Overview - Silvopasture

- Silvopasture is an agroforestry system that combines well-managed woodlands and pastures to generate both livestock and forest products on the same parcel of land
- Two approaches to silvopasture are pasture enrichment and forest conversion. Pasture enrichment involves adding trees into the pasture area. In forest conversion, trees are thinned in uniform, patch, or irregular patterns, and pasture species are seeded. A variation of forest conversion is when forests are thinned along a field edge, creating "open field edge" silvopasture. Additional approaches to silvopasture include introducing livestock into orchards and maple sugarbush forests, and the creation of outdoor living barns. Living barns are high density stands of trees, often conifers, planted into pastures primarily to provide shelter.
- Silvopasture systems are diverse and varied and can be designed to meet farmers' unique goals and complement existing and desired farm characteristics. Accounting for these goals and local conditions can help determine which approach to establishing silvopasture is appropriate for each farm. Considerations include the desired composition of forage, tree and livestock species, and what forest and livestock products will be produced.
- Silvopasture offers numerous climate change adaptation benefits that address challenges such as increased frequency and severity of weather extremes (i.e. drought, heat, and heavy rains). Combining woodland with pasture provides shade and protection for livestock, may enhance carbon sequestration, and can improve water filtration and retention.
- Skilled and active management of pasture and woodland together with sound livestock husbandry are essential to achieving a sustainable and successful silvopasture system.

Components of Northeast silvopasture systems may include but are not limited to:

Tree Species	**Forest Products**	**Livestock Species**	**Forages**
Oaks Maples Fruit trees Eastern White Pine Hickories Eastern Hemlock Commercial nut trees Black Locust	Firewood Sawtimber Fence posts Scion wood Fruit Nuts Maple sap Tree nursery	Cattle (beef, dairy) Goats (meat, dairy) Pigs Sheep (meat, fiber) Chicken (meat, eggs) Turkeys Horses	Red clover White clover Orchardgrass Bentgrasses Bluegrasses Fescues Timothy Ryegrasses

Silvopasture Adoption Costs and Benefits

Before installing silvopasture systems, trade-offs should be carefully considered. It may not be possible to realize all or even some of these potential benefits, while potential challenges may be mitigated through management and/or silvopasture system design.

Potential Benefits	**Potential Costs**

Increased stocking capacity (when expanding grazing into wooded areas) Increased utilization of woodland Cost-effective vegetation control Diversified farm products and income Improved animal performance through greater comfort with shelter and shade Improved animal health through diversified diets Balancing of seasonal forage growth and increased forage availability during droughts Creation of high-value wildlife habitat Improved tree health and performance Improved soil health Improved water retention and quality Carbon sequestration Beneficial farm aesthetics	Livestock exposure to toxic plants, predators, parasites, diseases, physical hazards, hunters Silvopasture establishment and maintenance costs, time, and labor Managers' lack of silvopasture management experience and knowledge Reduced mobility of farm equipment in grazing areas Undesirable vegetation, including invasive plants Soil degradation and compaction Decreased water retention and quality Carbon release Damage to tree roots, bark, and branches Implementation of silvopasture may impact farms' Current Use designation and enrollment

Additional Resources

Interested in silvopasture? Check out our economic tool to determine the potential costs and revenue here. See what silvopasture looks like here.

Virtual Tour and Videos:

- Agroforestry Angus Glen Farms, NY (USDA Northeast Climate Hub)
- Dickinson College's Farm Silvopasture PA (USDA Northeast Climate Hub)

Factsheets, Guides, Overviews:

- A comprehensive collection of silvopasture resources (including economic case studies, powerpoint presentations, workbooks, frameworks for silvopasture planning and implementation, guides, and factsheets) compiled by Cornell Cooperative Extension in the Department of Natural Resources can be found here.
- Photo Guide to Northeastern United States Silvopasture (Orefice, Carroll, & Ketner, June 6, 2016)

- Nutrient Management for Pastures (Cornell University Cooperative Extension)
- Working Trees Info: How Can Agroforestry Help Landowners Adapt to Increased Rain Intensity? (USDA National Agroforestry Center)
- Working Trees Info: What Are Agroforestry's Income Opportunities? (USDA National Agroforestry Center)
- Working Trees Info: Mitigating Heat Stress in Cattle (USDA National Agroforestry Center)
- How can Agroforestry support mitigation of climate change? (USDA Northeast Climate Hub)
- Agroforestry Notes: Forest Grazing, Silvopasture, and Turning Livestock into the Woods (USDA National Agroforestry Center, August 2014)
- Agroforestry Notes: Silvopasture Water and Fencing Systems for Cattle (USDA National Agroforestry Center, February 2005)
- Silvopasture: An Agroforestry Practice (USDA National Agroforestry Center)
- Water Quality (USDA National Agroforestry Center)

Other:

- Association for Temperate Agroforestry (association promoting the wider adoption of agroforestry by landowners in temperate regions of North America)
- Northeast/Mid-Atlantic Agroforestry (NEMA) Working Group (network of researchers, technical service providers, agency staff, farmers and producers focused on educating, promoting and implementing agroforestry systems in the region)