

# Windbreak Wisdom

A Nebraska-based forester shares tips to ensure windbreak health and longevity.

by *Kindra Gordon*

**A**nyone who has ever planted a windbreak or shelterbelt out on the open Plains knows that it takes good moisture — and a fair amount of luck — to get a nice stand of trees established.

Doak Nickerson has devoted much of his career to understanding trees. Formerly in the Christmas tree farm business, Nickerson has spent the last two decades with the Nebraska Forest Service in the northwest part of the state. Presently, he works from Chadron, and although Nickerson can't make it rain, he does offer a few tricks of the trade that can greatly increase survivability and success of windbreak plantings.

## Most important step

Nickerson calls site preparation “the building block of a successful windbreak,” especially in areas where drought is common. “It’s a mistake to cheat yourself on site preparation,” he adds.

Whether your tree planting is going into existing cropland or native grassland, Nickerson says the key is to build moisture in the soil profile a year ahead of time, particularly in the semi-arid west.

To do so, he says it is imperative to fallow that ground the fall prior to spring planting or even an entire year beforehand, especially on grassland. East of the 100th

meridian, where it rains more, he says fall site preparation is usually adequate.

Rather than till up the soil to prepare the tree-planting site, Nickerson says more and more research is pointing to no-till methods using chemicals like Roundup to kill strips of grass where the trees will be planted.

“Killing the grass stops it from taking moisture out of the soil profile,” he explains, and by killing it with chemicals, the plant residue that is left helps capture more moisture during that year of fallowing.

“Every time you till, you dry the soil out as deep as you tilled it. Tillage is tough on soil — it’s devastating really,” Nickerson adds. “So, no-till is the word of wisdom.”

He recommends treating sites twice with chemicals to burn down the grass — a spring application knocks out the cool-season grasses and a mid-summer application kills the warm-season grasses. Nickerson adds that most contact herbicides will not leave carryover in the soil that would cause concern when trees are planted the following spring.

Asked what it is like to plant trees into the strips of dead grass, Nickerson says it works quite well. He admits that the top 3-4 inches (in.) of soil can be sod-bound with dead root masses common to rhizomatous vegetation like smooth brome grass. “If it has been fallowed for a year, the ground will be mellow, and the tree planter can easily slice through it,” he says.

## Fabric a favorite

A second step toward a successful windbreak is to install the black water conservation mulch fabric in each row when the trees are planted.

“Especially in the drier regions, it has taken conservation tree planting to a new level,” Nickerson says of the fabric. “I’d say it is one of the biggest impact technologies developed in the last 100 years.”

Specifically in Nebraska, he reports, by using the fabric, trees have gone from a first-year average survival rate of 50% to 70%-80%.

“That’s important because it means fewer replants are needed the following year, which is less work and less cost for the landowner,” Nickerson says.

Secondly, he reports, with most tree species the growth rates have doubled when fabric is used.

Nickerson attributes this to the fact that the fabric acts as a gutter and funnels even the smallest amount of rainfall to the trees. “That’s why survival and growth rates have improved when the fabric is used,” he says.

There is one caveat that comes with the fabric. The opening around the tree needs to be ripped and made larger before the tree is

PHOTOS COURTESY OF USDA-NRCS

► **Above:** Doak Nickerson of the Nebraska Forest Service calls site preparation “the building block of a successful windbreak,” especially in areas where drought is common.



5 years old, Nickerson says. “So there is this one-time maintenance with the fabric that absolutely needs to be done.”

He emphasizes that the fabric does not need to be removed. It’s permeable to let the water through and keep the weeds suppressed. Over time, the fabric will break down on its own from ultraviolet sunlight. But, Nickerson explains that because tree growth rates are so good with the fabric, the shading from the trees is preventing the fabric from breaking down within the first five years.

Thus, to prevent tree girdling, the opening needs to be ripped 3- to 4-feet (ft.) wide to give the tree trunk room to grow.

Nickerson says ripping the opening is especially critical on evergreens and broadleaf trees because they all can have fairly large trunks.

### Plant diversity

Nickerson also advocates diversity in windbreak plantings. He acknowledges that soil type will dictate what type of trees or shrubs you plant. But, he says, “Consider all the species that will grow for your soil type and area.”

Nickerson explains that diversity is important to help maintain a windbreak into perpetuity. He gives the example of a livestock operation with only eastern red cedar for a shelterbelt.

“If a new disease comes along and wipes out that species, you’ll have no tree protection left,” he says. Conversely, if a shelterbelt has a mix of species, even if one tree species is hit by disease, the others should survive.

Not only does Nickerson like planting different rows of tree species, he also suggests mixing tree species within the row.

He concedes that a single row of the same tree species is visually appealing, but he says it is also risky because if a disease or insect comes along, it could wipe out all the trees down the row.

He says one only needs to look at the past to see examples of this. He points to Dutch elm disease, which wiped out many American elms; and, more recently, the Halloween freeze in 1991 that killed thousands of Siberian elms in the Great Plains.

“In a 24-hour period, decades of wind protection for ranchers was severely impacted,” Nickerson says.

“I’m encouraging us to get out of the rut, and if soils and cold hardness will allow it, to plant a mix of broadleaf trees, evergreens and shrubs,” Nickerson says. He suggests looking for trees that are a different genus, or alternating an introduced tree species

CONTINUED ON PAGE 224



► Soil type will dictate what type of trees or shrubs you plant, Nickerson says. “Consider all the species that will grow for your soil type and area.”

### Animal control tips

Animals — such as gophers, rabbits, field mice and deer — can be the bane of a successful windbreak. Nebraska forester Doak Nickerson says it is important to be cognizant of these critters and control them if they are doing damage to your trees.

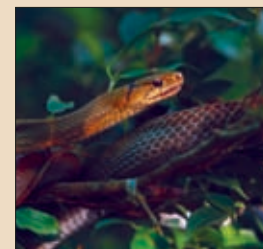
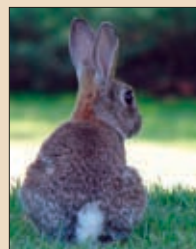
Gophers should be controlled because they are plant eaters, so they can eat roots and cause a tree to die. Moles on the other hand only eat insects, so they are not considered harmful to trees.

Field mice like to live under the black fabric used in tree rows. One trick Nickerson learned from farmers to control mice is to use the large cardboard tube that is left over from the fabric roll. One end of the tube should be plugged, then bait can be put in and the tube tipped up so it falls to that end. The tube can then be laid down out in the tree row. Nickerson says mice like going into the dark tunnel, where they’ll eat the bait and die. The good thing is that birds and other nontarget animals can’t get to the bait or the poisoned mice.

Snakes also tend to hang around the fabric because their food (mice) is there. “Snakes are OK because they help control the rodents,” Nickerson says.

If rabbits are a problem, Nickerson says expandable netting (usually yellow in color) is available to put over the tree or shrub. This helps keep rabbits away from the trees and will slow deer down, too.

For deer, Nickerson says the best deterrent is a bar of soap. He has found that drilling a hole in small bars of soap (like those you get from motels) and hanging them from the tree branches appears to do the trick in keeping whitetail and mule deer away. Nickerson believes the odor from the soap must be unpleasant to the deer. He adds that hunting is also important to help keep deer populations in check and take pressure off trees.



PHOTOS COURTESY WIKIMEDIA

with a native species. As an example, you could alternate Siberian elm with bur oak within a row and widen the spacing between trees so the fast-growing elm doesn't overtop the oak.

"We're always flirting with potential insect and disease problems in our shelterbelts, but if we build species diversity into the design of future windbreaks, that risk is reduced. That's the take-home message for windbreak longevity," he concludes.

### **Curb grass growth**

As a final tip, Nickerson says grass — especially cool-season grass — needs to be controlled in windbreaks. This reduces competition for moisture between the trees and grass.

Specifically, Nickerson targets smooth brome grass, calling it the "scourge" of many livestock shelterbelts and farmstead windbreaks. "Do anything you can to keep smooth brome grass out of windbreaks," he says.

However, he says digging up the soil between the rows should not be done as it releases too much moisture and damages tree roots.

One option is spraying between the rows, but you need to be careful that spray drift doesn't hurt the trees. Nickerson has seen a spray mount for an ATV with atomizer nozzles mounted under a hooded shroud that hugs the ground. Developed in Saskatchewan, he says this sprayer appears to work quite well. It has a smaller, retractable shroud mount for spraying between trees in the row.

Mowing between the rows can also be effective for reducing the grass and weed competition. Nickerson says keeping the area mowed will also help promote growth of warm-season native grasses like buffalo grass, blue and side-oats grama. These are less competitive with trees and don't rob early season soil moisture like the cool-season grasses.

If you do mow between the rows, Nickerson suggests raising the mower to leave 1-ft.-tall stubble in the fall to help catch snow during the winter and early spring.

Nickerson concludes by saying trees truly add value.

"In the Great Plains there is a constant need for tree cover because of the wind, cold and heat," he says. "And it's not just for our benefit. Crops, livestock and wildlife all benefit from trees as well."

