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Fact Sheet: Silvopasture in Minnesota

The Sustainable Farming Association of Minnesota is conducting an education, demonstration, and outreach project on silvopasture, a practice that can increase soil health and build a regenerative agriculture system on farms and working landscapes. In partnership with allies, SFA is hosting field days, workshops, webinars and other events, providing information to farmers, landowners, forestry professionals and conservationists on the hows, whys and wherefores of silvopasture. Silvopasture is a practice used in other regions of the country and across the globe, and shows promise here in Minnesota as a regenerative farming practice. This fact sheet provides an introduction to Silvopasture.

Useful resources

Relevant documents and resources available to download and/or view on the SFA Soil Health Portal:

- Silvopasture Handbook
- Beginning Grazier Handbook
- SFA Silvopasture webinar series
- Silvopasture Design & Establishment: The How-Tos

**These and much more
available at sfa-mn.org/soil**

Silvopasture is the deliberate integration of trees and grazing livestock operations on the same land. The trees, forage, and grazing livestock are managed intensively and must complement with one another to increase overall production. The sales of livestock provide annual income to the producer while fostering long-term economic benefits from trees such as sawtimber.

In silvopasture, management of trees through thinning and pruning helps provide high-value timber and ensures that sufficient light is available for forage. Grazing animals control competition for moisture, nutrients, and sunlight, enhancing tree growth. Trees provide shade for livestock and create a microclimate that improves forage quality. Livestock promote nutrient cycling, and nitrogen fixing forage crops benefit trees.

Is it a Silvopasture?

Silvopasture is **not a 'plant it and leave it' system**. Allowing livestock to graze in a natural woodland area without active livestock/forage management is NOT considered silvopasture, nor is having one or two trees in the pasture considered silvopasture.

Silvopastures are:

1. **Intentional** – The trees, livestock, and forage together are intentionally designed, established, and managed to work together and yield multiple products and benefits. These are not individual practices that occur coincidentally together nor managed independently.
2. **Intensive** – Silvopastures are managed intensively to optimize production. Cultural practices such as thinning and pruning are often employed on the trees, while fertilization is done on forage to improve production. Livestock in silvopastures are managed based on forage availability.
3. **Interactive** – Livestock grazing, forage production, and tree management are conducted in harmony to enhance the production of multiple harvestable components, while providing conservation benefits.
4. **Integrated** – The trees, forage, and livestock are structurally and functionally combined into a single, integrated management unit tailored to meet the landowner's objectives.



Goats in silvopasture system. Photo courtesy National Agroforestry Center.

Benefits of Silvopasture

- Diversify farm enterprise (e.g., livestock sales, timber sales, hunting leases, etc.), and spreads out market risk
- Provide high value timber resulting from pruning and thinning to manage tree density
- Provide shade or cooler summer environment for livestock
- Provide wind protection for livestock during severe winter conditions
- Reduce animal stress and improve animal productivity
- Improve soil health and nutrient cycling
- Enhance habitat for many wildlife species through plant diversification and promoting nutritious forages
- Enhance plant nutrient uptake efficiencies and improve water quality – deep tree roots can capture nutrients from deeper soil horizon
- Increase opportunities for recreation
- Control weeds and invasive species due to browsing of animals, and development of desirable ground cover
- Reduce wildfire severity due to reduction of forest and ladder fuel



Ways of Establishing Silvopasture

Silvopasture can be established in two ways:

1. **Establish forages in the woods:** Forages can be established in an intensively manipulated forest environment. The area can be managed jointly for grazing and timber production. The key to successful silvopasture in this setting is forage production. The success of forage production in this environment depends on the level of light received, and providing adequate rest periods between grazing events. Light can be adjusted by reducing tree density and managing tree spacing. Forages should be selected to match grazing objectives and light availability.
2. **Establish trees into existing pasture:** In this method, trees are introduced into the pasture. Matched with site conditions, the right choice of tree crop allows you to carry on a profitable livestock operation while creating a long-term investment in timber and/or forest products. Young trees allow plenty of light for forage production. Success and longevity of this method of silvopasture establishment hinges on control of grass growth around trees and protection of the trees themselves and proper management of tree densities.



Poultry in silvopasture system. Photo courtesy Main Street Project.

Both methods of silvopasture establishment require proper site assessment. To learn more about site assessment for silvopasture establishment, refer to SFA Silvopasture: Site Assessment factsheet. To learn ways of how to establish each method, refer to SFA How to Establish Silvopasture.

Examples of Silvopastures in Minnesota

High-value hardwoods such as red and white oaks, ash trees, black walnut and aspen are among the tree species commonly used in silvopasture in Minnesota, integrated with livestock (e.g., cows) and forage. Cool-season grasses such as red clover, timothy, orchardgrass, kura clover among other species have shown promise as understory forage plants for silvopasture. Shrubs (e.g., hazelnut) and fruit bearing horticultural crops (e.g., apple) integrated with chicken and hogs have shown promise as silvopastures as well. Goats are also being used as an animal component in silvopasture system designed to eradicate invasive species. Other livestock suitable for silvopasture include sheep and horses which are integrated with chestnuts in SE Minnesota. Increases in farm profitability, animal performance, summer forage growth, and improved soil health have been demonstrated benefits of silvopastures in Minnesota.