



## Natural Resources Conservation Service

### CONSERVATION PRACTICE STANDARD

## TREE-SHRUB PRUNING

### CODE 660

#### (ac)

#### DEFINITION

The removal of all or parts of selected branches, leaders, or roots from trees and shrubs.

#### PURPOSE

This practice is applied to support one or more of the following purposes:

- Maintain or improve plant productivity, health, and vigor
- Reduce excessive plant pest pressure
- Develop desired plant structure, foliage or branching density, or rooting length
- Improve the composition and vigor of understory plants
- Reduce wildfire and safety hazards

#### CONDITIONS WHERE PRACTICE APPLIES

This practice applies on any area with trees or shrubs.

#### CRITERIA

##### General Criteria Applicable to All Purposes

Maintain the health and vigor of trees and shrubs by removing the minimum amount of living biomass required to achieve the pruning objective. Maintain appropriate crown ratios for the treated species.

Use proper pruning methods, techniques, timing, and tools to achieve the pruning objective and minimize stress and damage to trees and shrubs.

Time all pruning activities to minimize negative impacts to the site, soils, vegetation, and seasonal wildlife activities.

Do not paint or treat pruning cuts or “top” (pollard) trees or shrubs unless specifically recommended for the intended purpose. See Tree Care Industry Association, “ANSI A300 (Part 1) - 2017 Pruning” in “References” for pruning standards for urban tree pruning.

##### Additional Criteria for Maintaining or Improving Plant Productivity, Health, and Vigor

When root pruning for maintenance or renovation of existing trees, prune outside the tree drip-line (unless root competition with adjacent crop or forage areas becomes too great) and to a depth appropriate for the species and site.

##### Additional Criteria for Reducing Excessive Plant Pest Pressure

Sanitize all equipment after pruning treatment areas and sites, even if there is no apparent disease.

For affected species and sites, limit the spread of root-graft transmitted diseases by pruning roots at distances recommended for the species, site, and size of the tree.

Time pruning to minimize plant susceptibility to disease and pest pressure.

#### **Additional Criteria for Reducing Wildfire and Safety Hazards**

When pruning is used to reduce wildfire hazard or is conducted for other purposes in areas that are susceptible to wildfire, treat woody residue to reduce wildfire risk. Use NRCS Conservation Practice Standards (CPSs) Woody Residue Treatment (Code 384) and/or Prescribed Burning (Code 338).

For wildfire hazard reduction, prune to a height appropriate to achieve desired separation between the ground vegetation and tree crown, including branches that droop from the bole.

#### **Additional Criteria for Developing Desired Plant Structure, Foliage or Branching Density, or Rooting Length**

Prune only when desired plant structures are within the limits of tolerance for the species that will be pruned.

#### **Additional Criteria for Improving the Composition or Vigor of Understory Plants**

When pruning is used to increase access to resources needed by understory plants, ensure overstory tree and shrub pruning rates and intensity are sufficient to meet the demands of understory plants for the intended understory objectives.

When artificial regeneration methods are planned to improve understory composition in conjunction with overstory pruning, ensure timing, methods, and equipment are compatible with appropriate site preparation and establishment techniques.

### **CONSIDERATIONS**

Consider the impacts of pruning on the effectiveness of windbreaks and other agroforestry or other specialized tree or shrub plantings.

Removing live branches and foliage decreases tree and shrub energy reserves and ability to photosynthesize. Improper pruning methods that remove too much material, or lead to structural defects and breakage, can impact the health and vigor of trees and shrubs.

Consider the potential impacts of planned vegetative residue treatment methods on soil, water, animal, plant, energy, and air resources (e.g., retaining residues on site as opposed to removal or burning). Soil health is improved through inputs of vegetative residue (e.g., mulch, biochar) that supply nutrients, structure, and organic matter.

If needed, treat vegetative residue to limit threats from diseases or insects, maintain operational capacity, or speed residue incorporation into soil. Use NRCS CPS Woody Residue Treatment (Code 384).

Consider estimated costs and projected economic benefits of pruning for production of knot-free wood or other specialized forest products.

When pruning for disease or pest control (e.g., mistletoe, blister rust), consider existing tree-to-tree spacing, vertical tree structure, degree of infection, stand age, and site quality. If it is necessary to cut or kill entire trees to limit disease or pest damage, use NRCS CPS Forest Stand Improvement (Code 666).

Consider the impacts of pruning on wildlife food and cover and the potential for temporary impacts of animal damage to crop trees (e.g., bear damage to conifers). Pruned branches and other plant parts can be used to create wildlife cover. Use NRCS CPS Structures for Wildlife (Code 649).

For species susceptible to sun scald, consider possible damage that may occur to plants suddenly exposed to more light by pruning, especially on south-facing slopes.

Consider how to use branches and other plant parts removed during pruning as special forest products or for other purposes. Consider using biomass for bioenergy or renewable energy production.

To improve soil organic matter or eliminate impacts to air quality, consider not burning vegetative residues except where biochar production might occur, wildfire hazard or threats from diseases and insects are of concern, or where other management objectives are best achieved through burning. If burning is necessary, use NRCS CPS Woody Residue Treatment (Code 384) to utilize air curtain incineration as a more efficient alternative to open pile burning.

To improve soil organic matter, distribute residue throughout the site. Moving residues away from stems of trees or shrubs is acceptable. Residues may be chipped, mulched, or transformed to biochar to speed incorporation into the soil.

## PLANS AND SPECIFICATIONS

Prepare plans and specifications for applying this practice, including design and installation requirements for achieving the intended purpose. Locate the area to be pruned on the conservation plan map, and document the purpose(s) for pruning in the conservation plan.

At a minimum, specifications must include—

- Location
- Objective(s) for pruning
- Treatment method by species or vegetation type
- Number of trees/shrubs per acre or proportion of stand to be treated
- Targeted amount of stem, branch, or foliage material to be cut or removed (e.g., desired crown ratio, crown density, height on tree bole, etc.)
- Timing relative to considerations for disease, insects, and wildlife impacts
- Mitigation measures, if needed, to reduce wildfire hazard or the potential for disease and insect pests

## OPERATION AND MAINTENANCE

Periodically inspect plant condition and conduct additional treatment or mitigation if needed.

Control locally invasive and noxious plants that may establish due to increased light penetration.

## REFERENCES

Bedker, P.J., J.G. O'Brien, and M.M. Mielke. 2012. How to Prune Trees. NA-FR-01-95. USDA Forest Service, Northeastern Area State and Private Forestry.  
<https://www.fs.usda.gov/naspf/sites/default/files/publications/htprunerev2012.pdf>

Gilman, E.F. and A. Bisson. 2007. Developing a Preventive Pruning Program in your Community: Mature Trees. Publication ENH 1063. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL. [http://hort.ifas.ufl.edu/woody/documents/ch\\_13\\_mw06.pdf](http://hort.ifas.ufl.edu/woody/documents/ch_13_mw06.pdf)

Hanley, D.P. and S. Reutebuch. 2005. Conifer Pruning Basics for Family Forest Landowners. EB1984. Washington State University Extension, Pullman, WA.  
[https://www.fs.fed.us/pnw/olympia/silv/publications/opt/506\\_HanleyReutebuch2005.pdf](https://www.fs.fed.us/pnw/olympia/silv/publications/opt/506_HanleyReutebuch2005.pdf)

Nolte, D.L., K.K. Wagner, and A. Trent. 2003. Timber Damage by Black Bears: Approaches to Control the Problem. Technical Report 0324–2832–MTDC. USDA Forest Service, Missoula Technology and

Development Center, Missoula, MT. <https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf03242832/pdf03242832dpi72.pdf>

Owen, J.H. 2009. Shaping Fraser Fir Christmas Trees. North Carolina State University Cooperative Extension Service, Raleigh, NC. [https://christmastrees.ces.ncsu.edu/wp-content/uploads/2014/05/shaping-fraser-fir-christmas-trees\\_070609.pdf](https://christmastrees.ces.ncsu.edu/wp-content/uploads/2014/05/shaping-fraser-fir-christmas-trees_070609.pdf)

Tree Care Industry Association. ANSI A300 (Part 1) - 2017 Pruning. Manchester, NH. [https://www.tcia.org/TCIA/Build\\_Your\\_Business/A300\\_Standards/Part\\_1.aspx](https://www.tcia.org/TCIA/Build_Your_Business/A300_Standards/Part_1.aspx)

USDA, NRCS. 2021. The PLANTS Database (<http://plants.usda.gov>, 31 March 2021). National Plant Data Team, Greensboro, NC 27401-4901 USA

van der Hoeven, G.A. 1977. All About Pruning. KSU Horticulture Report C-550. Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Manhattan, KS. <https://bookstore.ksre.ksu.edu/pubs/c550.pdf>

Windell, K. 1996. Pruning in Timbered Stands. Technical Report 9624-2815. USDA Forest Service, Missoula Technology and Development Center, Missoula, MT.