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Division of Resource Conservation and Forestry

## Windbreak Establishment

Successful windbreak establishment depends on:

- Layout
- Site preparation
- Planting
- Pre-planting care
- Planting technique
- Post planting care
  - Weed control
  - Livestock control
  - Wildlife damage control
  - Insect and disease control
- Replanting

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This brochure was funded in part by a grant from USDA Forest Service Forest Stewardship Program.

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# Windbreak Establishment



**South Dakota**  
**Department of Agriculture**  
Division of Resource Conservation  
and Forestry

Successful windbreak planting depends on proper establishment and care during the first few years after planting.

## Layout

Before planting, it is best to layout each row of the windbreak on the actual site. Customize the design for position of buildings, roads, driveways, feedlots, field boundaries, utility lines, drainage ditches and other features.

## Site preparation

Proper site preparation is one best way to improve the survival of newly planted trees and shrubs. Site preparation should begin the year before planting to reduce competition from weedy species. This will also conserve soil moisture, and provide easier planting. Consider soil type, existing vegetation, and possible erosion hazards when selecting the appropriate tree planting. If rodents are a problem, begin control measures at least a year in advance. Cropland may need little or no site preparation depending on current weed density. On sites with heavy grass sod, site preparation begins with a herbicide treatment in the spring while grass is actively growing. Plow the site in the fall and disk the following spring just prior to planting. Delayed disking conserves soil moisture, controls early spring weeds, and reduces potential erosion damage.

## Planting

After preparing your site, successful establishment depends on using quality plant material, how you handle the plant material, and using proper planting techniques.

### Plant Material Selection

- Purchase plant material from a reliable source.
- Choose plant material that is suitable for

your soils and can survive the environmental extremes at your site.

- Choose nurseries using locally collected seeds or seeds from known origins.
- When available, select insect and disease resistant plants.
- Conifers should be at least 8 to 12 inches tall, with a good, healthy root system.
- Hardwoods and shrubs should be 12 to 24 inches tall with full, healthy root system, and at least a one-quarter inch diameter just above the root collar (the point where the root meet the stem).
- Do not be too quick to buy the cheapest seedlings; they may not be the best value in the end.

### Pre-Planting Care

Care of plant material upon arrival is a crucial step in establishment. Warm temperatures and dryness greatly reduce seedling survival.

- Immediately upon arrival, inspect the plant material for dry, moldy, or very small trees. Do not waste your time planting damaged trees.
- Plant as soon as possible after the seedlings arrive. Ideally, seedling should be planted the same day they are received.

If seedlings need to be stored, several methods will minimize storage stress. Keep the packing materials around the roots keeping the roots damp. Check them daily for adequate moisture and keep the box or bag closed so that seedlings remain in the dark.

Refrigerated storage (34 -40°F; 80 -100 percent humidity) is best and will allow seedlings to be held for several weeks. **DO NOT** allow seedlings to freeze.

A cool, damp root cellar will provide satisfactory storage for up to a week. Placing several trays of ice cubes on top of the packing material covering the roots will provides cooling and moisture. Repeat the process daily. **DO NOT** use dry ice, as this will freeze the plant material.

A cool basement or unheated room will provide satisfactory storage for several days. Apply ice cubes as mentioned above.

It is very important to avoid seedling root exposure to air any longer than absolutely necessary. Placing the seedling roots in a bucket containing a slurry of soil and water will provide a protective coating, and keep them from drying out. Although dryness damages the roots, they do need some oxygen; therefore, **DO NOT** store the seedlings with their roots in water or slurry for more than several hours.

### Planting Techniques

There are two ways to plant trees— by hand or by machine. Both will provide excellent results. After planting by machine, walk the entire planting lightly tugging on each seedling while tamping the soil at the base to be sure they are vertical and firmly in the ground.

### Post-planting care

Windbreak establishment does not end once the seedlings are planted. New plantings are susceptible to weed competition, hot dry winds, insect and disease damage, and feeding by livestock.

- Competition from weeds is the leading cause newly planted windbreaks failure. Weeds need to be controlled for 3 to 5 years after planting using pre-emergent herbicides, clean cultivation, or fabric. If fabric is used, weeds between the rows still need to be controlled.
- Keep livestock out of windbreaks at all times.
- Provide protection from wildlife damage.
- Inspect plantings for insect and disease problems. Early identification allows earlier control of the situation - before damage can decrease windbreak effectiveness.

### Replanting

Even under the best of conditions, some seedlings die. Check and replace dead seedlings for at least three years to maintain the windbreaks effectiveness.