



Green Lands
Blue Waters

Continuous Living Cover & Agroforestry in NRCS Practices

Photo Credit: Savanna Institute

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Continuous Living Cover

Continuous Living Cover (CLC) crops, rotations, and systems address multiple conservation resource concerns, making CLC a highly efficient use of United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) funding and technical assistance. CLC farming establishes and maintains *year-round* live plant cover in ways that diversify and bolster the farmer's economic portfolio, while also protecting and nurturing natural resources. There is great potential to enhance conservation outcomes if more program funds are prioritized to deploy CLC systems.



Silvopasture Goats, Lily Springs
Photo Credit: Savanna Institute

Green Lands Blue Waters (GLBW) and its partners promote five CLC farming strategies in the Upper Midwest: **agroforestry**, perennial biomass, perennial forage, perennial grains, and rotation/cover crops/winter annuals. **Agroforestry is a land management approach that integrates trees and shrubs with plant and animal farm operations.** USDA defines it as “combining trees and agriculture to enhance long-term production of food and other useful products while protecting the soil and water, diversifying and expanding the local economies, providing wildlife habitat, and ensuring a more pleasing and healthier place to work and live.”¹

Among the many types of agroforestry practices around the world, the USDA has identified five broad categories to focus on: **Silvopasture, Alley cropping, Forest farming, Windbreaks, and Riparian forest buffers.** Of these, Silvopasture and Alley cropping have particular relevance and numerous opportunities for addressing NRCS resource concerns within the Upper Midwest.

1. Silvopasture establishment involves integrating a combination of trees or shrubs, compatible forages and managed livestock grazing on the same acreage. Establishment can be accomplished through addition of trees and shrubs to existing pastureland, or through management of trees, shrubs and understory in existing

¹ <https://greenlandsbluwaters.org/continuous-living-cover/#agroforestry>



forestland. Note that NRCS provides technical but not financial assistance to convert forestland to silvopasture. Agroforestry, pasture and forage, and perennial grains could all be stacked as a CLC farming system under this practice.

- Alley cropping involves growing grain, vegetables, hay or other non-woody crops between rows of trees or shrubs. Alley cropping is a practice with potential to support stacking of practices within each of the five CLC categories.² For example, annual row crops or small grains could be planted between woody rows, and cover crops incorporated in rotation with the annual crops.

Agroforestry Practices Address NRCS Resource Concerns

Silvopasture and Alley cropping can benefit our natural resources by blending agriculture and forestry to enhance productivity, profitability, and environmental stewardship.³ These practices can address the following agency resource concerns, under a variety of land use scenarios.

Table 1. Resource Concerns Addressed by Silvopasture⁴

Category	Resource Concern	Land Use
Air	Emissions of greenhouse gases	Cropland, Forestland, Other Farm and Rural Land, Pasture, Rangeland
Animal	Feed and forage balance	Forestland, Pasture
	Inadequate livestock shelter	Forestland, Pasture, Rangeland
Plants	Plant productivity and health	Forestland, Pasture
	Plant structure and composition	Forestland, Pasture
Soil	Aggregate instability	Forestland, Pasture, Rangeland
	Compaction	Forestland, Pasture, Rangeland
	Organic matter depletion	Forestland, Pasture, Rangeland
	Soil organism habitat loss or degradation	Forestland, Pasture, Rangeland
	Wind erosion	Forestland, Pasture
Water	Groundwater depletion	Cropland, Developed land/Urban Ag, Forestland, Other Farm and Rural Land, Pasture, Rangeland
	Naturally available moisture use	Forestland, Pasture
	Pesticides transported to groundwater	Cropland, Developed land/Urban Ag, Forestland, Other Farm and Rural Land, Pasture, Rangeland
	Pesticides transported to surface water	Cropland, Developed land/Urban Ag, Forestland, Other Farm and Rural Land, Pasture, Rangeland
	Ponding and flooding	Cropland, Developed land/Urban Ag, Forestland, Other Farm and Rural Land, Pasture, Rangeland
	Seasonal high water table	Cropland, Developed land/Urban Ag, Forestland, Other Farm and Rural Land, Pasture, Rangeland
	Surface water depletion	Cropland, Developed land/Urban Ag, Forestland, Other Farm and Rural Land, Pasture, Rangeland

²<https://greenlandsbluewater.org/wp-content/uploads/2020/09/NRCS-Opportunities-for-Increasing-CLC-Farming-Systems-June2018-Final-Sep2020-rev.pdf>

³ https://greenlandsbluewater.org/wp-content/uploads/2020/10/WI-NRCS-SI-Agro_Forest_Practices.pdf

⁴ <https://cpdi.sc.egov.usda.gov/00/ConservationPractices/9/302>



Table 2. Resource Concerns Addressed by Alley Cropping⁵

Category	Resource Concern	Land Use
Air	Emissions of greenhouse gases	Cropland, Pasture,
	Emissions of particulate matter (PM) and PM precursors.	Cropland, Developed land/Urban Ag, Forestland, Other Farm and Rural Land, Pasture, Rangeland
	Objectionable odor	Cropland, Pasture
Animal	Feed and forage balance	Cropland
Plant	Plant productivity and health	Cropland
	Plant structure and composition	Pasture
Soil	Sheet and rill erosion	Cropland
	Wind Erosion	Cropland
Water	Drifted snow	Cropland, Pasture
	Naturally available moisture use	Cropland, Pasture
	Nutrients transported to groundwater	Cropland/Pasture
	Nutrients transported to surface water	Cropland/Pasture
	Pesticides transported to groundwater	Cropland, Other Farm and Rural Land, Pasture
	Pesticides transported to surface water	Cropland, Other Farm and Rural Land, Pasture
	Seasonal high water table	Cropland, Pasture
	Sediment transported to surface water	Cropland

NRCS Silvopasture and Alley Cropping Practice Standards

Adoption of CLC through Silvopasture and Alley cropping practices is broadly included in several NRCS program practice standards and commonly associated practices. Silvopasture practices in particular may present an opportunity to utilize funds set aside under the 50% livestock and 10% wildlife minimums. The section below outlines existing practice standards to support farmer adoption of Agroforestry.

In addition to Alley cropping #311 and Silvopasture Establishment #381, other NRCS conservation practice standards and enhancements that support establishment of agroforestry systems include the following:

Access Control, #472

Brush Management, #314

*Conservation Cover, #327

*Conservation Crop Rotation, #328 (see [GLBW piece on Perennial Grains](#))

*Contour Buffer Strips, #332

⁵ <https://cpdi.sc.egov.usda.gov/00/ConservationPractices/2/2>



- *Cover Crop, #340
- *Critical area planting, #342
- Fence, #382
- *Filter Strip, #393
- Forge and Biomass Harvest Management, #511
- *Pasture and Hay Planting, #512
- *Forest Stand Improvement, #666
- Herbaceous Weed Control, #315
- Irrigation, #441
- *Mulching, #484
- Prescribed burning, #338
- *Prescribed grazing, #528
- Tree/Shrub Pruning, #660
- *Tree and Shrub Establishment, #612
- Tree and Shrub Site Preparation, #490
- *Upland Wildlife Habitat Management, #645
- Woody Residue Treatment #384
- Silvopasture for Wildlife Habitat (structure and composition), #E381133Z
- Silvopasture for wildlife Habitat (cover and shelter), #E381137Z



Alley Cropping – Photo Credit: Savanna Institute

*Indicates [Climate-Smart Agriculture and Forestry Mitigation Activity](#)⁶

Note that some Silvopasture and Alley cropping strategies may require specific combinations of practices, depending on site- and state-specific requirements. For example, Alley cropping requires soil erosion calculation (RUSLE2) and a plan for Conservation Crop Rotation (328) (see [GLBW piece on Perennial Grains](#)) while clients applying for Silvopasture may be required to have a Grazing Management Plan approved by the NRCS before they can apply.

State technical committees do have options for modifying practice scenarios to meet the needs of local producers and serve site-specific conditions. For example, in Wisconsin, scenarios for Silvopasture have been expanded to include many more options of planting stock (bareroot, potted trees less than two gallons, potted trees more than two gallons, etc.) and options for tree protection (no protection, tree tubes, tree cages).

Prioritizing Agroforestry Practices: Funding Pools, Ranking Criteria and the Inflation Reduction Act

In 2017, Missouri NRCS piloted a statewide funding pool allocating 1% of general EQIP funds (approximately \$150,000) to support “Agroforestry and Woody Crop Establishment.” This program awarded \$41,579 to 11 funded contracts in the pilot year.

Following the pilot year, MO NRCS approved continued funding that has supported 53 contracts on 1,282 acres with a total obligation of \$719,462 to date. Silvopasture and Alley cropping are among the top 5 practices funded under this program. Combining certified and planned contracts, Silvopasture projects cover 157 acres and \$36,042 while Alley cropping projects cover 29 acres and \$66,965.⁷

⁶<https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/climate/climate-smart-mitigation-activities>

⁷ NRCS Contracting Data February 1, 2023



NRCS agencies in other states can use the MO program as a model to develop their own funding pools. **The following sample language is intended as a starting point for NRCS and other conservation professionals** (FSA, state technical committees, working groups, etc.) to increase funding and producer support for CLC production practices by leveraging alignment with existing practice standards and enhancements.

This funding pool provides financial and technical assistance to producers implementing agroforestry on cropland, pasture and hayland to address soil health (organic matter, erosion), water quality (filtration, nitrate leaching) and environmental health (carbon sequestration, reduced fuel and inputs, wildlife habitat) concerns. Priority is given to practices that utilize continuous living cover (CLC) to keep live plant cover and/or roots in the soil all year long.

The Inflation Reduction Act (IRA) of 2022 provides additional opportunities to prioritize and promote agroforestry. The IRA allocates \$19.5 billion over 5 years to NRCS to support implementation of practices with demonstrated climate change mitigation benefits. **The Climate Smart Agriculture and Forestry Mitigation Practice List includes many agroforestry and other CLC practices that reduce greenhouse gas emissions and benefit carbon sequestration, including Silvopasture and Alley cropping.** As of this writing, IRA funds will be distributed through separate funding pools within each state and will be screened using new ranking criteria to be developed.⁸

With this new funding, there is a need, and an opportunity, to expand training for NRCS staff to understand linkages between these Silvopasture and Alley cropping practices and those they are already utilizing regularly. Training should demonstrate how these systems work, what the benefits are, and equip staff to promote these practices with clients. Working at the local (working groups), state (technical committees, state offices) and federal levels to develop funding pools and support ranking criteria that prioritize Silvopasture and Alley cropping practices is an impactful step to expand agroforestry-based contracts, and direct more funding towards the necessary training and technical assistance to support increased implementation of agroforestry practices.

SAMPLE FUNDING POOL LANGUAGE:
This funding pool provides financial and technical assistance to producers implementing agroforestry on cropland, pasture and hayland to address soil health (organic matter, erosion), water quality (filtration, nitrate leaching) and environmental health (carbon sequestration, reduced fuel and inputs, wildlife habitat) concerns. Priority is given to practices that utilize continuous living cover (CLC) to keep live plant cover and/or roots in the soil all year long.

Green Lands Blue Waters and partners are conducting essential research, improving the genetics of old and new crops, translating knowledge into Continuous Living Cover farming systems, developing new extension and outreach capacity, working in farm fields, shaping policy, building profitable markets for new crops, and changing the narrative around what's possible through agriculture. The value of Continuous Living Cover farming comes in yields and profits, but also in improved soil health, cleaner water, new economic opportunities, diverse agricultural communities, more wildlife, reduced risk, and resiliency in the face of a changing climate.

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⁸ <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=49155.wba>

