels that this portable mill produces are shipped to a company in Eugene, Oregon to produce finished red alder products. The waste from the veneer production is used for corrugated cardboard, and can be used for bulk fuel and pellet fuels.

Questions on mill operation and production capabilities should be directed to Doug Erickson, Erickson Products, Port Angeles, Washington, phone (360) 452-3680 email [coya@olympen.com](mailto:coya@olympen.com).



# Cattle, Trees and Leo Hollinger

## A Winning Combination

**Joan Love Smith**  
USDA Natural Resources Conservation  
Service, Auburn, Alabama

He is a cattleman. He is a tree farmer. He is a sportsman, a conservationist, and a gardner. He is an innovator who likes to explore different ways to do things. He is Alabama farmer Leo Hollinger.

Leo was one of the first cattlemen in Alabama to integrate trees with livestock through silvopasture. This practice can provide multiple benefits to landowners if managed properly. Trees in a livestock operation can reduce the stress on livestock and maintain forage production. A landowner who includes trees in the forage system can produce additional income from the land by selling timber, Christmas trees, or nut and fruit crops; or from commercial wildlife or recreational opportunities provided by the trees.

Sid Brantly, NRCS Regional Grazing Land Coordinator and Raleigh Wilkerson, ALFA Director for Bee, Sheep, Goat, and Ratites (ostriches, emus, etc), has worked with Hollinger to get his silvopasture operation up and running. They visited the research farm at Louisiana State University (LSU) where they found that silvopasture could be profitable and could enhance the aesthetics and value of the property.

“When we returned,” Hollinger explains, “I planted 40 acres of pine seedlings in our pasture. Next year I will plant 25 or 30 acres and I will continue to plant until all my open land is in pines. The trees are genetically improved second-generation loblolly pine developed by a local paper company to fit our particular site. Once we get into production and the trees are marketable, we expect a good cash flow because we will have trees ready to thin or harvest every year or every other year

depending on the growth and the markets. With wide spacing and good fertilization, we expect faster growth than what we would get on a regular plantation. The trees will be shorter than in a traditional pine plantation, but they will be fatter.”

“Our pasture is predominantly common Bermuda and Tifton 9 Bahia grass with a lot of volunteer rye grass and crimson clover,” Hollinger continued. “We plowed the field and attempted to establish the Bahia grass by overseeding with a conventional planting drill. We will graze the pasture until the end of February, then plant trees, then cut some hay from it, hoping that the clover will reseed to continue the process. The trees are planted in rows 32 feet apart.”



**“Once we get into production and the trees are marketable, we expect a good cash flow because we will have trees ready to thin or harvest every year or every other year depending on the growth and the markets,” – Leo Hollinger**

Hollinger is convinced that having trees in his pasture is much better than open pasture for what he wants to do. “It is going to be real pretty out here in 10, or 15, or 20 years. It will look like a park,” he explains. “I plan to remove trees to create 32 foot by 32 foot spacing and they will really do some growing.”

Conservationist Leo Hollinger explains “To my way of thinking, these wide row spaced pine trees with the grass between them will be better for wildlife. The grass is going to hold more soil in place. The water coming off the grass will be cleaner than if we had just a solid stand of real thick pine trees with pine straw on the ground.”

Wildlife habitat is a major objective of Hollinger’s. Turkey and deer are plentiful on the property and he trades turkey and deer hunting rights on his land for duck hunting rights on land owned by some of his friends. He also is looking toward some non-consumptive uses such as wildlife viewing and photography. Pastures and trees are located for ease of viewing the species as they cross the land. He does not plan to exclude hunting but will take advantage of this additional use of his natural resources.

To provide a little spending money for the children and to help them experience the benefits of farming, Hollinger has planted watermelons in alleys between rows of pine trees (alley cropping).

Leo Hollinger and his wife, Jeannie, a county extension agent, enjoy their life in the country. They have a wonderful family, a beautiful home, and their land. Their legacy is one of good stewardship – to leave their land better than they found it and to pass it on to their children and grandchildren.

*Reprinted from: Grazing Lands Round-Up, Volume 8, July 2000.*





# Are You EQIP'd?

## EQIP Helps Producers Use Silvopasture Technology to Protect Forests and Water

**Frank Gariglio**  
NRCS Forester, Lewiston, Idaho

Ranchers and forest landowners should look seriously at how they can utilize the Environmental Quality Incentives Program (EQIP) for silvopasture systems. EQIP is a voluntary USDA conservation program to treat identified soil, water, and related natural resource concerns on eligible land. It provides technical and financial assistance with up to 75 percent cost-share on conservation practices. A landowner may also receive incentive payments for implementing land management conservation practices important to improving and maintaining the health of natural resources in the area.

Eligible land includes cropland, rangeland, pasture, private non-industrial forestland, and other farm or ranch lands. Sixty percent of EQIP dollars must be spent on livestock related issues. EQIP's authorized budget of \$6.1 billion over six years starts with \$400 million in fiscal year 2002 and increases to \$1.3 billion in fiscal year 2006. The decision on which practices will be funded is made locally.

### An Idaho Example

As we in the western United States are very much aware, maintaining forest health, protecting watershed and riparian areas, and reducing fire hazards is a priority on public lands. Since watersheds don't follow clear property lines, these issues also impact private landowners. It only makes sense that private landowners are also dealing with the same issues and are trying to implement resource management systems to achieve similar objectives.

In 1999 a project area was designated to apply many of the same solutions that the public land management agencies use. The

Soldiers Meadows Project began with an area water assessment publication. In 2000, because of the large amount of Nez Perce Tribe ownership, this watershed received funding utilizing EQIP dollars that were set aside for tribal use. The project was set up as a geographic priority area. The local Natural Resources Conservation Service (NRCS) office began developing Resource Management System (RMS) plans and awarding contracts that year.

This 50,000-acre "watershed" is composed of the upper drainage of several streams that eventually empty into Idaho's Salmon, Snake, and Clearwater Rivers. The area consists of forestland on a high elevation plateau, owned and operated primarily by the Idaho Fish & Game, Nez Perce Tribe, and private non-industrial landowners. The Soldiers Meadows area of Idaho is characterized by gentle topography and historically large amounts of old growth ponderosa pine forests. In the early 1900s, this area was one of the first to have large-scale logging. Over the years preferential and frequent harvesting resulted in a shift to late seral species (Douglas-fir, grand fir) in most of the stands and a loss of genetic diversity. Additionally, nearly a century of fire exclusion has added tremendous fuel loads to this area.

The "Maloney Creek" fire, the largest private-land wildland fire in Idaho in 2000, burned to the southern boundary of the project area. That event raised the level of awareness in the project area to the threat of wide spread forest fires. Threats of large-scale, high intensity wildland fires could adversely impact the hydrologic function of the lower stream reaches of all the watercourses that originate in the Soldiers Meadows area, severely impacting efforts to restore native steelhead and salmon runs in the lower portions of the streams. The water-

shed planning committee recognized these problems and the opportunities available to restore health and diversity of the forest and capitalize on the grazing resources using silvopasture technology. Today, almost 25 percent of the eligible lands in the area are under EQIP contract.

Mike McCann is a private landowner in the treatment area. Mike manages almost 3,000 acres of forestland for livestock grazing and timber production goals. Through EQIP contract financial assistance and with NRCS technical guidance, Mike is actively restoring his forests with tree planting and thinning. He commonly applies pre-commercial thinning and tree harvesting on a block of land and immediately seeds the area to a grass mixture for cattle grazing. By following these guidelines, Mike controls the spacing, species selection, and vigor of his forest trees while at the same time increasing livestock production opportunities. This silvopasture application reduces the fire danger and increases opportunities for short and long-term economic return from livestock and tree production.

Mike's relationship with the USDA serves as a model for other landowners in the project area. The other contract holders (both private and Tribal owners) are also applying pre-commercial thinning and tree planting, but Mike is specifically addressing timber and livestock production in a very intensive way. Mike is also putting in cross fences, water developments, and other practices.

This project is a joint effort between the Natural Resources Conservation Service, the Nez Perce Soil and Water Conservation District, Idaho Fish & Game, Idaho Department of Lands, and the Nez Perce Tribe (Forestry and Land Services Departments).



# Fire

continued from page 1

**2. Maintenance of tree densities** – Prescribed burning may be applied to enhance or retard reproduction of targeted tree species. When natural reproduction is desired, fire can be an effective tool in timing and completeness of regeneration.

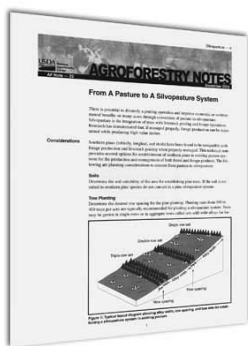
**3. Management of unwanted woody and herbaceous plants** – One of the most common objectives for using prescribed burning is the control of unwanted vegetation. Prescribed fire, when properly planned and applied, can effectively suppress or kill unwanted plants in established tree stands. Most unwanted woody plants can be controlled by the use of fire. Most non-sprouting species can be killed by a fire that will not harm the existing established trees. Sprouting species can be managed to minimize competition and enhance production of established species. The need for herbicides and mechanical treatments to control unwanted vegetation can be greatly reduced through the use of fire. When combined with a grazing management plan, both unwanted woody and herbaceous plants can be managed effectively and economically.

**4. Management of insect and disease pests** – Insect and disease pests on trees, forage and livestock can be managed in a very similar way as are unwanted plant pests. The use of prescribed fire, timed to the life cycle of the insect or disease, can be a very effective control method. This may be especially true when combined with grazing management that breaks parasite and host organism cycles. Chemical and mechanical methods to manage pests can be greatly reduced when combined with fire.

**5. Forage quantity and quality improvement** – Another common objective of prescribed burning is improvement of forage quality. Prescribed burning is often used to remove old decadent growth. This allows the fresh new growth to be readily available to the grazing or browsing animal. When applied with a planned grazing management scheme that provides proper timing of grazing after the fire, both forage quantity and quality are improved. The performance of the grazing animals is also improved by more and better forage.

**6. Improvement of grazing distribution** – Prescribed burning can be used to remove vegetative barriers to grazing and browsing animals, making more area accessible to the animal. Prescribed burning can also be used to erase the “land memory” of past grazing or browsing patterns by making forages of the same species, equally palatable.

All of the above conservation and production objectives may be integrated into an overall plan of grazing and wood product harvesting. The proper planning and application of prescribed burning relies on the development of prescription parameters that time the environmental conditions and vegetation characteristics to achieve the desired results. Prescriptions must be specific to the objectives and situation of the landowner. Assistance should be obtained in the development and application of prescribed burns. Assistance may be available from your local Natural Resources Conservation Service (NRCS) office, County Extension Service office, state forestry agency and/or USDA Forest Service, US Fish and Wildlife Service, and non governmental organizations such as The Nature Conservancy or Audubon Society.



## Coming Soon: Two New Silvopasture Agroforestry Notes

NAC staff are working with Oregon State University on the production of two new *Agroforestry Notes* that will join the Silvopasture series.

The first of the *Notes* will present operational experiences with afforesting pastures in the more humid maritime zone. The second *Note* will emphasize conversion of forested land into silvopasture in the more arid ponderosa pine and mixed conifer zone of the interior western US and Canada.

Watch for these *Notes* in your mailbox in 2003.



## 8th North American Agroforestry Conference Agroforestry and Riparian Buffers for Land Productivity and Environmental Stability

June 23-25, 2003  
Oregon State University, Corvallis, Oregon

Conference emphasis is on opportunities for sustainable crop production in managed riparian buffers and planted forests (nontimber forest products) in the Pacific Northwest. Sessions will be on silvopasture, alley cropping, hybrid poplar, and specialty forest products. A one-day symposium is focused on design and use of riparian forest buffers to enhance stream function and stability. Contributed papers can cover all five temperate agroforestry practices. A full-day field tour to the Willamette Valley will visit landowners who are successfully using agroforestry practices. A pre-conference tour will visit agroforestry practitioners in Central Oregon. Full and partial (daily) registration rates are available.

Co-sponsored by the Association for Temperate Agroforestry (AFTA) and Oregon State University College of Forestry. The North American Agroforestry biennial conference has been held since 1989.

Once details are finalized, the first conference announcement and call for papers will be circulated by e-mail. To add your name to the contact list, e-mail Miles Merwin, AFTA President, at [mm1@onemain.com](mailto:mm1@onemain.com)

Additional information will be posted on AFTA's website:  
[www.missouri.edu/~afta/Whats\\_New](http://www.missouri.edu/~afta/Whats_New)

# Upcoming Events

## October 25-26, 2002

*Special Forest Products Production and Marketing Conference.* Cape Girardeau, MO. Contact: Julie Rhoads, 573-882-3234, [RhoadsJ@missouri.edu](mailto:RhoadsJ@missouri.edu).

## November 5-7, 2002

*Excellence in Conservation Planning, SWCS Northern Regional Conference.* Nebraska City, NE. Contact: Rob Glidden, 308-334-5655.

## November 10-14, 2002

*American Society of Agronomy Crop Science & Soil Science.* Indianapolis, IN. Contact: David Kral, 608-273-2021, [dkral@agronomy.org](mailto:dkral@agronomy.org).

## February 2-7, 2003

*International Society for Range Management.* Casper, WY. [www.rangelands.org](http://www.rangelands.org).

# Editor's Note

Due to wild fire suppression costs, NAC's budget has been restricted for the remainder of fiscal year 2002. Consequently, no Summer *IA* was produced. Instead you are receiving this special Fall newsletter in early October and a Winter issue this winter. We then plan to return to our usual production schedule of Spring, Summer, and combined Fall / Winter newsletters.

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## Mission

The USDA National Agroforestry Center (NAC) is a partnership of the Forest Service, Research & Development (Rocky Mountain Research Station) and State & Private Forestry and the 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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