

Silvopasture

Silvopasture combines the production of timber and forage (livestock) on the same acreage, and has the benefits of both systems. Producers benefit financially from both periodic (timber) and annual (forage) revenue providing diversification of products and income. An April 2020 review of silvopasture research found it to be 42% to 55% more productive than separately managed timber or pasture systems (Pent 2020).



Transition process based on current land use:

Pasture to Silvopasture

- Prepare pasture for tree planting using herbicide to control competing vegetation at tree planting locations.
- Plant trees on wide (30 feet or greater) row spacings allowing for forage production between tree rows. Single, double- or triple-row sets may be used. Orient rows north-south to minimize shade on inter-row area.
- Control grass and other competing vegetation around trees using herbicide until trees are well established (usually 1 to 3 years).
- Exclude livestock or protect trees for 3 years post-planting. Hay may be harvested from inter-row area during this period or may be grazed if trees are protected using shelters or fencing.
- Prune trees as necessary to insure log/wood quality (maintain canopy of 1/3 of total tree height).
- Harvest timber on an approximately 20-year interval, along with annual revenue from livestock/forage production.

Forest to Silvopasture

- Reduce tree density in existing forest through thinning. A maximum of 33% canopy cover is desired to allow for forage production.
- Prescribed burn and/or herbicide to control unwanted woody vegetation and promote grass establishment.
- Forage establishment through seed planting or sprigging.
- Maintain forest understory in grass cover through prescribed burning on 3-year interval.
- Periodic thinning of timber to maintain canopy cover at approximately 30% and to generate timber revenue.
- Harvest timber at an optimum rotation age and replant in a traditional forest management or silvopasture system.



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Benefits of Silvopasture

- Economic – Both infrequent, larger (from timber) and annual, but lower (from forage production) revenue streams provide economic benefits over either system managed separately.
- Environmental – Silvopasture is more environmentally friendly than traditional livestock/forage-only agricultural systems. It promotes improved soil health, improves water quality, reduces erosion, and has greater carbon storage than traditional pasture systems.

Silvopasture Options

- Native grasses – Many native grasses provide higher productivity in shaded environments and have lower nutrient requirements (no fertilizer recommended) than exotic grasses often utilize for forage production.
- Alternate livestock – silvopasture is not just for cattle production. Goats, horses, chickens, turkeys, and exotic mammals all are options. Goats are potentially useful in forested situations where woody browse is prevalent in the understory. They may benefit a forest to silvopasture conversion by assisting with the control of woody vegetation.

Potential Challenges

- Shade (trees) and grass often oppose one another. Tree cover must be balanced, ensuring enough light is available for forage production in the understory.
- Trees must be protected from livestock until they reach heights greater than six feet.
- Herbicides: Many of the commonly used forestry herbicides control grass. Care must be used to effectively establish trees while promoting forage production.
- Wood quality may be reduced due to rapid tree growth and limbiness. Trees may require pruning.
- Active (intensive) management is required. Silvopasture requires more periodic management practices than traditional forest management systems.

Pent, G. 2020. Over-yielding in temperate silvopastures: a meta-analysis. *Agroforest Syst* (2020) 94:1741–1758

Photo courtesy of USDA National Agro Forestry Center