Info

Working Trees

What is silvopasture?

Silvopasture is the deliberate integration of trees and grazing livestock operations on the same land. These systems are intensively managed for both forest products and forage. Well managed silvopastures employ agronomic principals, typically including introduced or native pasture grasses, fertilization and nitrogen-fixing legumes, and rotational grazing systems that employ short grazing periods which maximize vegetative plant growth and harvest. Silvopastures are:

Cows in a loblolly pine silvopasture. Sid Brantly - USDA/NRCS

- ***Intentional -*** The combinations of pastures, trees, and animals are purposefully managed to provide forage and timber products on a sustained basis. These are not individual practices that occur coincidentally together or are managed independently.

- ***Intensive -*** Silvopastures are intensively managed to optimize the production of the forest products and forages. Science based grazing, haying, fertilization, tree pruning and trimming and other cultural practices are planned in advance to compliment reforestation, tree protection, market cycles and work load.

- ***Interactive -*** The forest management, pasture management, and grazing management are conducted in harmony so as to enhance the production of multiple harvestable components, while also providing conservation benefits. The combination of the products realized usually exceeds the normal yield of either enterprise individually.

- ***Integrated -*** The trees, livestock and forage are functionally combined into a single management unit tailored to meet the landowner's objectives.

Goats in a walnut plantation silvopasture. -NAC Photo

Potential Benefits of Silvopasture

1. Cooler summer environment for livestock.
2. Shorter timber rotations due to forage fertilization and competition control.
3. High value timber products resulting from pruning and management of tree density.
4. Shaded, cool season forage plants can be more nutritious for livestock.
5. Diversification of income streams spreads out market risk and increases income opportunities.
6. Greater plant nutrient uptake efficiencies - the deep tree roots coupled with pasture plant roots acquire nutrients from a greater range of soil depths.

Silvopasture is not the same everywhere

Though many silvopasture principals are universal, some management requirements and benefits vary in different parts of the United States.

Silvopasture in the Northwest Douglas-fir, ponderosa pine, red alder, black walnut, black locust, maple, and poplar are options for silvopasture trees, depending on your particular farm and climate. Orchardgrass, tall fescue, and ryegrass with white clover or subterranean clover are likely understory options, depending on the soil type and forage needs. Well managed silvopasture trees in Oregon have been known to produce as much as 16% greater diameter growth than similar trees in a typical forest plantation setting.

Silvopasture in the Southwest Southwestern silvopasture types range from ponderosa pine, Douglas-fir, almond and other nut trees on the west coast to loblolly pine, longleaf pine, pecan and other hardwoods in Texas. Forage types range from annual, cool season grasses in the west to warm season grasses like Bermudagrass as you travel east. It has been noted that the warm season grasses seem to mature a little later in the silvopastures than in open pastures, slowing the cyclic digestibility decline as forages mature.

Tips for Silvopasture Management

- Intensive rotational grazing, modest stocking, and careful monitoring of forage and trees is essential. "Typical" pasture management can result in over-grazed plants, damaged trees, and soil compaction. Hungry, mineral-deprived, or parasitized animals are highly likely to browse or damage trees.
- Grazing management needs to accommodate the susceptibility of seedling/saplings to browsing. In general, livestock are more likely to impact broadleaf trees than confiers (there are exceptions).
- Trees need to be pruned and thinned as needed in order to develop high-quality timber products. Open grown, unpruned trees have very low or no marketable timber value. Trees for fruit or nut production should be pruned according to horticultural standards.
- When selecting tree species for silvopasture; take care to evaluate the potential for livestock poison-ing. Some animal species are intolerant of red maple (horses), black cherry, black locust, black and red oak.

Silvopasture in the Northeast Black locust, black walnut, other hardwoods and even larch treees in the northern reaches have been used for silvopasture production in the northeast. Orchardgrass, tall fescue, eastern gamagrass, bluegrass, Kura clover, and reed canarygrass have shown promise as understory forage plants for silvpasture. Increases in farm profitability, animal performance, summer forage growth and market diversification have been demonstrated in silvopastures in the northeast.

Silvopasture in Southeast In the southeast region, loblolly pine, slash pine, and longleaf pine are utilized for silvopastures very effectively with bahiagrass and crimson clover understory forage. As you move north in this region, pecan, black walnut, black locust, and even white pine become more feasible, with tall fescue, orchardgrass, red clover and white clover serving as the forage base. Silvopastoralists cite improved farm economics due to efficiences of soil nutrient uptake, livestock summer heat protection, and improved aesthetics as some of the major benefits afforded by silvopastures.

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More information on the Web

USDA National Agroforestry Center: http://nac.unl.edu/silvopasture.htm
USDA Natural Resources Conservation Service: http://efotg.sc.egov.usda.gov/references/public/AL/tg381.pdf
Cornell University: www2.dnr.cornell.edu/ext/info/pubs/MapleAgrofor/Silvopasturing3-3-2011.pdf
University of Florida IFAS Extension: http://edis.ifas.ufl.edu/fr139

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