



Introduction to Silvopasture

Silvopasture is an agroforestry practice that integrates trees, forage, and livestock on the same site and manages the system to protect the environment. Like any agricultural system, silvopasture requires careful management to provide economic benefits and prevent ecological damage.

What are the benefits?

Depending on how it is managed, silvopasture can provide many benefits:

One of the most important benefits of silvopasture is the **shade and shelter** provided for livestock. In extreme heat, access to shade can protect animal production and even life. And well before production impacts can be measured, access to shade offers welfare benefits. Trees can also provide shelter from cold by blocking wind in winter.

Another potential benefit is **increased income** and/or **reduced taxes** from woodland. Letting livestock graze in wooded areas can provide some annual income between timber harvests. In addition, grazed woodland is classified as agricultural land, and qualifies for lower property taxes than regular woodland in Wisconsin. Trees planted in pasture may add a variety of marketable products over the long term, from fruit and nuts to wood. However, it is critical to manage the trees, forages, and livestock access carefully to prevent long-term damage to the trees and provide healthy forage for the animals.

Silvopasture can increase **climate resilience** in several ways beyond providing shade for the animals. Planted trees increase carbon storage, and the foliage of many trees can provide nutritious forage when heat and drought cause grasses to go dormant. While total forage



Photo Credit: Natasha Paris, UW-Madison Extension

production is lower in silvopasture than in open pasture, shade can delay dormancy for grasses in hot, dry weather.

Many farmers also value the **aesthetic and recreational benefits** of silvopasture systems, especially compared with neglected woodlands that are overgrown with invasive brush. Grassy glades between trees attract deer, turkeys, and other wildlife and allow people to move freely.

What are the concerns?

Precisely because animals love trees for their shade and foliage and for rubbing, it takes intensive management to protect trees while maintaining profitable livestock production. For many years resource professionals urged farmers to keep all livestock away from trees because of the tree health and soil quality problems caused by giving cows continuous access to farm woodlots. Just letting cows go into the woods, or having a couple of trees in a pasture is not silvopasture. You need enough trees so the livestock don't crowd under them, and you need enough space between the trees so there is light for a good forage layer. Below are some other considerations for silvopasture:

- Because forages typically grow more slowly in shade, on mature silvopasture sites it is best to **schedule shorter grazing events and longer rest periods than on open pasture**.
- **Protect newly planted trees from livestock, deer, and rodents** until the tree canopy is above 6 feet and



the trunk is at least 4 inches in diameter at a height of 4 feet. Depending on the tree species, this protection may need to be maintained up to 10 years, or even longer. Fast-growing trees like hybrid poplar might reach this size in 4 or 5 years, while slower-growing trees like oaks might take 10 years or more to reach the point where they no longer need protection from cattle.

- **Consider equipment access when planning tree location**, to facilitate management tasks like clipping weeds, removing toxic plants, or reseeding pasture. Trees can also damage fences by dropping branches.
- Monitor brush and **proactively use grazing** and other management tools **to maintain the quality of the silvopasture**.
- **Plan a mix of open pasture and silvopasture paddocks**. Silvopasture is cooler during summer days, but open pasture cools off more quickly at night. In addition, some grassland birds and other species need wide-open grassland habitat, so while silvopasture is beneficial for some species, it is not appropriate everywhere.
- Trees growing in open settings tend to have low branches and broad canopies, which is not good timber form. However, open-grown trees are likely to bear more nuts or fruit than trees that are crowded together.

How to get Started

Agroforesters talk about two different ways to establish silvopasture: by planting trees in a pasture, or by removing trees from a woodland and planting forage. Which of these paths you choose will depend on what resources you have on your farm to start with, and what your specific goals are for your farm and for silvopasture on your farm. For more information see “Establishing Silvopasture

by Planting Trees” and “Establishing Silvopasture in Existing Woodland.”

Some general principles to keep in mind:

Aim for 25 to 40% Shade Cover: Once the tree canopy covers more than 50% of the site, forage growth declines sharply. If less than 25% of the site is shaded, the livestock are likely to congregate too much in the small amount of shaded area.

Manage Your Forage Yield Expectations: Total forage production will almost always be lower in silvopasture than in open pasture (though silvopasture may provide emergency forage sources in times of heat and drought). How much forage growth is reduced depends mainly on the amount of shading.

Consider Topography: Prevailing winds and slope aspect affect microclimate as well as shading.

Plan for Change Over Time: As trees in a silvopasture system grow or age, they can alter shading patterns, forage availability, and overall microclimate.

Consider Site and Goals when Selecting Trees: The types of trees and forages suited to a silvopasture system depend on site conditions as well as farm goals. Popular silvopasture species include fast-growing trees like hybrid poplar (commonly *Populus deltoides x nigra*) or mulberry (*Morus rubra*). In addition to growing quickly, the foliage from these trees has good forage value, so they can provide emergency fodder. Deep-rooted trees like oak and black walnut cast a light shade, and their wood is prized for furniture and flooring, but they grow more slowly and their leaves are less suitable for forage. However, farmers can make a wide range of trees work for silvopasture, depending on the site and goals.

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Conclusion

Silvopasture can bring animal welfare benefits, climate resilience, and profit to grazing operations, if the system is carefully designed and well managed. While silvopasture has been practiced around the world for thousands of years, for most of the past century farmers in the Midwest were simply told that trees and livestock don't mix.

Today, an increasing number of farmers and resource professionals in the Midwest are working to figure out how to make silvopasture work in our region and for our time.

Some good places to find more information:

- Establishing Silvopasture by Planting Trees
- Establishing Silvopasture in an Existing Woodland
- USDA National Agroforestry Center
<https://www.fs.usda.gov/nac/practices/silvopasture.php>
- Savanna Institute
<https://www.savannainstitute.org/technical-service/>
- Missouri Center for Agroforestry <https://centerforagroforestry.org/>



Photo Credit: Ruth McNair

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