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USDA NRCS Carbon Friendly Forestry Practices

March 5, 2022 | Chris Modisette | State Resource Conservationist

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Topics

- Who is NRCS
- What We Do
- Forestry Programs
- Common Forestry Practices
- Carbon Friendly Forestry Practices
- The Role Forest Management Planning
- Biochar



Who Are We?

Formerly known as the **Soil Conservation Service (SCS)** which was created in 1935 to reverse the devastation caused as a result of the Dust Bowl



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NRCS is the lead federal agency within the USDA that helps private landowners voluntarily conserve soil, water, and other natural resources



Productive Soil



Healthy Plants



Clean Water

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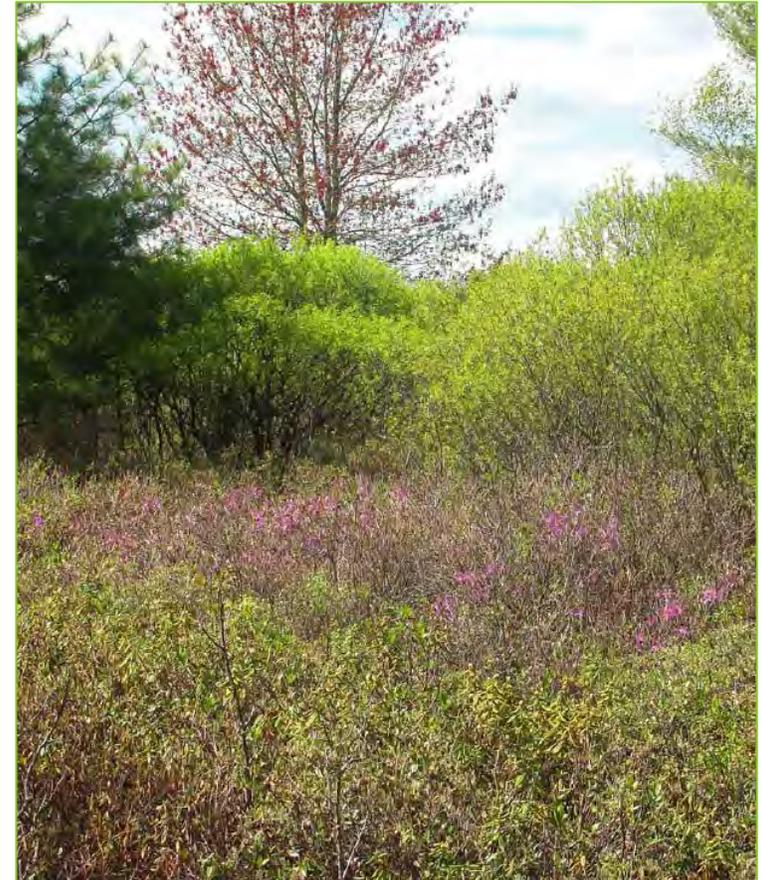
What Do We Do?

We work, primarily, on private lands.

We provide technical assistance to help landowners develop and implement conservation plans for their property.

We provide financial assistance to both protect and restore natural resources.

All our programs are voluntary and non-regulatory.



Forest Conservation Assistance Programs

Environmental Quality Incentives Program (EQIP)

EQIP CIC - Conservation Incentive Contracts

Conservation Stewardship Program (CSP)

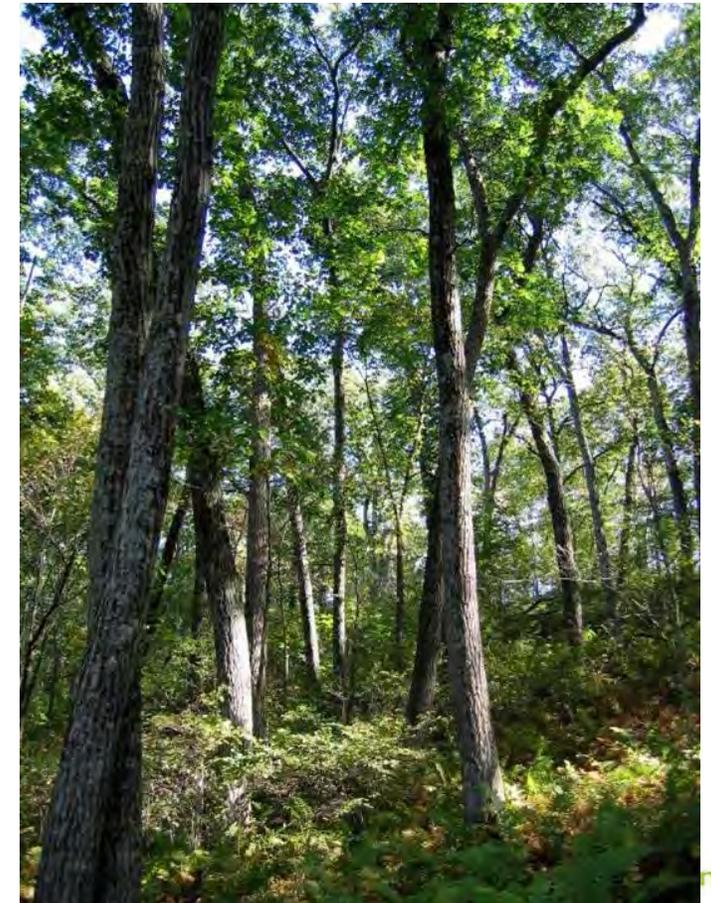
Easements

HFRP (Healthy Forest Reserve Program)

ACEP (Agricultural Conservation Easement Program)

Agricultural Land Easements

Wetland Reserve Easements



Environmental Quality Incentives Program (EQIP)

Provides financial and technical assistance to agricultural producers and non-industrial forest managers to address natural resource.

Multi-year contracts to install the needed NRCS Conservation practice(s)

Must have a Forest Management Plan



Common EQIP Forestry Practices

- **Forest Management Plan Preparation**
- **Forest Stand Improvement**
- **Forest Trails & Landings**
- **Early Successional Habitat Development**
- **Wildlife Planting**
- **Road/Trail Closure**
- **Riparian Forest Buffer**
- **Stream Crossing**
- **Tree & Shrub Site Preparation**
- **Tree & Shrub Planting**
- **Tree/Shrub Pruning**
- **Invasive Species Management**
- **Woody Residue Treatment**
- **Fuel Break**
- **Dry Hydrant**



EQIP CIC & Conservation Stewardship Program (CSP)

- helps maintain and improve your existing conservation systems
- adopt additional conservation activities to address priority natural resource concerns
- earn payments for enhanced conservation performance (5 year contract)
- CIC is a steppingstone for producers from EQIP to CSP
- Allows producers to implement elements of CSP on a smaller scale



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Some CSP Enhancements



- E666A Maintaining and improving forest Soil Quality
- E666D Forest management to improve understory
- E666E Reduce fuel ladders
- E666F Reduce forest density
- E666G Daylighting roads
- E666H Increase on-site carbon storage
- E666I Crop tree management for mast production
- E666J Facilitating oak forest regeneration
- E666K Patch openings mimic natural disturbance
- E666L Improve degraded hardwoods
- E666O Forest habitat features
- E666P Summer roosts for forest bats
- E666R Maintain forest bird habitat
- E612B Planting for carbon capture
- E612C Tree/shrub restoration
- E384A Biochar production from woody residue



Climate Smart Agriculture & Forestry

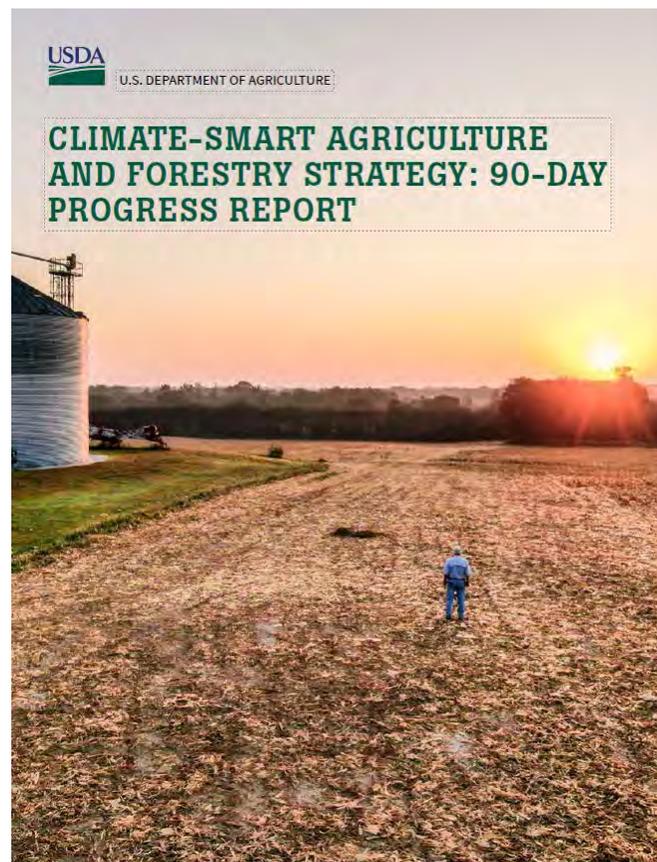
- **On January 27, 2021, the President signed Executive Order 14008 Tackling the Climate Crisis at Home and Abroad.**
- **This Executive Order directs Federal agencies to coordinate a Governmentwide approach to combat the climate crisis.**
- **The Executive Order tasked the U.S. Secretary of Agriculture to deliver a report with recommendations for a climate-smart agriculture and forestry (CSAF) strategy.**



Climate Smart Agriculture & Forestry Progress Report - May 2021

“With the right tools and partnerships, American agriculture and forestry can lead the world in solutions that will increase climate resilience, sequester carbon, enhance agricultural productivity, and maintain critical environmental benefits.”

**- USDA Secretary of Agriculture
Thomas Vilsak**



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Climate Smart Agriculture & Forestry Progress Report - May 2021

- **Keep forests as forests while building climate resilience through forest conservation programs.**
- **Forests on public and private lands provide numerous benefits to people in the United States, including ... carbon storage.**
- **Maintaining the health and integrity of America's forests is vital to protecting their carbon sequestration potential.**
- **Climate Smart Practices that store carbon and will ... improve forest management to increase forest resilience and health.**



FY22 Climate Smart Agriculture & Forestry Mitigation Practice List – Nov. 2021

- **33 NRCS Conservation Practices and 81 CSP Enhancements have been identified to deliver quantifiable climate solutions, based primarily on methodologies described in COMET-Planner.**
- **Many of the listed NRCS conservation practices provide co-benefits:**
 - such as improved soil health and water and air quality climate change adaptation and resilience



Carbon Friendly Forest Management Supported by NRCS Programs



- **Avoid Forest Loss**
- **Establish Reserves**
- **Grow trees for a longer time before harvest**
- **Use Thinning to Improve Growth of Remaining Trees**
- **Increase Proportion of Younger Age Classes**
- **Increase Structural Complexity**
- **Retain Big Trees**
- **Increase the Amount of Dead Wood**
- **Increase Forest Stocking**
- **Increase Species Diversity**
- **Protect Soil and Leaf Litter**



A Little Bit About Biochar

CPS 384 – Woody Residue Treatment

CSP Enhancement E384A

Interim Soil Amendment 808



Woody Residue Treatment

Conservation Practice Overview

October 2017

CPS Woody Residue Treatment (Code 384)

Woody residue treatment reduces or otherwise addresses the management of woody plant residues created during forestry, agroforestry or horticultural activities, or resulting from natural disasters.

Practice Information

This practice applies on areas with quantities of woody slash and debris requiring treatment.

Conservation benefits include but are not limited to—

- Reduced wildfire hazard.
- Reduced risk of smoke.
- Reduced risk of harmful insects and disease.
- Improved access to forage for grazing and browsing animals.
- Improved soil organic matter retention.
- Improved site conditions for natural or artificial regeneration.

Treatment options include burning, chipping, shredding, and offsite disposal. When determining the method and timing of woody material treatment, considerations will include air quality regulations, burning regulations, available resources, ability to use woody biomass as biofuel, and future regeneration objectives. Long-term negative impacts to soil quality may occur with offsite removal of woody material.



384 Payment Scenario



Practice: 384 - Woody Residue Treatment

Scenario: #38 - Replacing open pile burning with air curtain burner - small operation

Scenario Description:

Using an air curtain burner to replace open pile burning of orchard/vineyard prunings, trimmings, and removals or forestry slash and removals for smaller operations (<60 acres).

Before Situation:

Orchard and vineyard prunings, trimmings, and removals or forestry slash and removals at smaller operations (<60 acres) are burned in open piles, resulting in substantial air emissions of particulate matter.

After Situation:

Orchard and vineyard prunings, trimmings, and removals or forestry slash and removals at smaller operations (<60 acres) are burned using an air curtain burner instead of in open piles, resulting in a cleaner and more efficient burn and resulting in greatly reduced air emissions of particulate matter.

Feature Measure: Acres Treated

Scenario Unit:: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: \$8,194.49

Scenario Cost/Unit: \$163.89

Payment Rate (75%) = \$6,145.87
Rate/Acre = \$ 122.92



Soil Carbon Amendment – Interim CPS 808

Natural Resources Conservation Service
INTERIM CONSERVATION PRACTICE STANDARD
SOIL CARBON AMENDMENT
Code 808
(Ac)

DEFINITION

Using carbon-based amendments to increase soil carbon and improve the physical, chemical, and biological properties of the soil.

PURPOSES

- Maintain, increase, or improve soil organic matter quantity and quality
- Maintain or improve soil aggregate stability
- Maintain or improve habitat for soil organisms
- Improve plant productivity and health
- Improve the efficient use of irrigation water

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land where carbon amendment applications will improve soil conditions.

CRITERIA

General Criteria Applicable to All Purposes

Evaluate soils following the In-field Soil Health Assessment Worksheet to determine where soil carbon amendments will improve the soil condition.

Plan, design, and implement carbon amendment applications to meet all federal, state, and local laws and regulations. The owner or operator is responsible for securing all required permits or approvals and for performing in accordance with such laws and regulations.

Physical and chemical amendment analysis is the responsibility of the provider of the material. In cases where the amendment is produced on-farm or on-site, the producer must have the material tested by a laboratory that participates in the North American Proficiency Testing Program.

Compost: Use compost that is analyzed and within range for the following parameters according to the Test Methods for the Examination of Composting and Compost (TMECC), or by other Land Grant University (LGU) recognized methods:

- Carbon to nitrogen ratio (C:N) between 15:1 and 30:1 at maturity
- 40-60% moisture (60-40% solids) at maturity

Compost analysis must also report the carbon and nitrogen content, phosphorus, potassium, pH, soluble salts (electroconductivity), organic matter, and bulk density.

Biochar: Use biochar that is produced by heating biomass to a temperature in excess of 350°C under conditions of controlled and limited oxidant concentrations to prevent combustion (pyrolysis or gasification).

Biochar analysis must report carbon, nitrogen, phosphorus, potassium, and pH.





PLANS AND SPECIFICATIONS

In the soil carbon amendment plan, document—

- Purpose of practice
- In-field Soil Health Assessment Worksheet completed for each conservation management unit.
- Laboratory soil health tests results prior to application
- Planned fields receiving amendments and their planned rotations aerial photos, including location of sensitive areas and setbacks
- Soil maps, including soil type, slope, drainage class
- Amendment analysis or certification
- Application rate, method, timing, and method of incorporation (when applicable)
- Evaluation of carbon input effectiveness for the purpose(s) using the In-field Soil Health Assessment Worksheet to interpret positive trends.



CSP Enhancement E384A



CONSERVATION ENHANCEMENT ACTIVITY E384A

CONSERVATION STEWARDSHIP PROGRAM

Biochar production from woody residue

Conservation Practice 384: Woody Residue Treatment

APPLICABLE LAND USE: Forest, Associated Ag Land

RESOURCE CONCERN: Plants; Soil

ENHANCEMENT LIFE SPAN: 10 years

Enhancement Description

Uses woody debris remaining after fuel reduction harvests or wildfires to create biochar. Biochar stores carbon and is a useful soil amendment that improves Soil Organic Matter (SOM) and water-holding capacity.

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Forestland – General Eligibility

- Engaged in ... forestry management or have an interest in the ... forestry operation;
- Must be nonindustrial private forestland on which forest-related products are produced and that meets the following criteria:
 - Has existing tree cover or is suitable for growing trees,
 - Is owned by any NIP individual, group, association, corp., Indian Tribe or other legal entity.



The Role of a Forest Management Plan

A forest management plan is a site-specific plan developed for a client, which addresses one or more resource concerns on land where forestry-related conservation activities.

A forest management plan is required to receive technical and financial assistance through EQIP



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NRCS/EQIP Assistance to Develop a Conservation Activity Plan for Forestry

- **Payment to get a plan developed**
- **Must use a certified Technical Service Provider (TSP)**
- **Conservation Activity Plan Will:**
 - Meet NRCS quality criteria for the identified resource concern(s)
 - Comply with federal, state, tribal, local laws, regulations, and permit requirements
 - Meet the client's objectives



Forestry Technical Service Providers (TSPs)



- **TSPs are certified professionals qualified to provide Technical services to USDA customers;**
- **Prepare forest management plans; and**
- **Provide Technical Assistance to Implement Forest Practices**





For More Information

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or

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