

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE SPECIFICATION GUIDE SHEET**

**FOREST STAND IMPROVEMENT**

**(ac.)  
CODE 666**

The manipulation of species composition, stand structure, and stocking by cutting or killing selected trees and understory vegetation shall adhere to the Natural Resources Conservation Service (NRCS) Conservation Practice Standard Forest Stand Improvement (666), in the South Dakota Technical Guide (SDTG).

Material in this document provides guidance for complying with the standard to meet a variety of purposes on forested lands.

Removing trees in a change of land use is not to be planned or reported under this practice; also, stands that are maintained in an overstocked condition or those that have been thinned to an understocked condition will not be planned.

Mark unit boundaries and sensitive areas well beforehand, so they can be easily identified throughout improvement activities. Protect riparian zones, unique areas, and structures. To protect riparian zones or other water quality sensitive areas, refer to "Forestry Best Management Practices for South Dakota" published in 2003 or the most recent version. Leave a strip of existing woody vegetation, a minimum 50 feet wide, along any non-woodland border.

**FOREST STAND IMPROVEMENT - HARVESTING**

The primary objective of harvesting is to remove wood products with a minimum disturbance to the site and to provide for regeneration of a new stand or perpetuation of the existing forest.

The harvest-regeneration strategy needs to be identified for all planned forest improvement harvesting.

All cut trees shall be limbed full length on the trunk and slash scattered so it will lie within 18 inches of the ground. Logging slash shall be treated by lopping and scattering the vegetation, by removal from the site or by piling and burning according to the standard Forest Slash Treatment (384).

Limit damage to the site by using directional felling, limiting trails to less than 15 percent of the site, logging when the soil is dry or frozen, using the smallest size equipment possible, and using well-organized access trails.

Use the logging system and equipment appropriate for the site. Take care to minimize damage in the residual stand when using mechanical methods.

Avoid wet soil conditions to minimize compaction and rutting.

The choice of commercial harvest method is highly specific and depends upon landowner objectives, stand and site conditions, species, markets, contractors, and other considerations. Landowners should seek advice from a professional forester before pursuing a commercial timber harvest.

## FOREST STAND IMPROVEMENT – THINNING

The primary objective of thinning is to improve growth and quality of the remaining trees with minimum disturbance to the site. Wood products may or may not result. Woodland stands should be thinned before diameter growth on the larger, better quality trees is reduced. Stands should be thinned as soon as the overstocking is recognized. In well stocked, even aged stands this usually occurs between 10 and 20 years of age.

**Pre-Commercial Thinning** – reducing forest stocking in immature stands by removing a portion of the non-merchantable trees in a stand. Ponderosa pine stands with average stand diameter up to 4 inches should be thinned to 10 foot spacing; stands with an average diameter of 5 to 6 inches should be thinned to 12 foot spacing. This guide is subject to professional interpretation. Variations will be necessary for stand conditions and site quality.

**Commercial Thinning** – reducing forest stocking by harvesting a portion of the merchantable trees in a stand. This may include some non-merchantable trees in the thinning operation. Determine the desired level of stocking that meets the landowner's objectives and the stands management needs.

Remove suppressed and malformed trees or trees of undesirable species, leaving sufficient well-formed trees. Priority shall be given to thinning sites having site indices of 55 or greater.

Favor the species best adapted to the site (see Conservation Tree/Shrub Group descriptions, Section II of the SDTG). Invasive species will be controlled in favor of native vegetation. Generally ponderosa pine should be the species to favor in the Black Hills.

Kill unwanted trees, shrubs, and vines by any of the following means: cutting, girdling, frilling, stem injection, basal bark spray.

**Cutting:** Cut down unwanted trees in a stand by the use of a chainsaw, brush saw, feller-buncher, axes, loppers, or any other mechanical device. Stumps should be no higher than six inches above the ground. Cutting of deciduous trees should be followed by a suitable herbicide application to reduce stump sprouting. Treat the stump with an herbicide best suited to kill the species. Apply chemical immediately after cutting in accordance with directions given on the label.

**Girdling:** Girdle the tree about breast height, being careful to cut clear through the cambium layer all the way around the tree. Girdling is an alternative for killing a few large weed or wolf trees larger than 12 inches in diameter.

**Frilling and treating with a herbicide:** Frill with an axe at a convenient height above ground. Make cuts all the way around the tree then immediately apply herbicide in accordance with directions given on the label. December 15 to March 15 is the best period for frilling and herbicide treatment.

When choosing herbicides, review leaching, runoff potential, setback requirements, persistence, and toxicity ratings of chemical formulations. Use the safest available herbicide. Follow all label directions and label precautions.

Take care to minimize damage in the residual stand when using mechanical methods.

To avoid damage from bark beetles, do not thin ponderosa pine stands between April 1 and September 30, unless slash is to be removed from the site, chipped, or burned before spring.



practice standard Tree/Shrub Pruning (660) for more detailed information and guidance regarding this practice.

Low intensity prescribed fires may be used to reduce fuel build-up, expose mineral soil for improved germination or improve/increase green browse for wildlife. Refer to Practice Standard Prescribed Burning (338) for additional guidance. A prescribed burn plan shall be prepared.

On sites with site indices below 55 or where the development of wildlife habitat is a consideration, add 1 to 3 feet to the average spacing guidelines (D+7 to D+9).

Consider rotating forest stand improvement across the forested property so that various stages of plant succession will be established.

Weeding can be used for the removal or reduction of overtopping and strongly competing brush or other undesirable growth from established seedlings of desirable species.

Release can be obtained by chemical or mechanical means.

Cooperators using chemicals shall be cautioned to read the label on the container before using the chemical, handle and apply the chemical according to the label instructions, dispose of unused material or empty containers in a safe manner and follow local, state, or federal laws and regulations concerning the use of agricultural chemicals.

Timing of the treatment shall coincide with intended purposes and minimize impact on other resources.

## **OPERATION AND MAINTENANCE**

Monitor populations and the potential of damage to site resources by harmful pests and take controlling actions as necessary. Comply with Practice Standard Pest Management (595).