



Sweet on Silvopasture

LIKE mixing ingredients together to make a cake, three components – trees, forage, and livestock – are blended together to create a silvopasture system.

You can custom-design silvopastures for individual landowners, but four key characteristics are the essence of silvopasture and distinguish it from typical grazing or forestry technologies.

- **Intentional** – Each silvopasture ingredient is purposefully managed to yield multiple products and benefits.
- **Intensive** – The system recipe must be regularly and deliberately managed.
- **Interactive** – Just as a baker works to

create the perfect texture and flavor, silvopasture resources are managed to optimize desired effects and to mitigate any undesired effects. The goal is to enhance production of more than one harvestable component at a time, while also provide conservation benefits like nonpoint source water pollution control or wildlife habitat.

- **Integrated** – The understory, trees, and animals are structurally and functionally combined.

Together, this mix will create a sweet, successful silvopasture. 🌲

Inside

4 RECIPE FOR SUCCESS



DON'T JUST WISH,
REDUCE THE RISK

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NAC Director's Corner

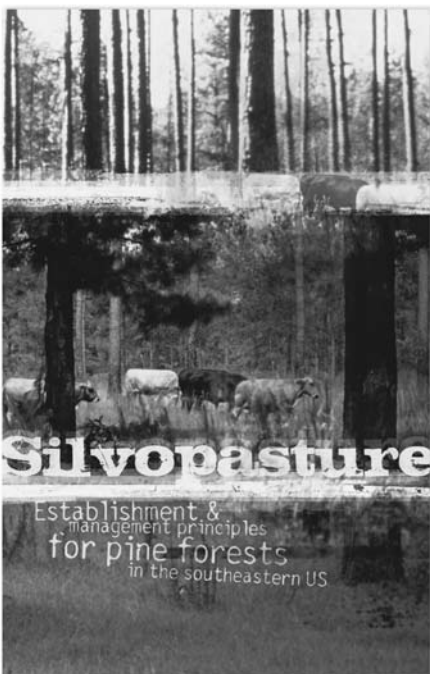
A commentary on the status of agroforestry
by Dr. Greg Ruark, NAC Program Manager



Silvopasture research provides more design options

THE demand by landowners for information on silvopasture is growing tremendously, resulting in a corresponding increase in demand for more information on a wide variety of silvopasture options. To date, most research on silvopasture systems in the South has examined loblolly pine and, to a lesser extent, slash pine in combination with introduced forage grasses for cattle production. However, the recent refinement of techniques that can release the growth of longleaf pine seedling in their first year of outplanting has made this species more attractive to landowners. Along the Gulf Coast, where many loblolly pine stands were toppled or broken apart by the high winds associated with hurricanes, longleaf pines fared better. Longleaf pine silvopasture systems have the potential to provide landowners with a strategy to reestablish pines that are less susceptible to wind damage, while providing an annual revenue stream from

grazing that would diversify their income and lessen the overall risk of economic loss from catastrophic events. In the West, most silvopasture research has focused on the development of ponderosa pine systems for cattle or sheep grazing. However, the heightened demand for goat meat has increased the interest of landowners in finding ways to incorporate goats into their silvopasture systems in both the West and the South. Wildlife continues to be of primary interest to many landowners and efforts are being amplified to modify existing silvopasture designs in order to optimize conditions for species such as quail, wild turkey, and non-game birds. To this end, studies are underway to examine the performance of native grasses as the sole or partial forage component of a silvopasture system. Several of these research efforts are summarized in this issue. 🌲



Field guide available soon

THIS 8 ½ x 5 ½ spiral-bound technical handbook is being developed to be a field companion. It brings together under one cover the diverse aspects of silvopasture management. Topics covered include economic, planning, and establishment issues to consider in creating and managing silvopastures. The main part of the guide is divided into three sections: The Tree Component, The Forage Component, and The Livestock Component.

The guide is a general reference for silvopasture establishment and management, complete with a section of additional resources. The handbook will be completed this winter. It will be available for order on NAC's website: www.unl.edu/nac.



Graduate student grant program

SUSTAINABLE Agriculture Research and Education (SARE) offers graduate student grants in sustainable agriculture for projects that address sustainable agriculture issues and are part of the student's degree program. Grant proposals in the North Central Region are due in January.

For more information, visit <http://www.sare.org/ncrsare/grad.htm> or contact Bill Wilcke at 612-625-8205 or wilck001@umn.edu.

Ecological sites mimic natural systems

Michael Hall, NRCS Grazing Lands Specialist, and **Richard Oliver**, NRCS Forester, Greensboro, NC; **Homer Sanchez**, NRCS Rangeland Management Specialist, Ft. Worth, TX

SILVOPASTURE resembles many of our great coniferous savannah systems both in the West and the Southeast. Awareness of how natural processes work can help us develop similar conditions to meet management objectives.

The ponderosa pine systems of the West and the longleaf pine/wiregrass systems of the Southeast are known for their open canopy of overstory trees with a grass/forbs understory. These savannah systems developed through natural processes such as wind, ice, or fire that “opened up” the stand of trees and are maintained in this state as a result of periodic fires and/or wildlife.

Today, natural landscapes can be divided into “ecological sites” for the purposes of inventory, evaluation, and management. An ecological site is a distinctive type of land with specific physical characteristics that differ from other kinds of lands. An ecological site is the product of all environmental factors responsible for its development. The procedure for collecting and describing all the environmental characteristics and interactions on



This photo shows several different land types that are described as ecological sites.

NAC file photo

areas perceived as having the same historic plant community. Succession is the process of soil and plant community development on an ecological site over time. State and transition models can be developed to show how an ecological site will respond to disturbances (fire, drought, insects,

an ecological site is called an Ecological Site Description.

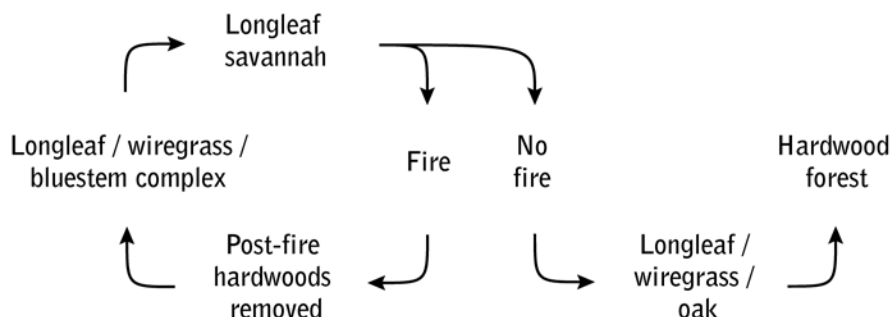
Ecological Site Descriptions relate ecosystem components within and between

wind, and wildlife) and management.

By understanding how nature creates and maintains savannahs, we can initiate and develop silvopastures that mimic natural ecological systems across the country. For instance, rather than a natural phenomena that opens up a forest stand, as land managers we can thin or selectively harvest trees to reach the desired canopy opening. Livestock and rotary mowers normally replace fires and wildlife in preventing them from transitioning back to a closed canopy forest.

Collection of data and development of Ecological Site Descriptions is an ongoing process. Existing data is maintained and is available for review in the Ecological Site Information System (ESIS): <http://esis.sc.egov.usda.gov> 🌲

Part of the Ecological Site Description is a state and transition model that describes vegetation dynamics on the site.



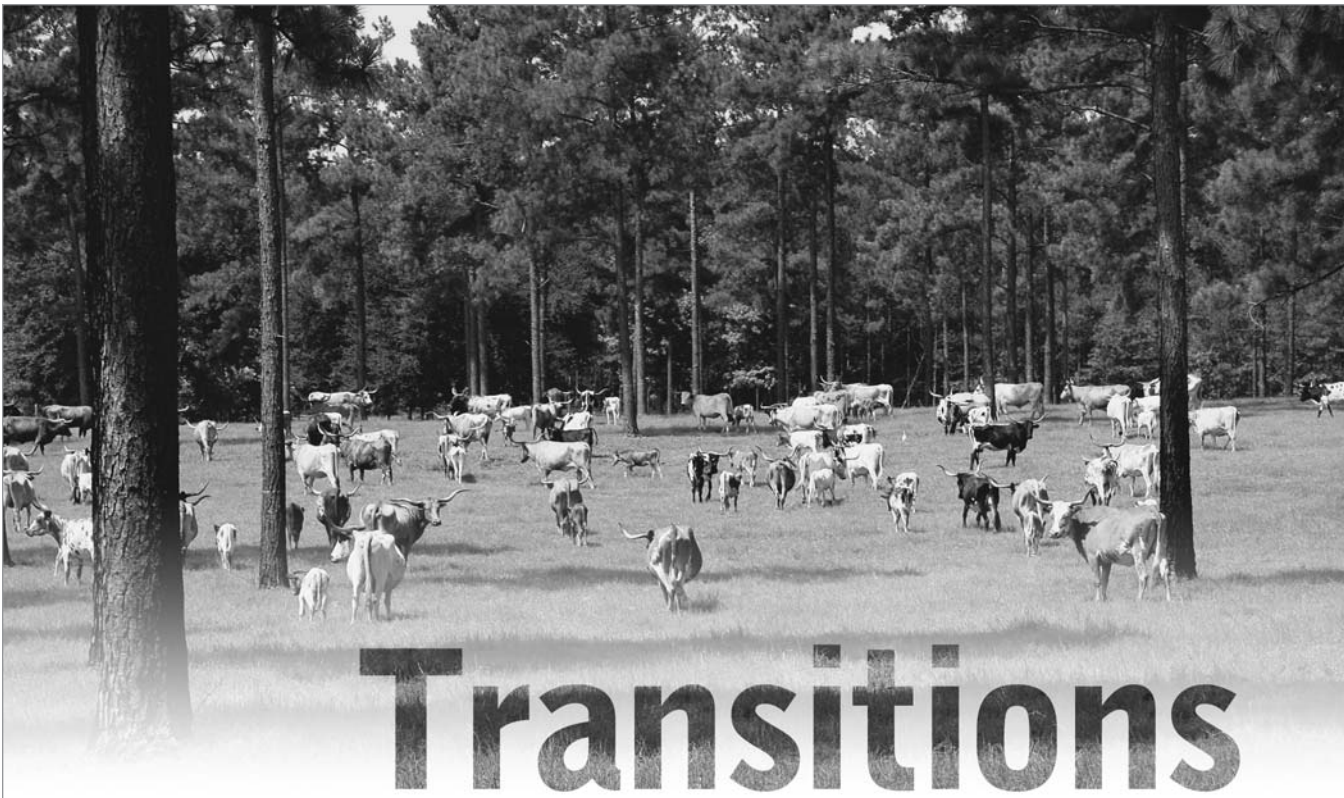


Photo courtesy of Michael Hall

CRP: pines to silvopasture

Michael Hall, N R C S Grazing Lands Specialist, and **Richard Oliver**, N R C S Forester, Greensboro, NC; **Homer Sanchez**, N R C S Rangeland Management Specialist, Ft. Worth, TX

THE Conservation Reserve Program (CRP) has provided landowners with an opportunity to remove highly erodible and other sensitive lands from row crop production, placing it into permanent cover of trees or grass. Landowners receive an annual “rental” payment for doing so.

Many landowners need the annual income they receive from CRP payments until they can harvest their pine trees. Silvopasture may be an alternative for them. Silvopasture systems are designed to produce a high-value timber component, while providing short-term cash flow from forage and livestock.

Before you begin

Before converting a CRP pine planting to a silvopasture make sure that the CRP contract has expired and that USDA Farm Services Agency has released the land.

Assess the current condition of the pine stand. If basal area is greater than 100 square feet per acre, it may be necessary to thin trees in a two stage process. Never thin over 50 percent of the basal area of the tree stand at one time. This is necessary in order to avoid tree sweep as they react to increased sunlight, and to avoid increased wind throw and top breakage problems.

For a silvopasture system to be successful the pine stand must be thinned enough to allow sunlight to reach the ground to promote forage growth. The

see **CRP** on page 9

Success story

Michael Hall

N R C S Grazing Lands Specialist, Greensboro, NC

JIM Adkins, a consulting forester from Summerville, South Carolina left a 2002 silvopasture workshop (sponsored by NAC) with some needed Continuing Forestry Education credits and the notion that converting a stand of pines to a silvopasture could be a viable alternative, given the right circumstances.

A few years later, the opportunity presented itself when a client, Robert O. Collins of Blackville was interested in modifying a loblolly pine plantation to include grazing for 150 head of longhorn cattle. Collins, who was unfamiliar with the term silvopasture at that time, knew what he wanted the pasture to look like.

see **Success** on page 9

Goats in the forest



Lyn Townsend,
N R C S Forester,
Portland, OR; **Bruce**
Wight, N R C S Lead
Agroforester, Lincoln, NE

IN the foothills of the Sierra Nevada Mountains, near Colfax, California, native vegetation is not conducive to conventional livestock operations. The brush and trees shade out much of the grass and forbs that typically provide range feed for cattle and sheep. But, the same brush and trees offer superb feed for browsers, like goats and some varieties of sheep.

Allen Edwards is not your traditional farmer. He, along with his wife and children, created a “stacking enterprise,” in which their goat silvopasture is a part. Enterprise stacking takes advantage of every piece of ground that is productive and works to sustain the operation. Each microclimate is examined and managed and new enterprises are always evaluated to add to the stacks.

In 1946, Allen’s father purchased a 520-acre farm intending to manage it as a tree farm. In 2001, a wildfire destroyed over 100 acres. Fortunately, a 900-foot wide by one-half mile long fuel break prevented additional loss.

“What we have always done, and still do, is grow trees for lumber. But we’ve expanded for a number of reasons,”

Edwards explained. “We lost a quarter of our land in the Ponderosa Fire six years ago so I replanted 10,000 pine trees. So much brush came back that we added raising sheep and goats.” The goats produce additional income in his stacking enterprises and also reduce the risk of future fire. The annual goat browse also helps keep the deer range in good condition.

In economic terms, a traditional tree farm enterprise focused primarily on sawlog production may net \$150 per acre per year, while the stacked enterprise

“What we have always done, and still do, is grow trees for lumber.”

**Allen Edwards, farmer,
California**

approach may yield up to \$500 per acre per year. The other components of Allen’s stacking enterprises include:

- **Overstory trees** – Long-term sawlogs.
- **Intermediate tree thinning** – “Stove wood” (firewood); posts and poles

could be an additional product. Hog fuel at \$15 to 20/dry ton (1 cord of Douglas fir) is not as lucrative as stove wood.

- **Small tree reproduction** – Potential “free range” Christmas trees (\$3 to \$9 per tree) as well as bundles of greenery from Douglas fir and western cedar (\$2.50 per bunch).
- **Understory** – Goat grazing or browsing; Understory “weeds and brush” are browsed by the goats. For example, the deciduous sweet birch has a 20+ percent protein resulting in producing goats with a high-grade meat with freshness and taste. Allen currently sells the goat meat to three restaurants along with a variety of garden greens that are produced in fields near the house.

Managed goat browsing is a key component of the Edwards multi-faceted enterprise. By reducing the aggressive competition of invading woody shrubs, the regenerating pines grow faster while at the same time reduce the fuel loads resulting in a lower fire risk from another wildfire. Allen’s enterprise stacking approach has enabled him to continue as a viable and sustainable farm that supports the local economy instead of selling parcels to the ever increasing rural housing developments. 🌲

A taste of silvopasture research



As the interest in silvopasture continues to grow, so does the demand for guidelines and technical information. To meet this demand, scientists around the country are examining the effects of silvopasture on different animals and comparing various forage and tree combinations. Here are a few current research projects.

Oregon State University

There are approximately one million hectares of hill land, woodland, and pasture in western Oregon. Silvopasture presents opportunities to increase hill land productivity, profitability, and biodiversity. The goal of this research project is to develop conceptual models of silvopasture structure and function, based upon quantifiable properties, which will allow people to predict the general impacts of silvopasture design and management decisions. The project has accumulated 14 years of tree and pasture measurements. Current activities concentrate on monitoring tree and pasture growth, with emphasis on integrating the data to expose trends in tree/pasture interactions over time and space. In addition, the long-term nature of treatment application offers significant opportunities to study accumulated treatment effects such as carbon and nitrogen accretion, and soil compaction.

For more information: Steve Sharrow
Rangeland Resources, Oregon State
University, Corvallis, OR; 541-737-
1627, Steven.H.Sharrow@orst.edu

Nacogdoches, Texas

An existing cooperative project with the USDA Natural Resources Conservation Service (NRCS) and the National Agroforestry Center will be joined to evaluate the effects of silvopasture management on soil quality and soil ecology, including earthworm ecology. Both pine plantation and pasture conversion to the silvopasture system will be evaluated. Two study sites in east Texas will be used for the research. The study sites and findings of the research will also be used for landowner demonstration programs conducted with NRCS.

For more information: K. W. Farrish, School of Forestry, Stephen F. Austin State University, Nacogdoches, Texas; 936-569-7029, kfarrish@sfasu.edu

University of Missouri Center for Agroforestry

Researchers are investigating the similarities and differences in cattle performance between traditional open pasture rotational grazing and silvopasture grazing. Individual projects include:

- Response of cattle and trees in pastures with planted trees
- Extended grazing season with early/late season forages sown under alley cropped pine
- Influence of intensively managed grazed cattle on forage and trees
- Effects of managed hardwood forest stands on understory shade tolerant forages
- The integration of silvopastoral practices into unimproved, standing timber
- Forage growth characteristics and animal utilization of stockpiled tall fescue in a silvopasture system
- The effects of silvopasture practices on survival and growth of underplanted white oak

For more information:
www.centerforagroforestry.org/

Auburn University, Alabama

A silvopasture project is underway to increase the understanding of plant-soil-livestock interactions in order to enhance the sustainability of southern pine silvopasture systems. The objectives include:

- Determine the impact of nitrogen supply on above- and below-ground forage productivity, forage quality, and plant diversity
- Determine the impact of nitrogen supply on pasture soil structural stability and relationships to soil compaction, and water infiltration

and retention in developing and mature silvopastures

- Compare the use of small ruminants to the more conventional use of herbicides to control invasive

“Questions about silvopasture are coming from many sectors. NAC is working with partners to find answers.”

– Greg Ruark, NAC Program Manager

broadleaf plants and the impacts on infiltration

- Examine economic feasibility and level of landowner acceptance
- Estimate the effects of management practices on watershed-level hydrology

Cooperators include Auburn University, NRCS (AL, GA, NC), Fort Valley State University, Georgia Forestry Commission, and University of Florida

For more information: Mary Goodman, Forage and Grazing Lands Ecology, Auburn University; 334-844-3936, goodmms@auburn.edu

Federation of Southern Cooperatives, Epes, Alabama

A loblolly pine / goat silvopasture study has been established in the “Black Belt” region of Alabama, on property of the Federation of Southern Cooperatives. The Federation is comprised of over 100 black farmer cooperatives located throughout the Southeast. Research includes:

- Evaluating browse and forage species performance under loblolly pine
- Studying the effects of browse and forage species on the growth and health of goats
- Investigating the effects of meat goat-loblolly pine silvopasture on

soil chemical, physical, and hydrological properties

- Evaluating the economics of pine silvopasture goat production in the Black Belt region of the Southeast

Partners include Alabama A&M University, Tuskegee University, Auburn University, the Alabama Forestry Commission, and the USDA National Agroforestry Center.

For more information: Dr. Ermson Nyakatawa, Alabama A&M University; 256-372-4241, Ermson.nya@aamu.edu.

Agricultural Research Service (ARS), Appalachia

A multidisciplinary team of scientists are raising lambs on oak silvopastures to compare their progress on traditional pasture versus silvopasture. Instruments at the research sites monitor light, soil temperature, wind speed, precipitation, and soil moisture. Some researchers keep a watch on the above ground processes while others observe what’s happening underground, since there’s a possibility that the trees help shallow grass roots grow. Other experiments involve black walnut/honeylocust silvopastures.

For more information: www.ars.usda.gov/is/AR/archive/aug05/sylvan0805.htm

Florida A&M University Research Center

The objective of research at Florida A&M is to help limited resource landowners seek alternative uses for timberland. Researchers converted a 20-year old loblolly pine plantation to silvopasture and planted two varieties each of bahia and Bermuda grass species. Goats were introduced. The results indicate it is feasible to successfully undertake a silvopastoral system with goats; it is both economically and environmentally beneficial.

For more information: Oghenekome U. Onokpise, Agronomy, Forestry and Natural Resource Conservation, 850-561-2217, oghenekome.onokpise@famuedu 🌱

Make a silvopasture and slow out the wildfire



by Richard Straight
FS Lead Agroforester
Lincoln, NE

THERE have been over 77,000 fires thus far during the 2007 fire season that have burned over 9.2 million acres in the United States. The number of acres burned is almost three times the 10-year average. Increasingly, fire prevention and suppression efforts are complicated by the growing occurrence of private forest ownership in the Wildland-Urban Interface (WUI), where houses are interspersed in forest and woodland areas.

The high fuel loads of unmanaged forests, coupled with dry weather, increase the incidence and severity of wildfires. Unmanaged forests essentially develop into thick stands of competing trees. This competition creates a high incidence of tree mortality, which increases the fuel load, thus increasing the risk for catastrophic fires.

Several factors create these high-risk situations:

- Limited harvesting or thinning;
- Inability to use prescribed fire around

developing residential areas;

- Lack of post-harvest activities, such as tree and shrub regrowth management;
- A decline in forest health (overstocking creates favorable conditions for insects and disease).

An alternative to unmanaged forests and plantations is silvopasture. Silvopastures are intensively managed for both forest and forage products, and as a result address these high-risk situations. Converting a thick forest stand to a silvopasture system has numerous benefits:

see **Fire** on page 11

CRP

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canopy density goal for a silvopasture is 25 to 45 percent for warm season grasses, and 35 to 65 percent for cool season grasses.

Thinning alternatives

Thinning can be done in one of three ways: (1) removing entire rows of trees leaving linear pattern of trees and open alleys; (2) selectively removing trees. This creates a more natural “park like” setting, but requires more effort in marking, harvesting, and establishing grass; or (3) leaving clusters (motts) of trees with larger open areas (a variation of the selective thinning). This method is very advantageous for wildlife if mast producing tree and shrub species are allowed to remain in the clusters.

Pruning

Most pine stands in the Southeast coming out of CRP will probably have done a good job of self-pruning, but some additional hand pruning may be needed. Pruning of lower branches up to a height of at least one log length has proven to be profitable by producing large knot free logs. Pruning also raises the tree canopy so that more light can reach the ground, thus maintaining higher pasture production for a longer portion of the tree rotation. Remove no more than $\frac{1}{3}$ to $\frac{1}{2}$ of the total crown while maintaining a live crown equal to $\frac{1}{3}$ of the tree height.

Woodland and forage

Silvopastures are intensive systems, thus it is important to establish a high quality forage crop. This can be either a native warm season grass or improved grasses such as bahiagrass, coastal bermudagrass, and tall fescue.

Grazing can control grass competition for moisture, nutrients, and sunlight thereby enhancing tree growth. Well managed grazing provides economical control of weeds and brush without herbicides. Fertilizer applied for forage is also used by

trees, increasing their growth as well.

For silvopasture systems to be successful there must be a commitment to intensive forage, livestock, and timber management. Plan future tree harvests in about five year intervals to maintain desired canopy density and maximum growth of final crop trees. Rotational or intensive grazing is a must. Continuous grazing is not recommended.

Wildlife benefits

While economic gain is most often the primary goal of a silvopasture system, wildlife habitat is commonly seen as an added benefit. Minor modification can greatly improve the value of a silvopasture system for wildlife, while still retaining most of the timber and forage production potential. Adding legumes as a forage component for grazing also benefits wildlife. 🌱

Success

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Collins' objectives were driven as much by the resulting aesthetics as the need to thin the trees or create more pasture. He needed the additional pasture but did not want the openness of the typical Southeastern pastures and hayfields.

Leave trees were marked with a goal of 30 to 40 saw timber and pole quality trees per acre. Adkins believes that cutting the stand back to the desired stocking does not decrease the quality of the remaining timber. He does caution that thinned stands can be susceptible to wind throw and ice damage during the 3 to 4 years following harvest. The trees need at least this much growing time to develop strength to withstand these weather stresses.

Since Annosus root rot is a problem associated with the sandy soils of this area, Adkins recommends a final stem count that includes a small percentage increase should the need arise to remove infected trees. CRP stands of loblolly pines, 20 years of age and older, are common in Adkins' area of South Carolina. He says

that for a landowner with livestock and a desire to increase grazing acreage, converting CRP plantations to silvopasture is an alternative worth considering.

Collins is working on another 150 acres of silvopasture near Blackville to provide grazing for a cattle operation that includes a large herd of Santa Cruz cattle. 🌱

Conservation Security Program and silvopasture

Lyn Townsend

NRCS Forester, Portland, OR

LARGE blocks of traditional forest land are not eligible for the Conservation Security Program (CSP). However, forest land classed as “silvopasture,” the intentional combination of trees and livestock under intensive management with interactions between the components as an integrated agro-ecosystem, is eligible.

CSP is a voluntary conservation program that supports ongoing stewardship of private agricultural lands by providing payments for maintaining and enhancing natural resources. CSP identifies and rewards farmers and ranchers who are meeting the highest standards of conservation and environmental management with their operations. The program provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant, and animal life, and other conservation purposes on Tribal and private working lands. Working lands include cropland, grassland, prairie land, improved pasture, rangeland, as well as forested land that is an incidental part of an agriculture operation.

A fact sheet with more details is available at: www.nrcs.usda.gov/programs/csp/pdf_files/csp_fs3_05.pdf 🌱



reasons to adopt silvopasture

- 1 Diversify on-farm income.** Silvopastures provide annual income from grazing and long-term profit from trees, which respond to different market pressures.
- 2 Reduce economic damage** that can result from a catastrophic event, like a hurricane or tornado. Accessibility into a silvopasture increases its salvage value.
- 3 Reduce the risk of wildfire.** Silvopastures have a lower understory fuel load than a traditional plantation with a lower tree stocking density.
- 4 Control insects.** Bark beetles are primarily attracted to dense stands of trees and not typically found in silvopastures. The distance between trees makes it difficult for the beetles to spread.
- 5 Minimize the impact of low pulp market prices** on management decisions. Silvopastures eliminate the need for pulp tree thinning.
- 6 Environmental benefits.** Silvopastures increase biological diversity, help protect water quality, reduce soil erosion, and improve water holding capacity of the land.
- 7 Provide wildlife habitat.** Silvopastures create structure and plant diversity which is attractive to many wildlife species including wild turkey, red cockaded woodpeckers, and deer.
- 8 Provide shade for livestock.** Uniformly dispersed trees increase livestock comfort levels and reduce stress.
- 9 Boost the opportunity for recreational activities.** Silvopastures are easily accessible for hunting, bird-watching, and photography.
- 10 Improve forage quality.** The partial shade created by trees lengthens the growing season creating higher quality forage. Animal waste enhances both tree and forage growth as well. 🌱

Economics of forage alternatives

Kimberly Stuhr

Technology Transfer Specialist, Lincoln, NE

SINCE colonial times, range scientists have advocated combining cattle and timber production on the Coastal Plain of the Southeastern United States. While low density grazing of native forage in natural forests and plantations is practiced throughout the southeastern US, few landowners are aware of the economic potential of combining forage and timber management practices.

In 1984, Dr. Terry Clason sought out to investigate this. At the time, Clason worked for the Hill Farm Research Station in Homer, Louisiana; the Station is affiliated with Louisiana State University Agricultural Center.

He examined five silvopasture treatments of native and introduced grasses in a thinned 20-year-old loblolly pine plantation including: native grasses, Pensacola bahiagrass, common bermudagrass, Coastal bermudagrass, and Au-Lo-Tan lespedeza. They were managed as conventional pastures except the lespedeza which was managed as a low input pasture. There was also a timber treatment with no forage management. He collected pine growth data in 1984, 1987, and 1989 and evaluated the annual forage production at 21-day intervals from April to October (forage dry matter yield and quality was determined for each sampling interval).

Based on his early findings of these treatments, Dr. Clason initiated an economic analysis comparing the Coastal bermudagrass silvopasture, coastal bermudagrass open pasture, timber management only, and asset liquidation. The coastal bermudagrass silvopasture treatment was the most profitable of the four land management options evaluated, and best demonstrated the value of diversifying income producing enterprises.

Dr. Clason found that a loblolly pine-forage intercropping system is a suitable management option for maturing plantations. After five years, he determined that timber and forage management practices provided investment income, created and maintained a high quality forage resource, and enhanced the timber production component. 🌱

The coastal bermudagrass silvopasture treatment was the most profitable of the four land management options evaluated.

Fire

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- Thinning removes potential fuel hazards and promotes growth on the residual trees. The thinned tree canopy also allows adequate sun light to reach the ground to support forage growth.
- Forage production on the forest floor for livestock and wildlife increases. Livestock remove forage which prevents the build up of dead or dry fuel and brush species regrowth. Careful management of the grazing rotation also assures abundant residual grasses and forbs for wildlife use and watershed health.
- The overall health of the residual forest stand improves, reducing the risk of insect attacks.



As wildfires across the country become larger and more difficult to contain, fuel management is essential. Silvopasture develops discontinuities in fuel beds and eliminates ladder fuels. *Photo by Richard Straight*

- Fire ladder fuel is eliminated because the trees are farther apart and branches are pruned to create high-quality lumber and to increase sunlight to the forage below.
- The creation of a silvopasture creates annual income that can partially offset the cost of hazard

fuel reduction.

In addition to creating a productive forest management system, silvopasture areas can also serve as buffers to help protect residential areas and address issues in and around the WUI. They can serve as buffers next to no-management or ecologically sensitive areas. 🌲

Wildlife à la mode

Michael Hall

NRCS Grazing Lands Specialist,
Greensboro, NC

GETTING wildlife managers and cattlemen to agree about how grazing lands should be managed can be a difficult task. A cattleman's objective centers around the forage needs of large herbivores, whereas a wildlife manager focuses on the needs of small ground nesting birds. Silvopasture systems are common ground for the wildlife manager and the livestock producer in the central and western United States. Both have long recognized the value of native warm season grasses as a source of forage and a valuable habitat for grassland bird species. Many also recognize the value that proper livestock grazing and prescribed burning have on habitat manipulation.

Native warm season grasses, combined with trees and livestock production,



Wildlife, such as the Eastern wild turkey, benefit from the habitat that silvopastures create. *Photo by C. Kertley-Perkins.*

enhance habitat for quail, turkey, and a variety of non-game species. Using a double-row set of trees with 30 to 40 feet between sets, in combination with a native warm season mix has the potential to create excellent habitat and also add forage for the livestock operation.

Managing for multiple benefits is the key to overall success. The tree canopy must be managed to allow adequate light to reach the ground, while the grasses are

managed primarily through grazing and prescribed burns. A grazing management plan with specific timing and grazing duration guidelines is critical to obtaining wildlife objectives for the system. Moderate grazing intensities maintain and increase plant diversity. Recommended grazing heights for the grasses must be maintained ensuring the viability of the grasses and meeting the wildlife habitat requirements.

According to Lynn Lewis-Weis, wildlife biologist with the National Wild Turkey Federation, "Properly managed silvopasture is not only good for cattle production and growing trees, but for

Managing for multiple benefits is the key to overall success.

wildlife as well. Compared to traditional pasture management, silvopasture offers a multitude of benefits for landowners who have diversified operations that include forestry, cattle, pasture, and wildlife, all on the same piece of land." 🌲

Upcoming Events

January 16–18, 2008

Eighth National Conference on Science, Policy, and the Environment: "Climate Change: Science and Solutions." Washington, DC. For more information: 202–530–5810, conference2008@ncseonline.org, <http://ncseonline.org/2008conference/>

Resources Association (AWRA) Summer Specialty Conference: "Riparian Ecosystems & Buffers: Working at the Water's Edge," June 30 – July 2, 2008, Virginia Beach, VA. For more information: atodd@fs.fed.us, http://www.awra.org/meetings/Virginia_Beach2008/index.html

International Renewable Energy Conference. Washington, DC. For more information: www.wirec2008.gov

For more upcoming events, visit our website calendar: www.unl.edu/nac/calendar.htm.

February 4, 2008

Call for Papers. American Water

March 4–6, 2008

WIREC 2008: Washington



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www.unl.edu/nac

Mission

The USDA National Agroforestry Center (NAC) is a partnership of the Forest Service (Research and Development and State and Private Forestry) and the Natural Resources Conservation Service. It is administered by the Forest Service, Southern Research Station; and its program manager and headquarters are located in Huntsville, AL, on the campus of Alabama A&M University, while NAC's staff are located at the University of Nebraska, Lincoln NE; University of Idaho, Moscow ID, and in Blacksburg, VA. NAC'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, NAC 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.

Policy

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