



**CONSERVATION ENHANCEMENT ACTIVITY**

**E666I**

**CONSERVATION STEWARDSHIP PROGRAM**

**Crop tree management for mast production**

**Conservation Practice 666: Forest Stand Improvement**

**APPLICABLE LAND USE: Forest, Associated Ag Land, Farmstead**

**RESOURCE CONCERN: Plant, Animal**

**ENHANCEMENT LIFE SPAN: 10 Years**

**Enhancement Description**

Forest stand improvement using crop tree management techniques to increase mast production.

**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 the number of mast crop trees to be developed based on site productivity and spacing guidelines for the mast tree species. See State guidelines.
- Crop tree crowns should be in the upper level of the forest canopy (dominant and/or codominant trees), and not suppressed by other tree crowns.
- Cut or kill all trees whose crowns touch the crown of the crop tree on four sides (three sides if adjacent to another crop tree), and leave additional space for large crown development of mast crop trees. Crop trees will have >15 feet of space on all treated sides.
- Retain a diversity of tree species to reduce the potential impact of an epidemic event (e.g. insect outbreak) that may kill some/all trees.

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- Trees that are below the crown of the crop tree or are not affecting crown development will be left to provide protection from wind damage, limit epicormic sprouting, and provide diversity for wildlife habitat.
- Trees removed that have marketable quality can be sold.
- All killed trees shall be left standing to provide wildlife habitat, except where snags will become a safety hazard (within 100 feet of a building, power line, road, etc.) or create a fire hazard. Snags that must be cut for safety reasons shall be left on site to become coarse woody debris on the forest floor (unless they create a fire hazard).
- As applicable, additional actions include:
  - Cutting damaging vines away from crop trees
  - Treatment of invasive plants that may be stressing crop trees
- Refer to criteria in NRCS Conservation Practice Standard Integrated Pest Management (Code 595) to assist with site-specific strategies for pest prevention, pest avoidance, pest monitoring, and pest suppression. Time tree felling to avoid buildup of insect or disease populations.
- 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. Protect site resources by selecting the method, felling direction and timing of tree felling, and heavy 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

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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).

- The enhancement will comply with all applicable federal, state, and local laws and regulations, and with States' Forestry Best Management Practices for Water Quality.



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## Documentation and Implementation Requirements

### Participant will:

- Prior to implementation, identify the number of dominant and/or codominant mast producing crop trees to be developed based on site productivity and spacing guidance for mast trees, as required in state specific guidelines. (NRCS will provide technical assistance, as needed.)
- During implementation, release all crop trees on all sides by killing competing trees within 15 feet of the crop tree’s crown/canopy.
- During implementation, retain a diversity of tree species, cut damaging vines away from crop trees, and treat invasive plants that may stress crop trees.
- During implementation, leave all killed trees (unless removed as a merchantable product) standing to provide additional wildlife habitat, except where snags could become a safety hazard. Trees that must be cut for safety reasons will be left on site to become coarse woody debris on the forest floor.
- During implementation, protect the site from plant and animal pests, fire, and adverse impacts to the soil resource.

### NRCS will:

- Prior to implementation, as needed, provide technical assistance in determining sites for enhancement implementation that meet specified criteria, including the number of crop trees per acre needed and the spacing of those trees.
- Prior to implementation, provide and explain the following NRCS Conservation Practice Standards as they relate to implementing this enhancement (as applicable for the site):
  - Forest Stand Improvement (Code 666)
  - Integrated Pest Management (Code 595)
  - Forest Trails and Landings (Code 655)
  - Access Road (Code 560)
  - Woody Residue Treatment (Code 384)
  - Prescribed Burning (Code 338) *WA NRCS does not offer this practice.*



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- During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- After implementation, document the number of crop trees per acre and average spacing and verify the post treatment stand conditions meet the specifications developed for the crop tree release activity.

**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



## WASHINGTON SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

## CONSERVATION STEWARDSHIP PROGRAM

### E666I

#### Additional Criteria for Washington

- In addition to the criteria specified in the National job sheet E666I the following additional criteria apply in Washington:
  - In forests with larger overstory trees then most native conifers, **Oregon white oak, Big leaf maple** and **Oregon ash** can provide hard mast for wildlife and **Bitter cherry** and **Pacific Madrone** could provide soft mast.
  - In younger forest plantations and forest openings the smaller hardwood trees (tall shrubs) can provide both soft and hard mast. The following native small trees are common mast producers in Washington forests: **Elderberries (Red and Blue), Crab apple, Hawthorn, Cherries (Choke and Bitter), Serviceberry, Hazelnut (Beaked and California), Juniper (Rocky Mt & Western), Cascara, Pacific dogwood, Indian plum, Hackberry, and Mountain ash.**
  - Use Forestry Technical Note 10 Table 2 (FOTG, Section I) for help establishing the general spacing of conifer and hardwood tree species when mast production is the goal along with timber production. USDA PLANTS can provide guidance for other tree and shrub species. The wider end of the spacing range will provide greater sunlight to the mast producing crop tree. When mast production is the primary goal, then select 10-40 trees per acre for mast production when using the crop tree management techniques described in the National Enhancement Criteria.
  - Pruning overstory trees allows more light to the understory and pruning the crop tree can open up the crown of that tree to more light and improve mast production. Conservation Practice 660 Tree & Shrub Pruning (FOTG, Section IV) may also be helpful in improving past production.
  - Based on WebSoil Survey soil suitabilities and limitations, protect soils sensitive to rutting, compaction and erosion, by using machinery only when the soil is dry or frozen, managing water runoff , and/or vegetating the roads trails and landing.



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All work done on Forest roads will be in compliance with WA Forest Practices Regulations (See WAC 222-24 and guidelines in Board Manual Section III)

- Use the Conservation Practice 384 Woody Residue Treatment Specification Guide (FOTG, Section IV), USFS forest residue photo series, or use some other professionally accepted protocol for estimating the amount of down wood on site and/or created by silviculture activities. In fire prone areas (dry forests) keep down woody debris ( forest slash) to 9 tons/acre or less. The 9 tons will be lopped and scattered and < 2' in height. The woody debris should be distributed across the site and break continuity in order to disrupt the spread of a fire. Woody debris amounts greater than 9 tons/acre will need to be treated through piling, chipping, crushing or removal (See WAC 332-24-652). In moist forests, keep down woody debris > 9 tons/acre outside of the Extreme Fire Hazard areas described in WAC 332-24-650.
- **NRCS WA does not provide technical or financial assistance for prescribed burning. See WA Dept. of Natural Resources (WA DNR) for all assistance for prescribed burning including plans and permits. See WA DNR for assistance with WA Forest Practices Rules and Applications.**

### Additional Documentation Requirements for Washington

- In addition to the documentation requirements specified in the National job sheet E666I the following additional documentation requirements apply in Washington:
  - Document a list of tree species to be used as crop trees for mast production.
  - Document the targeted number of crop trees per acre when using the crop tree management techniques described in the National criteria.
  - When tree species other than the ones listed above are used for crop trees document source used to establish mast production and benefit to wildlife
  - Document current and post treatment forest residue/fuel loading. Also document which method was used for estimating the amount of forest residue.  
Document WA Forest Practice Application class and required compliance.