

**NATURAL RESOURCES CONSERVATION SERVICE**  
**CONSERVATION PRACTICE STANDARD**  
**TREE/SHRUB PRUNING**

(Acre)

**CODE 660**

**DEFINITION**

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

**PURPOSES**

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

- Maintain or improve plant productivity, health and vigor, and/or reduce excessive plant pest pressure.
- Develop desired plant structure, foliage or branching density, or rooting length.
- Improve the composition and vigor of understory plants.
- Maintain or improve soil quality and organic matter content.
- Reduce wildfire and/or safety hazards.
- Reduce energy use during field operations

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies on any area with trees or shrubs.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Use of this standard requires compliance with all applicable federal, state, and local laws and regulations.

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

Use proper pruning methods, techniques and timing for each species to achieve the pruning objective.

Use proper pruning procedure(s) and tools to minimize stress and damage to the residual tree or shrub.

Time all pruning and shearing activities to minimize negative impacts on the site, soils, and vegetation.

Do not create conditions (e.g., sap flow from fresh cuts) that will attract detrimental insects or increase the potential for disease.

Schedule the timing of pruning and shearing operations to minimize disturbance to seasonal wildlife activities.

Do not paint or treat pruning cuts, or “top” (pollard) trees or shrubs unless specifically recommended for the intended purpose as described by the International Society of Arboriculture.

Never prune trees that are touching or near utility lines; instead consult your local utility company.

Sanitize all equipment after pruning a forest unit, even if there is no apparent disease.

**Additional Criteria for Maintaining Health and Vigor**

When pruning diseased wood, disinfect pruning and shearing tools as needed to minimize the spread of pathogens.

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.

**Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service State Office, or download it from the Field Office Technical Guide for your State.**

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.

#### **Additional Criteria to Maintain or Improve Soil Quality**

Do not burn vegetative residues except where wildfire hazard or threats from diseases and insects are of concern, or other management objectives are best achieved through burning.

Distribute residue throughout the site; however, moving residues away from stems of trees or shrubs is acceptable. Residues may be chipped or mulched to speed incorporation into the soil.

Ground vegetation and/or conditions must be left in a manner to address erosion and other natural resource concerns to acceptable levels.

#### **Additional Criteria for Reducing Wildfire and/or 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 Indiana (IN) Field Office Technical Guide (FOTG) Standard (338) Prescribed Burning.

When pruning for wildfire hazard reduction, the final pruned branch height (at the bole) may need to be higher with trees whose branches droop, to achieve the desired separation between the tree crown and ground vegetation.

#### **Additional Criteria to Reduce Energy Use**

Where alternative pruning methods are available, reduce the total energy consumption associated with pruning by using energy-efficient and cost-effective methods.

### **CONSIDERATIONS**

The considerations section contains information that is optional to the planner.

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 vs. removal or burning). Soil quality is improved through inputs of vegetative residue that supply nutrients and organic matter.

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

Consider sanitizing pruning and shearing tools after pruning each tree/shrub, even if there is no apparent disease. A high potential of spreading disease to individual trees/shrubs exists when an unidentified disease is present.

If fungal diseases, such as oak wilt, are a concern, limit pruning to the dormant growing season. Spring and wet weather pruning should be avoided. Generally, pruning during the dormant season will reduce the likelihood of introducing diseases and boring insects into the tree wound.

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

The following species are high market valued trees favorable for pruning: Sugar Maple, Oak species, Basswood, Black Cherry, Black Walnut, Yellow Poplar, Red and White Pine. Preferred pruning time is late winter before bud break.

It is recommended to prune limbs that are small in diameter (<1 inch in diameter) because pruning cuts will normally close within one to two years. Limbs in excess of 2 inches in diameter may take up to 10 years to close.

Cutting into the branch collar, pruning flush to the trunk, or leaving a stub may increase decay and cause wood cracks and tissue die back.

Remove no more than one-third of the live crown in a single growing season. If necessary conduct heavy pruning at 3-year intervals to reach desired results.

Consider timing pruning to minimize disturbance to seasonal wildlife activities, particularly arboreal species.

Consider how to use branches and other plant parts removed during pruning as special forest products, or for other purposes.

Consider creating wildlife brush piles with the debris and vegetative material left after treatment. See IN FOTG Standard (649) Structures for Wildlife

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 IN FOTG Standard (666) Forest Stand Improvement.

For species susceptible to sun scald, consider possible damage that may occur to a newly-exposed tree bole or shrub, especially on south-facing slopes.

### **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 will include:

- Location,
- Objective(s) for pruning,
- Treatment method by species or vegetation type,
- Number of trees/shrubs per acre to be treated,
- Minimum and maximum amount of live branch and foliage to be cut or removed,

- 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.

### **Branch Pruning**

Small branches and limbs (up to 1.5") may be cut with a hand pruner or lopping shear. The by-pass style pruner is considered superior to the anvil style. The preferred tool for cutting small and medium sized limbs (1.5" to 4" diameter) is a hand or pole saw with a curved blade having approximately 6-8 backward-facing teeth per inch that cut on the "pull" stroke. Bow saws and chain saws are more appropriate for limbs larger than 4" in diameter.

If possible, prune branches when they are small, less than 2 inches in diameter.

Prune small branches (< 2 inches in diameter) just above an outside bud or at a fork. Make clean cuts as close to the remaining branch or tree stem as possible. Do not cut into branch collars.

Favor branches with strong, U-shaped angles of attachment. Remove branches with weak, V shaped angles of attachment.

See Figure 1 & 2. In references for details about proper techniques for pruning large branches.

### **Pruning for Timber or Veneer**

Once hardwood saplings are well established prune young seedlings in the dormant season or in the spring before new terminal has grown more than 3 inches. Remove the multiple leaders and any damaged terminals.

Young (less than 5 years old) trees of desirable species (black walnut, white oak, northern red oak, black cherry, sugar maple, and ash) that have been damaged or have developed poor form may be coppiced (cut off about 2 inches above the ground). Coppice in late winter or very early spring before leaves appear. Select a single vigorous well-formed sprout originating at or below ground line to

keep and cut off all others. Protect selected shoot with a tree shelter, if necessary.

Prioritize pruning based on species and local markets. Prune only up to 150 crop trees per acre selecting only vigorous, single-stem trees.

Begin branch pruning when the tree is 10 to 15 feet tall or 3 to 6 inches in diameter. Attempt to prune branches before they reach more than 1/2 inch in diameter. Eliminate multiple leaders, crooked, crossing or other deformed branches.

Gradually prune lower branches to a height of at least 10 feet and ultimately more than 18 feet. Never remove more than ¼ of the live crown in one year and always retain live branches on at least half of the length of the stem.

### Woody Plant Root Pruning

Root pruning can be done in any season of the year, whenever the ground can be worked. Use a tractor with at least 70 horsepower or equipment with adequate horsepower to pull a root plow at the desired depth.

Use a standard root plow with a vertical cutting bar capable of reaching a depth of at least 24 inches. Use two passes to sever roots. The first pass should be 12 to 15 inches in depth. The second pass should be 20 to 22 inches in depth and be in the same furrow as the first pass.

On sites with stones in the profile or a tendency to clod, one slow (<2 mph) pass may provide better results.

The plow furrow should be 2 feet into the field from the drip line of the trees but not closer than 15 feet from the trunks of the trees.

Minimize concentrated flow channels from the root pruning activities on potentially erodible sites by offsetting the plow furrow every 100 feet or close the pruning trench by driving over the furrow with a tractor tire on an additional non-plowing pass.

## 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.

Repeat root pruning operations, as necessary, every 5 to 8 years.

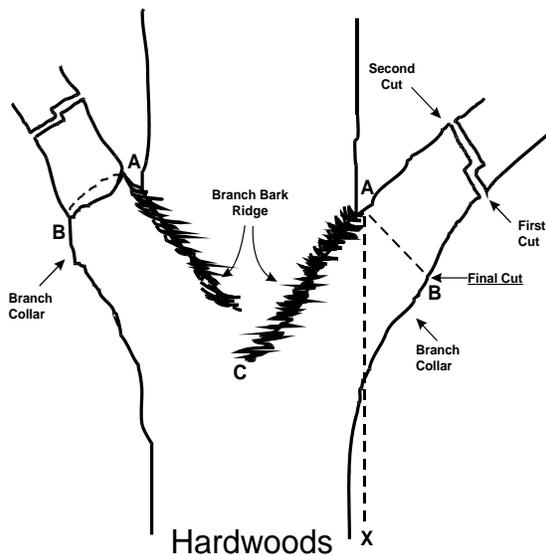
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**Figure 1 – Hardwood Pruning Guidelines**



Prune large branches according to the following steps:

1. Locate the branch bark ridge (See figure 1).
2. Find **A** (outside edge of branch bark ridge.)
3. Find **B** (swelling where branch meets branch collar.) If **B** is difficult to determine drop a line from **A**: the angle **XAC** is equal to the angle **XAB** (see Figure 2).
4. Make the final cut on line **AB**.
5. Do not cut behind the branch bark ridge.
6. Do not leave stubs.
7. Do not cut into the branch collar.

**Figure 2 – Conifer Pruning Guidelines**

