

Landowner _____

FIELD WINDBREAKS



WHAT IS A FIELD WINDBREAK?

A field windbreak is a linear belt of trees or shrubs established within or adjacent to a field. Field windbreaks reduce blowing soil, control snow deposition, conserve moisture, protect crops, orchards, wildlife and livestock, or simply increase the natural beauty of an area.

PURPOSE

Field windbreaks are generally established to reduce soil erosion from wind, protect plants from wind related damage, manage snow deposition, enhance wildlife habitat and improve air quality by reducing and intercepting dust, chemicals and odors.

HOW IT HELPS THE LAND

Reducing wind speed will reduce soil loss and damage from the wind to a level which will permit crop production to be sustained economically and indefinitely. Field windbreaks also provide wildlife food, cover, nesting sites and travel corridors.

WHERE THE PRACTICE APPLIES

Field windbreaks are “environmental buffers” that are planted in a variety of settings, such as cropland, pasture or rangeland where damage from moderate to high winds can be reduced. The site should also be capable of growing the proposed trees and shrubs.

WHERE TO GET HELP

For assistance and additional information on planning and establishing a field windbreak, contact your local Natural Resources Conservation Service or your local Conservation District office.

APPLYING THE PRACTICE

To protect crops which are highly susceptible to wind erosion and keep soil loss within tolerable levels, plan to plant tree rows at right angles to the prevailing wind direction.

All areas in need of protection should be located within 10 times the height of the tallest tree row. Since the height will change until the tallest tree

reaches maturity or becomes ineffective, it is suggested that estimated height of the tallest tree species at 20 years of age be used for planning purposes. If this distance is too close to meet goals and objectives, other forms of wind control will need to be considered such as strip cropping, grass barriers, or residue management, to stay within tolerable limits beyond this distance.

Generally a three to five row windbreak will be adequate.

- The first row from the windward side should provide a low growing, dense barrier. A species such as American plum spaced 3-5 ft. apart should be considered for this row.
- The next row should consist of an evergreen type species to provide high density to the mid-height area as well as providing year round protection. Species to be considered in this row might include Arborvitae or Rocky Mountain juniper. Evergreen trees should be spaced 6-12 ft. apart.
- The third row should provide density at the highest level of the windbreak. The taller species may include such deciduous trees as hackberry, pecan, ash, black locust, mulberry or Osage orange. These trees should be spaced from 12 to 18 feet apart.

Space the rows to allow for cultivation between the rows plus an additional four feet. Stagger or alternate the position of trees in adjacent rows. Do not alternate species within the row.

Site Preparation

Trees have a much better chance of survival when the planting site is properly prepared. Site preparation on medium or heavy cropland soils should include summer fallowing. When planting trees in sod or alfalfa crops, prepare the ground by subsoiling with a ripper or paraplow, leaving the surface rough over the winter and disking or harrowing in the spring to provide a clean, firm seedbed for tree planting.

Sandy soils which are subject to wind erosion should not be summer fallowed. A cover crop of Sudan or haygrazer should be established the summer before planting the trees. The area may require chemical treatment if annual winter weeds or grasses present a problem, before tree planting. If chemicals are used, follow the label recommendations.

If weed barrier is to be used on sandy soils, disk and clean only the row area which the material will cover.

No tree planting can be made in bermudagrass. Steps to destroy or control bermudagrass must be applied prior to planting of trees and shrubs.

Planting the Trees

Only high quality, dormant trees will be planted.

Plant bare root seedlings after December 1 and prior to bud break of native tree and shrub vegetation (usually March 15 to April 1).

Planting should be done under optimum moisture conditions, when soil is neither too dry nor too wet.

Avoid planting under dry, windy or very warm conditions.

Exercise extreme caution while planting bare root seedlings, to keep the roots from being exposed to open air.

Do not plant when the ground is frozen or during periods of freezing weather.

When taking the seedlings to the field; transport and store the seedling bags in cool, shady locations and protect them from temperature extremes.

Only open one bag at a time and close it immediately after taking only one handful of seedlings or what will be used in a short period of time. Transfer trees from shipping bags to planting bags quickly. Do not tap tree roots to remove excess moisture holding material or soil.

Keep seedling roots covered with moist burlap, moss or in buckets with water. Expose only the single tree being planted, at the time, to the elements when planting.

Plant the tree at the same level or no more than one inch deeper than they grew in the nursery. Roots must extend down and out naturally and not crimped in the hole or furrow.

Do not force roots into too shallow a hole or furrow. Avoid "J" or "L" rooting.

With hand planting, use your shoe to pack the soil firmly around the roots. If planting with a machine, make sure the packer wheels have the proper tension and are in the proper alignment in relation to the tree.

Properly planted seedlings should resist gentle tugging pressure. The seedling should not be loose.

Other Considerations

A super-absorbent planting gel such as polyacrylamide can be applied to the seedling roots to improve water retention in the soil, resulting in improved survivability. Label recommendation should be followed. Typically the polyacrylamide powder is mixed with water to the consistency of gravy. The tree roots are dipped into the mixture immediately prior to field planting.

Installing a drip watering system on a newly planted windbreak will help insure tree seedling survival the first year, and provide supplemental water during the critical three year establishment period. Installing a drip system is highly recommended, but not required.

Where watering is not practical, polypropylene woven fabric can increase the survivability of tree seedlings by retaining soil moisture and acting as a weed

barrier. The fabric comes in widths of six feet and is rolled over the newly planted trees. The trees are then pulled through openings cut in the fabric. The fabric lays flat over the soil with the edges secured by covering with soil or stapling.

If danger for wildfires exists, consideration should be given to establishing a firebreak to protect the windbreak.

MAINTAINING THE PRACTICE

Just like any other crop, weeds must be controlled in a new windbreak planting. The first three years are

the most critical. If a woven fabric weed barrier is not used, the area should be cultivated shallow, less than three inches deep, to avoid injury to the tree roots. Some hand work may be necessary close to the trees. If herbicides are used, apply only approved herbicides and according the manufacturer's recommendation – READ THE LABEL.

Livestock must be excluded from the windbreak. A dependable barrier such as a permanent four or five wire fence should be used and maintained.

Windbreak/Shelterbelt Establishment (FIELD WINDBREAK) – Job Sheet

Landowner _____ Field number _____

Purpose (check all that apply)	
<input type="checkbox"/> Reduce soil erosion from wind	<input type="checkbox"/> Provide living visual screens
<input type="checkbox"/> Protect plants from wind-related damage	<input type="checkbox"/> Improve air quality
<input type="checkbox"/> Alter microenvironment for enhancing plant growth	<input type="checkbox"/> Delineate property and field boundaries
<input type="checkbox"/> Manage snow deposition	<input type="checkbox"/> Improve irrigation efficiency
<input type="checkbox"/> Provide shelter for structures, livestock, and people	<input type="checkbox"/> Increase carbon storage in biomass and soils
<input type="checkbox"/> Enhance wildlife habitat	<input type="checkbox"/> Reduce energy use
<input type="checkbox"/> Provide living noise screens	

Location and Layout	
Width (feet; include widths of maintenance areas next to outer rows):	
Length (feet):	Area (acres):
Total area of zone protected/sheltered (acres; based on expected height and density of the windbreak/shelterbelt):	
Additional requirements:	

Woody Plant Materials Information					
Species/cultivar by row number:	Kind of stock ¹ :	Planting Dates	Distance between plants within row (ft):	Total number of plants for row:	Distance (ft) from this row to next row ² :
1					
2					
3					
4					
5					
6					
7					--

¹Bareroot, ^COntainer, ^Uutting; include size, caliper, height, and age as applicable. ²Adjusted for width of maintenance equipment.

Temporary Storage Instructions
<i>Planting stock that is dormant may be stored temporarily in a cooler or protected area. For stock that is expected to begin growth before planting, dig a V-shaped trench (heeling-in-bed) sufficiently deep and bury seedlings so that all roots are covered by soil. Pack the soil firmly and water thoroughly. Additional requirements:</i>

Site Preparation
<i>Remove debris and control competing vegetation to allow enough spots or sites for planting and planting equipment. Prepare supplemental moisture materials for installation if required by trees and/or shrubs. Additional requirements:</i>

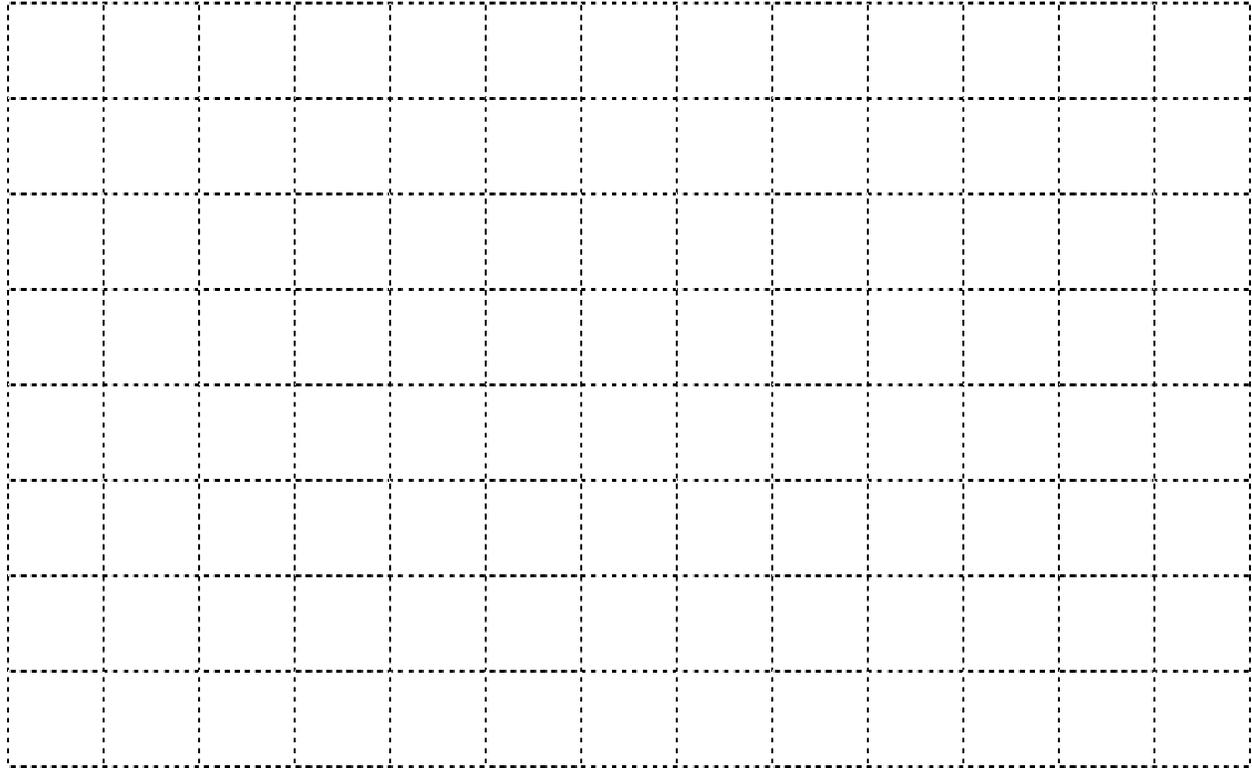
Planting Methods
<i>For container and bareroot stock, plant stock to a depth even with the root collar in holes deep and wide enough to fully extend the roots. Pack the soil firmly around each plant. Cuttings are inserted in moist soil with at least 2 to 3 buds showing above ground. Additional requirements:</i>

Operation and Maintenance
<i>Inspect windbreak/shelterbelt components periodically and protect from damage so proper function is maintained. Replace dead or dying tree/shrub stock and continue control of competing vegetation to allow proper establishment. Install and begin supplemental irrigation if required. Additional requirements:</i>

Windbreak/Shelterbelt Establishment (FIELD WINDBREAK) – Job Sheet

If needed, an aerial view or a side view of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

Scale 1"= _____ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2")



Additional Specifications and Notes:

Client Signature, as needed _____

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