

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD  
SOUTH DAKOTA SUPPLEMENTS ITALICIZED**

**WINDBREAK/SHELTERBELT RENOVATION**

(ft.)  
CODE 650

**DEFINITION**

Widening, partial replanting, releasing, removing and replacing selected trees and shrubs to improve an existing windbreak or shelterbelt.

**PURPOSES**

To restore or enhance the function of existing windbreaks or shelterbelts.

**CONDITIONS WHERE PRACTICE APPLIES**

In any windbreak or shelterbelt that is no longer functioning properly for the intended purpose.

**PLANNING CONSIDERATIONS**

*Renovation should not be initiated without an adequate inventory and evaluation of the existing windbreak/shelterbelt to determine probable causes of why it is not functioning as intended. Items to document and evaluate when inventorying a windbreak include:*

1. *Species composition, age, vigor, density, and height*
2. *Length, configuration, and spacing*
3. *Competition*
4. *Insect, disease, and herbicide damage*
5. *Soils*
6. *Animal and/or weather damage*
7. *Natural reproduction*

*Renovation may involve a combination of actions to restore or create the proper spacing, density, structure, or species composition in a windbreak/shelterbelt.*

**CRITERIA**

The following *restoration methods* will be used individually or in combination to *restore or enhance the useful lifespan* of windbreaks or shelterbelts:

*Renovation plans shall result in plantings, which achieve the minimum design density necessary to accomplish the intended purpose and function of the windbreak/shelterbelt. Natural Resources*

**SOUTH DAKOTA TECHNICAL GUIDE  
SECTION IV**

*Conservation Service (NRCS) standard Windbreak/Shelterbelt Establishment (380) contains the density requirements for windbreaks.*

**I. RELEASE OF SOD BOUND TREES AND SHRUBS**

When competing herbaceous vegetation is affecting the health of the planting, the trees or shrubs will be released mechanically or chemically to improve their growth and vigor.

*Applicable to sod bound plantings where at least 70 percent of the tree/shrub stand exists.*

*When mechanical release is conducted, till no deeper than three inches between the rows and no closer than two feet from the base of the plants. The optimum time is midsummer or early fall.*

*When chemical release is considered, consult the county extension agent or South Dakota Resource Conservation and Forestry Division for specific information regarding kind of herbicide and its proper use. Cooperators shall be cautioned to read and follow all label instructions on the safe use and handling of the material. Dispose of unused material or empty containers according to local, state, or federal laws and regulations.*

**II. REINFORCEMENT PLANTINGS**

Additional rows of trees or shrubs will be added adjacent to or within an existing windbreak/shelterbelt to improve density.

*Renovation plans, which involve the replacement or planting of new trees and shrubs, will:*

1. *Use species adapted to the soil properties and the planting site,*
2. *Use acceptable planting stock,*
3. *Use appropriate planting methods, and*
4. *Have planting sites properly prepared.*

*Guidelines for the above items are in the standard Windbreak/Shelterbelt Establishment (380).*

*Residual plants will be protected during the renovation. Avoid mechanical wounding of the trees*

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and shrubs to be retained in the windbreak/shelterbelt.

#### **Underplanting or Interplanting**

Plant approximately midway between the rows of an existing windbreak or shelterbelt where the majority of trees or shrubs in two or more adjacent rows are missing, dead, or in poor condition.

The replacement species selected must have the ability to handle the competition from existing trees and shrubs for light and moisture and still respond to eventual release.

Species adapted for underplanting or interplanting are: Eastern redcedar, Rocky Mountain juniper, and shade tolerant shrubs.

For seedlings planted by mechanical methods or by hand, the width of the scalped area should be a minimum of 16 inches.

Do not make scalp plantings where adequate natural regeneration is present.

Scalp plantings will not be made in heavy sod unless the grass has been controlled either chemically or mechanically.

This renovation method is the most difficult to successfully achieve. Other methods of renovation such as sod control, row replacement, and enlargement planting will be encouraged before underplanting, or used in conjunction with underplanting for the best renovation results.

#### **Supplemental or Enlargement Plantings**

##### **Cultivated sites**

Supplemental row plantings will not be closer than 30 feet to existing rows of large spreading trees such as cottonwood, Siberian elm, or silver maple.

All other supplemental row plantings will not be planted closer than 20 feet to an existing row unless the renovation plan includes the eventual removal of the adjacent row prior to it suppressing the newly planted row.

The row nearest to the existing windbreak should be planted to Austrian pine, Eastern redcedar, Ponderosa pine, Rocky Mountain juniper, Scotch pine, or shade tolerant shrubs.

##### **Scalp planting sites**

Scalp plantings should be limited to sites where proper site preparation is not possible.

Treat scalp plantings made in existing isolation strips or areas immediately adjacent to existing plantings as an underplanting.

### **III. ROW REMOVAL AND REPLACEMENT**

Comply with applicable laws and regulations, including the state's Best Management Practices (BMPs).

Entire or partial rows of trees or shrubs will be *clearly marked and identified* for removal to allow rows of new trees or shrubs to be planted.

Removal of woody material may be accomplished by any means, which does not damage the trees and shrubs to be retained or cause adverse offsite impacts.

All tree and shrub debris from the cleared area, which could interfere with new planting and maintenance operations will be removed from the site and disposed of prior to planting.

Disposal of woody material (including burning) shall be done in compliance with local and state regulations.

Generally, in multiple row removals of interior rows, one less row will be planted than was removed.

### **IV. THINNING, PRUNING, AND COPPICING**

#### **Thinning**

Thinning is the removal or killing of trees or shrubs within a row or an entire row.

Individual trees or shrubs will be identified and marked for thinning to reduce plant competition, alter the density of the planting, or improve the growth of the remaining trees.

Entire or partial rows of trees or shrubs will be identified for removal to release adjacent rows of conifers or a more desirable deciduous species.

Thinning should favor: those plants which have the most vigor, those long-lived species (including natural regeneration) which respond to release, or those species which will best perform the desired function of the barrier.

Trees and/or shrubs may be thinned to the extent that the maximum row to row and plant to plant spacing guidelines in standard Windbreak/Shelterbelt Establishment (380) is not exceeded by more than 30 percent.

#### **Pruning**

Pruning of trees will be used to remove diseased branches or alter the density of the planting.

Prune branches from adjacent deciduous trees and shrubs, which may interfere with the normal growth of any of the conifer species such as Eastern

*redcedar, Rocky Mountain juniper, or Ponderosa pine.*

*Pruning activities will be conducted according to guidelines in standard Tree/Shrub Pruning (660A).*

### **Coppicing**

Identified rows of trees or shrubs in decline will be cut to the ground to allow sprouting (coppice) and improve ground level density and vigor.

*Where the deciduous shrub rows have become leggy and a denser shrub row is desirable, cut shrubs back to within four to eight inches above the ground.*

*Cut during the dormant season for best results.*

### **V. MANAGE NATURAL REGENERATION**

*Older, multiple row plantings may have trees and shrubs naturally reproducing under the main canopy. Renovation plans can be designed to release this new growth.*

*When possible, release of natural reproduction can be done in rows to conform with a windbreak design or managed similar to a natural forest using timber stand improvement techniques.*

### **VI. ROOT PRUNING**

*Root pruning can be used to reduce competition on adjacent cropland areas from trees and reduce herbicide damage to trees from soil applied herbicides; or used to reduce adverse competition between existing windbreak rows and newly established supplemental plantings.*

*Root prune trees and shrubs no closer than their canopy drip line boundary.*

*Only one side of any row shall be root pruned per year.*

*Root prune to a depth of 18 to 24 inches by pulling a vertical blade or plow through the soil.*

*Repeat root pruning as necessary at intervals of 5 to 10 years.*

*Locate all buried utilities prior to root pruning.*

### **CONSIDERATIONS**

Renovation may be accomplished over a period of years.

Debris should be removed from the site and disposed of properly if the debris will cause insect, disease, fire, or operability problems.

Consider shade tolerance when selecting species for replanting within or adjacent to an existing windbreak or shelterbelt.

When rows of a windbreak or shelterbelt are merely extended in length, this is not considered renovation.

Damaging pests will be monitored and controlled.

Wildlife needs should be considered when selecting tree or shrub species.

*Avoid plants that may be alternate hosts to undesirable pests.*

*Species diversity should be considered to avoid loss of function due to species specific pests.*

### **PLANS AND SPECIFICATIONS**

Specifications for this practice shall be prepared for each site. Specifications shall be recorded using approved specifications sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

### **OPERATION AND MAINTENANCE**

Vegetative competition will be controlled as long as it inhibits the renewed growth and vigor of the windbreak or shelterbelt.

Supplemental water will be provided as needed.

Trees and shrubs will be protected from fire and animals.

*Livestock shall be controlled or excluded as necessary to achieve and maintain the intended purpose. Please refer to standard Use Exclusion (472) or Fencing (382).*

Additional thinning, pruning, or coppice management may be needed in the future to maintain function.

The windbreak/shelterbelt will be monitored for potential damaging pests.