

Silvopasture

Virginia Conservation Practice Job Sheet

381



Definition

Establishment and/or management of desired trees and forages on the same land unit.

Criteria Applicable to All Purposes

Use plant species (i.e., trees and forages; shrubs where desired) that are adapted to the climate, soil, and biological conditions of the site and compatible with its planned use and management.

Establish and maintain silvopasture in a forested condition that is at least 10-percent stocked by single-stemmed woody species of any size that will be at least 4 meters (13 feet) tall at maturity.

Do not plant species on the Federal or State invasive species or noxious weeds lists.

Manage grazing at appropriate levels to establish and maintain silvopasture productivity and function. Locate and distribute facilities for providing water, minerals, or supplemental feed so that livestock will properly utilize forages in the silvopasture. Control livestock access to areas with sensitive soils (e.g., wetlands, riparian zones, habitats of concern, karst areas, etc.). Use NRCS Conservation Practice Standard (CPS) Prescribed Grazing (Code 528).

Where trees, or a combination of trees and shrubs, are added to existing pasture or crop land, perform site preparation and tree/shrub planting as needed based on existing vegetation and soil conditions. Conduct site preparation using NRCS CPS Tree/Shrub Site Preparation (Code 490), and establish trees/shrubs using criteria in NRCS CPS Tree/Shrub Establishment (Code 612), as needed.

Design the tree planting based on site factors (e.g., climate, topography, aspect, wind, etc.) to optimize the amount of sunlight reaching the ground to maintain desired forages, while providing the desired shelter and/or shade for livestock.

Protect plantings from unacceptable adverse impacts from pests, wildlife, livestock, and/or fire. Refer to plant protection criteria in NRCS CPS Tree/Shrub Establishment (Code 612), and Prescribed Grazing (Code 528).

When establishing silvopasture in existing forestland, remove a sufficient number of trees, and/or prune existing trees, to allow adequate light penetration for forage establishment and growth. For tree pruning, use criteria in NRCS CPS Tree/Shrub Pruning (Code 660). For establishment of forage species, use criteria in NRCS CPS Forage and Biomass Planting (Code 512).

Removal of products (e.g., trees, medicinal herbs, nuts, and fruits) is allowed, provided that silvopasture conservation purpose(s) are not compromised by the loss of vegetation or by harvesting disturbance.

Do not plan silvopasture in wetlands.

Tree Establishment in Forages

Where trees will be added to existing pasture, prepare the site based on existing vegetation, soil conditions and the type of tree species to be planted. Refer to Virginia Conservation Practice Standard *Tree/Shrub Site Preparation* (Code 490).

Plan tree density and spacing based on specified producer goals, with a minimum of at least 10- percent stocked by single-stemmed woody species of any size that will be at least 4 meters (13 feet) tall at maturity.

Trees are usually established in single, double or triple row sets for ease of management.

Determine tree row spacing, layout and arrangement while considering the size of equipment used for forage management. Trees should be planted at the recommended spacing and density shown in the table at the end of this document.

Livestock grazing shall be deferred until the average height of the trees' terminal bud exceeds the browsing height of the livestock and the trees are of sufficient size to resist breakage. Forages may be machine harvested during this period.

Pruning

As the trees grow and get larger, periodic pruning of the lateral branches may be necessary to maximize wood quality. When considering pruning you should always leave the branches on the top one third of the main stem. It is important to have a healthy crown on the top one third of the tree. As the small trees grow taller, you should not prune lateral branches if the adjacent tree trunk is less than 4 inch in diameter.

Establishing Forages in Trees

For existing forests being converted to silvopasture, thin and/or prune existing trees to reduce canopy cover sufficient for forage establishment and adequate growth.

Generally, canopy cover of 25-50 percent for warm season grasses, and about 35-60 percent for cool season grasses, is recommended. The rule of thumb is to reduce tree basal area per

acre by about 50% or 50 square feet of basal area whichever is greater.

The lower end of the canopy range should be targeted while forage is establishing. Stands at the higher end of the canopy range may indicate that it is time to thin.

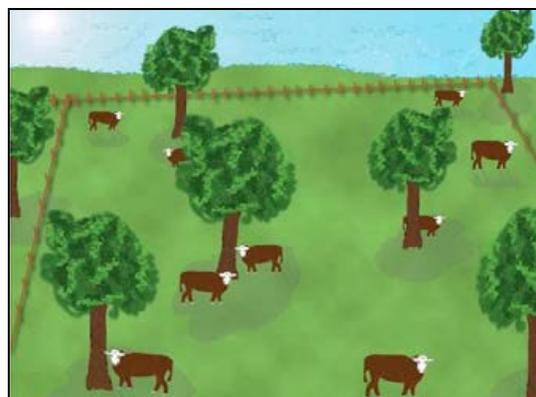
To maintain optimum tree and forage production, thinning adjustments may be necessary due to variability of growth rates among tree and forage species.

Refer to Virginia NRCS Plant Establishment Guide for specific seeding dates and rates for forage establishment. Tree/shrub spacing needs to exceed width of equipment to be used for forage management.

Two Types of Thinning Systems:

When converting an existing forest stand to a silvopasture, two types of systems are recommended, Even Distribution System (Selection Thinning) and Alley System (Row Thinning). (Figure 1)

1) Even Distribution System (*Selection Thinning*)
The even distribution system utilizes a more intensive tree selection method when thinning the stand. Travel corridors are cut within the stand, at every fifth row or 50 feet apart and trees are removed selectively within the stocked corridor, leaving trees with good form. This system results in a more natural appearance with trees evenly spaced across the landscape. For a first thinning, selection thinning is often difficult because of limited machinery access among small closely spaced trees.



Selection Thinning

2) Alley System (*Row Thinning*)

The alley system utilizes row thinning, with some tree selection within the remaining rows.

Specific trees do not have to be marked for removal, so the thinning operation proceeds rapidly once the pattern of row removal is established. This system is more advantageous to traditional farming equipment. If the landowner's emphasis is more towards forage production and less towards timber and wildlife this system should be considered.



Row Thinning

Figure 1. Tree thinning examples.

For more guidance in planning tree row spacing, alley width, site preparation and managing tree density over time refer to the USDA-NRCS Agroforestry Notes 18 and 22 located on the VA NRCS eFOTG.

Note: This summary does not address all requirements and considerations in the VA Silvopasture Conservation Practice Standard (VA-381). Consult the Conservation Practice Standard for further details.

General Information		
Client/Operating Unit:		Farm #:
County:	Field Office:	Tract #:
Amount of Practice to be Applied (acres):		

Goals, Objectives, and/or Specific Purpose
Specify the goal, objective or purpose for applying this practice. If multiple purposes select any that specifically apply.
<input type="checkbox"/> Provide forage, shade and/or shelter for livestock. <input type="checkbox"/> Improve the productivity and health of trees/shrubs and forages. <input type="checkbox"/> Improve water quality. <input type="checkbox"/> Reduce erosion. <input type="checkbox"/> Enhance wildlife habitat. <input type="checkbox"/> Improve biological diversity. <input type="checkbox"/> Improve soil quality. <input type="checkbox"/> Increase carbon sequestration and storage. <input type="checkbox"/> Provide for beneficial organisms and pollinators.

Practice Scenario Description (check the ones that apply)
<input type="checkbox"/> Commercial thinning of an existing stand of trees followed by establishment of forage.
<input type="checkbox"/> Non-commercial thinning of an existing stand of trees followed by establishment of forage.
<input type="checkbox"/> Establish trees into existing grassland containing adequate forage.
<input type="checkbox"/> Establish trees and selected forage species on an existing field that does not contain adequate forage or tree cover suitable for silvopasture system.
<input type="checkbox"/> Pres. Grazing plan attached <input type="checkbox"/> Forestry plan attached <input type="checkbox"/> Forestry map attached

Existing Plant Structure in Areas Targeted for Silvopasture Establishment						
Field #	Existing Vegetation (Forage, trees, or shrubs)	Size of Area (acres)	Average Tree/Shrub Spacing	Trees/ Shrubs Per Acre	Existing % Canopy Cover	Existing Products Harvested ¹

¹Existing products harvested, if any: forage, wood products, etc.

Target Established Silvopasture Plant Structure						
Field #	Vegetation (Forage, trees, or shrubs)	Size of Area Covered by Plant (acres)	Average Tree/Shrub Spacing	Trees/ Shrubs Per Acre	Maximum % Canopy Cover	Target Products Harvested ¹

¹Target products to be harvested, if any: forage, wood products, etc.

Silvopasture Establishment Plan
Specific Goal:
Forest Thinning: (include target thinned density sq. ft. basal area, general spacing and arrangement of trees and alleyways)
Tree Planting Arrangement: (specify planting arrangement, orientation, alley widths, tree species, stem density)
Site Preparation Prior to Seeding: (burning, disking, scalping, sod suppression, soil amendment application as it relates to this particular establishment scenario)
Forage Establishment: (species mix, rates, depths, dates, method)
Grazing Management: <ul style="list-style-type: none"> - Protect newly planted trees from livestock damage by deferring grazing until terminal buds are above the browse line or by installing access control measures to keep the livestock away from the trees. - Manage rotational grazing to allow short periods for forage harvest by livestock without overgrazing below 3-4 inch height and allow sufficient rest periods for plant growth and recovery - Do not use the silvopasture area as a summer sacrifice lot, this can cause permanent damage and ultimately death to the trees.
Timeline for Establishment

Operation and Maintenance

- Forage and forest management will follow Prescribed Grazing 528 and periodic thinning/pruning necessary to maintain enough sunlight for forage growth balanced for adequate livestock shelter.
- Replanting will be required when plant survival is inadequate to meet practice and client objectives.
- Competing vegetation will be controlled until the trees are established.
- Periodic applications of nutrients may be needed for establishment and to maintain plant vigor. Refer to Nutrient Management Standard 590 for further guidance.
- Inspect trees and shrubs periodically and protect from adverse impacts including insects, diseases or competing vegetation. The trees or shrubs will also be protected from wildfire and damage from livestock and wildlife.
- Where wildlife habitat enhancement is an objective
- Other _____

Planner Certification

The Silvopasture practice planned in this job sheet fulfills minimum requirements of Virginia NRCS Conservation Practice Standard 381.

Signature

Title

Date

Certification of Practice Completion

The Silvopasture practice planned in this job sheet has been completed and maintained according to Virginia NRCS specifications (indicate in Practice Specifications any changes to planned activities and acreage).

Signature

Title

Date

