Managing established tree windbreaks

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UMC Agricultural Guide 5900, "Tree Windbreaks in Missouri," outlines the benefits derived from wind protection by trees. It also gives recommendations for proper windbreak planning and establishment. Once the windbreak is in the ground, management makes the difference in its effectiveness. This guide sheet is designed to assist you in achieving maximum benefits from your windbreak over the longest possible period of time.

Weed control

Good care reduces the time it takes a windbreak to provide its maximum protection and extends its effective life. Weed control is the most important factor. Regular weed and grass control is extremely important in developing a good windbreak and should be continued at least until the trees are well established and several feet tall. Some owners plant field crops or gardens between the rows of trees to make better use of the land while the trees are growing.

Replace dead plants as soon as practical. To provide for replacing dead plants without losing growth, order a few extras and plant them in a location where they may receive care. Use these plants for transplanting.

Fertilization is not recommended for the first year or two while tree roots are becoming established. During this period, place emphasis on weed control. Improper fertilization may have a detrimental effect on trees (especially evergreens) or may even benefit competing vegetation more than the trees.

Mulching reduces weed competition, conserves moisture and reduces soil temperature. Suitable mulches include wood chips or ground corn cobs. Apply mulch 4 to 6 inches deep to a 4- to 6-foot diameter circle around each plant. When you use mulch, you may need to add nitrogen because the soil nitrogen is depleted as the mulch decomposes.

Mulching with straw, hay, or grass is not recommended because it provides food and cover for rodents. Rodents can cause serious damage by girdling plants.

While mowing is partially effective, mowed plants still rob the trees of soil moisture and nutrients. Combining clean cultivation around the tree with mowing between the rows of trees is a popular control system.

Use of herbicides in windbreaks is usually considered the most practical and economical means of weed control. Most of the herbicides used for weed control in tree and shrub windbreaks are not selective and will cause damage and toxicity if the herbicide reaches the root zone of the plant or gets absorbed by the foliage.

Always apply herbicides according to directions on the label. The label also lists species of plants which are approved for use with that particular chemical.

Timing chemical treatment is an important aspect of weed control in windbreaks. In general, there are three times to apply chemicals: before planting, after planting but before weeds appear, and after weeds emerge.

Applications before planting are designed to control perennial weeds and allow for soil incorporation. Application after planting but before weed appearance is needed for soil applied herbicides requiring a trash-free and relatively weed-free soil surface to ensure herbicide contact with the soil.

Herbicide application after weed emergence can be divided into two treatments. The first treatment is when the weeds are young (less than 4 inches tall) and is especially suited for use of mixtures of soil and foliage-applied herbicides. This treatment allows control and top growth suppression of annual and perennial weeds respectively and also provides seasonal control of annual weeds. In the second treatment, use foliar-applied herbicides throughout the growing season as required.

Foliar-applied herbicides are usually made selective by applying the herbicide only to the weeds as a directed spray. Direct the herbicide to the weed, and don't allow it to contact the bark or foliage of the trees.
Irrigation

Irrigation, or even the application of a few quarts of water around each tree during periods of severe drought during the first few years after planting may help to save the trees in your windbreak. Trickle irrigation systems have been developed for use in windbreaks where water supply is limited.

Protection

Protecting a windbreak is most important while trees are young, but even well established trees should be frequently inspected to detect problems before they become serious. Trees in a weakened condition are much more susceptible to attack by insects and diseases. Protect your windbreak against damage from livestock, rodents, insects, disease, and fire.

Cattle, horses, goats, sheep, and deer browse foliage from lower limbs of trees and frequently break young trees. All of them will browse young seedlings, compact the surface soil, and damage tree roots. When livestock are allowed continued use of windbreaks, all small trees and shrubs will soon be killed. Larger trees lose health and vigor, and growth is greatly reduced. The remedy for this type of damage is to prohibit livestock use of tree plantations. Build and maintain a stock-tight fence, and keep all animals outside it.

Rabbits, mice, gophers, and other rodents cause severe damage on young trees by girdling, debarking, and damaging roots. Weed control to remove protective cover, encouraging predators such as hawks and snakes along with hunting, trapping, poison baits and chemical repellents are methods of control. Also wire screen or tree wrap may be appropriate where a small planting makes it practical.

Inspect trees frequently and be alert in recognizing insect and disease damage in early stages. When you suspect insect or disease damage, collect some specimens of the insect or disease or the damage for identification. Take or mail the specimens to your local extension or Missouri Department of Conservation offices. Extension specialists will help you identify the cause of the damage and help you to determine the need for and method of control. Prompt and timely treatment usually reduces the hazard for future years.

Trees damaged under stress from drought or other unfavorable conditions are more susceptible to attacks from insects and disease.

Windbreaks damaged by fire will seldom recover to grow again into useful barriers. The best way to protect your windbreak from fire is to do a good job of weed and grass control. A cultivated strip on all sides with good weed and grass control within the windbreak will reduce the risk of fire.

Thinning and pruning

As the windbreak matures, it may become necessary to thin or remove some of the trees from some rows to prevent crowding. The incidence of diseases and insects generally increases as lack of moisture from crowding becomes more severe. Thinning interior broadleaf rows often stimulates and increases the vigor of remaining trees. Fence posts, small sawlogs, or fuel may be products of thinnings. Cutting deciduous trees and shrubs and managing their sprouts is a very effective method for controlling growth of large shrubby trees that over-top conifers and for improving the lower-level density of windbreaks. Trees, originally planted to function as shrubs but which have high sprouting tendencies, may also be improved if they are cut back to the ground.

Pruning lower limbs to improve appearance often defeats the purpose of the windbreaks and should seldom be practiced.

For additional information see your local University of Missouri Extension Center, Missouri Department of Conservation Office or Soil Conservation Service Office.