



CONSERVATION ENHANCEMENT ACTIVITY

E666106Z1

CONSERVATION STEWARDSHIP PROGRAM

Implementing sustainable practices for pine straw raking

Conservation Practice 666: Forest Stand Improvement

APPLICABLE LAND USE: Forest; Associated Ag Land

RESOURCE CONCERN ADDRESSED: Soil Quality Degradation

PRACTICE LIFE SPAN: 10 Years

Enhancement Description

Adopts guidelines for sustaining soil quality and wildlife habitat on sites where pine straw raking is currently practiced. Raking and removal of pine needles (“pine straw”) provides valuable landscaping material but at a high cost to soil fertility, soil organic matter, wildlife habitat, and in some cases, soil compaction, soil erosion and water quality degradation. Straw removal also makes prescribed burning less feasible by removal of the fine fuels needed to carry frequent surface fires that maintain longleaf pine and its characteristic understory. This enhancement is most applicable to longleaf pine forestland because: (1) longleaf-dominated ecosystems with their characteristic suite of flora and fauna historically predominated in most places where pines are currently grown in the Southeast, and (2) longleaf is the favored species for pine straw operations.

Criteria

- States will apply general criteria from the NRCS National Conservation Practice Standard Forest Stand Improvement (Code 666) as listed below, and additional criteria as required by the NRCS State Office.
- Identify specific sites with the greatest potential for pine straw. Natural pine stands with unusually high quality native understory vegetation, sites that support rare plants and sites that support Threatened & Endangered species should not be raked for pine straw.

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- The enhancement will be applied to sites where pine straw raking has occurred at least once during the past three years.
- Adhere to the following guidelines for pine straw raking:
 - Do not rake straw on erodible soils with slopes greater than 8%.
 - Use hand tools rather than mechanized raking equipment. Use pitchforks to lift straw off of rare or high-value understory plants.
 - Divide the acreage to be raked into several units and rotate the raking regime so that only a portion of the area is raked each year.
 - Adopt a rotation that includes periodic prescribed burns. One recommended rotation begins with a “rest” year to allow fuel to accumulate, a burn year and then a year when raking can occur (rest-rake-burn, repeat).
 - Thin the pine overstory to provide light needed to support understory plants. Thin when tree crowns begin to touch or when basal area reaches about 120 square feet, whichever comes first. Reduce basal area to 60-70 square feet.
 - Collect only the undecomposed, recently fallen “red needles.” Leave undisturbed the partially decomposed older needles, which are of little economic value.
 - Harvest needles once, in the middle of the fall (October) needle drop. Although the amount of subsequent needle drop will be less, studies have shown that retaining the late-season needles can reduce nitrogen and phosphorous losses by up to 70% and soil erosion by up to 90%.
 - If herbicides are necessary to control invasive or undesirable plants use directed-spray or spot treatments, and choose formulations and spray windows that will not damage native grasses and forbs.
 - Monitor fertility levels by periodic soil testing and pine needle nutrient analysis and, if indicated, be prepared to add fertilizer at recommended rates. Appropriate fertilization will increase the amount of needles, but over-fertilization can damage or kill longleaf pine trees.
- Implement forest stand improvement activities in ways that avoid or minimize soil erosion, compaction, rutting, and damage to remaining vegetation, and that maintain hydrologic conditions.



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- Protect site resources by selecting the method, felling direction and timing of tree felling, and equipment operation.
- For temporary access use NRCS Conservation Practice Standard Forest Trails and Landings (Code 655), to protect soil and site resources from vehicle impacts.
- Use NRCS Conservation Practice Standard Access Road (Code 560), for more heavily used roads associated with forest stand improvement activities.
- Where slash and debris will be generated, use NRCS Conservation Practice Standard Woody Residue Treatment (Code 384), to appropriately treat slash and debris, as necessary, to assure that it will not present an unacceptable fire, safety, environmental, or pest hazard. Remaining woody material will be placed so that it does not interfere with the intended purpose or other management activities.
- Do not burn vegetative residues except where fire hazard or threats from diseases and insects are of concern or when other management objectives are best achieved through burning. When slash and other debris will be burned onsite use NRCS Conservation Practice Standard Prescribed Burning (Code 338).



Documentation and Implementation Requirements:

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Participant will:

- Prior to implementation, review an informational booklet produced by the National Wildlife Federation: “Pine Straw Management and Harvest in Longleaf Pine Forest,” available from <https://www.nwf.org/~media/PDFs/Misc/FINAL%20Pine%20Straw%20Management%20BMGs%20July%202015.ashx>.
- Prior to implementation, obtain documentation of a past ongoing pine straw raking regime. Make documents available for NRCS review.
- Prior to implementation, obtain documentation of any species listed as Federal or State Endangered, Threatened, or State Sensitive. Make documents available for NRCS review.
- Prior to implementation, acquire all necessary approvals and permits (i.e. local, state, or federal, as applicable).
- Prior to implementation, arrange to have a forestry or wildlife specialist map out suitable and unsuitable areas for raking pine straw within the stand, that are not on slopes steeper than 8%, or where soil erosion is likely to occur, or in areas that are likely to impact Federal or State Endangered, Threatened, or State Sensitive, or other criteria established by the NRCS State Office. The specialist will also mark trees to be thinned to provide better longleaf pine growing conditions.
- Prior to implementation, arrange for soil tests to be conducted, one per each five acres.
- Prior to implementation, prepare a plan for managing pine straw raking in the stand, following guidance in the publication “Pine Straw Management and Harvest in Longleaf Pine Forest,” and any additional guidance provided by the NRCS State Office. The pine straw raking plan will include a schedule for follow-up soil testing and/or foliar testing to monitor site fertility. Have the plan available for NRCS review and written approval.
- During implementation, follow the plan for pine straw raking.
- After implementation, work with NRCS to follow up with other practices that may be recommended in the pine straw raking plan, such as NRCS Conservation Practice Standard Prescribed Burning (Code 338), or NRCS Conservation Practice Standard Woody Residue Treatment (Code 384).



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NRCS will:

- Prior to implementation, verify the enhancement is planned for the appropriate land use.
- Prior to implementation, as needed, provide explanations and technical assistance regarding information in the booklet “Pine Straw Management and Harvest in Longleaf Pine Forest” as related to implementing this enhancement.
- Prior to implementation, provide and explain the following NRCS Conservation Practice Standards (CPSs) as they relate to implementing this enhancement.
 - Forest Stand Improvement (Code 666)
 - Forest Trails and Landings (Code 655)
 - Prescribed Burning (Code 338)
 - Woody Residue Treatment (Code 384).
 - Access Road (Code 560)
- Prior to implementation, verify that any species listed as Federal or State Endangered, Threatened, or State Sensitive, are protected from adverse impacts on the site.
- Prior to implementation, verify the past ongoing pine straw raking regime.
- Prior to implementation, verify that the pine straw raking plan meets the enhancement criteria and any additional state NRCS requirements.
- As needed, prior to implementation, NRCS will provide technical assistance in:
 - Selecting locations within the stand that are suitable and not suitable for pine straw raking.
 - Advising on soil test results and ways to address any nutrient depletion issues, as necessary.
 - Determining the proper sequence and timing of raking and burning activities, and the timing of inactive periods.
 - Preparing specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.



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- During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- After implementation, verify the pine straw raking regime was accomplished according to the pine straw raking plan.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date