

Against the wind

By Steve Werblow

Windbreaks offer beauty, habitat, and energy savings

There's something about a row of trees beside a homestead that says "comfort." It's more than just some primal sense of security and shelter—studies show that windbreaks can cut energy costs 20 to 40% by providing shade in the summer and protection from the wind in the winter. Buffers of trees and shrubs offer privacy, draw birds and other wildlife, and help filter out noise, dust, and odors. A well-designed windbreak can serve as a living snow fence, piling blowing snow in drifts before it reaches houses, driveways, and roads.

A working windbreak is more than just a row of trees. There's a science to selecting the right trees and designing a windbreak to do a specific job. There's also an art to making a windbreak beautiful as well as functional.

The first step is considering what you want to accomplish with your windbreak, says Rich Straight, lead agroforester at the U.S. Department of Agriculture's National Agroforestry Center in Lincoln, Neb., which offers online tools at www.unl.edu/nac/windbreaks.html.

Simply screening a homesite from the road or cutting wind speed in a pasture may just require a simple row or two. Blocking howling winter winds or snow on the Great Plains may take three rows or more of densely planted trees placed farther from the house.

Snow time. Of course, a windbreak should run perpendicular to the direction of the wind you're trying to block. Ideally, it will also have a leg that runs at a right angle to the main break, too. It should be at least 10 times as long as the trees' height will be when they're

20 years old, he says. That will reduce performance problems caused by turbulence whipping around the ends of the row.

Windbreaks are all about turbulence. That's why they don't catch much snow on their windward sides. Instead, by creating turbulence and slowing down the wind that passes over and through the trees, windbreaks reduce the wind's capacity to carry heavy loads of snow, Straight explains. The slower breeze drops most of its snow in drifts on the downwind side, in a zone two to five times the tallest trees' height. That leads to the most common problem with windbreaks in snow country—the trees are often planted too close to a house, road, or driveway when they should be planted 150 to 200 feet away. That means they end up dumping snow right on the area they're supposed to protect.



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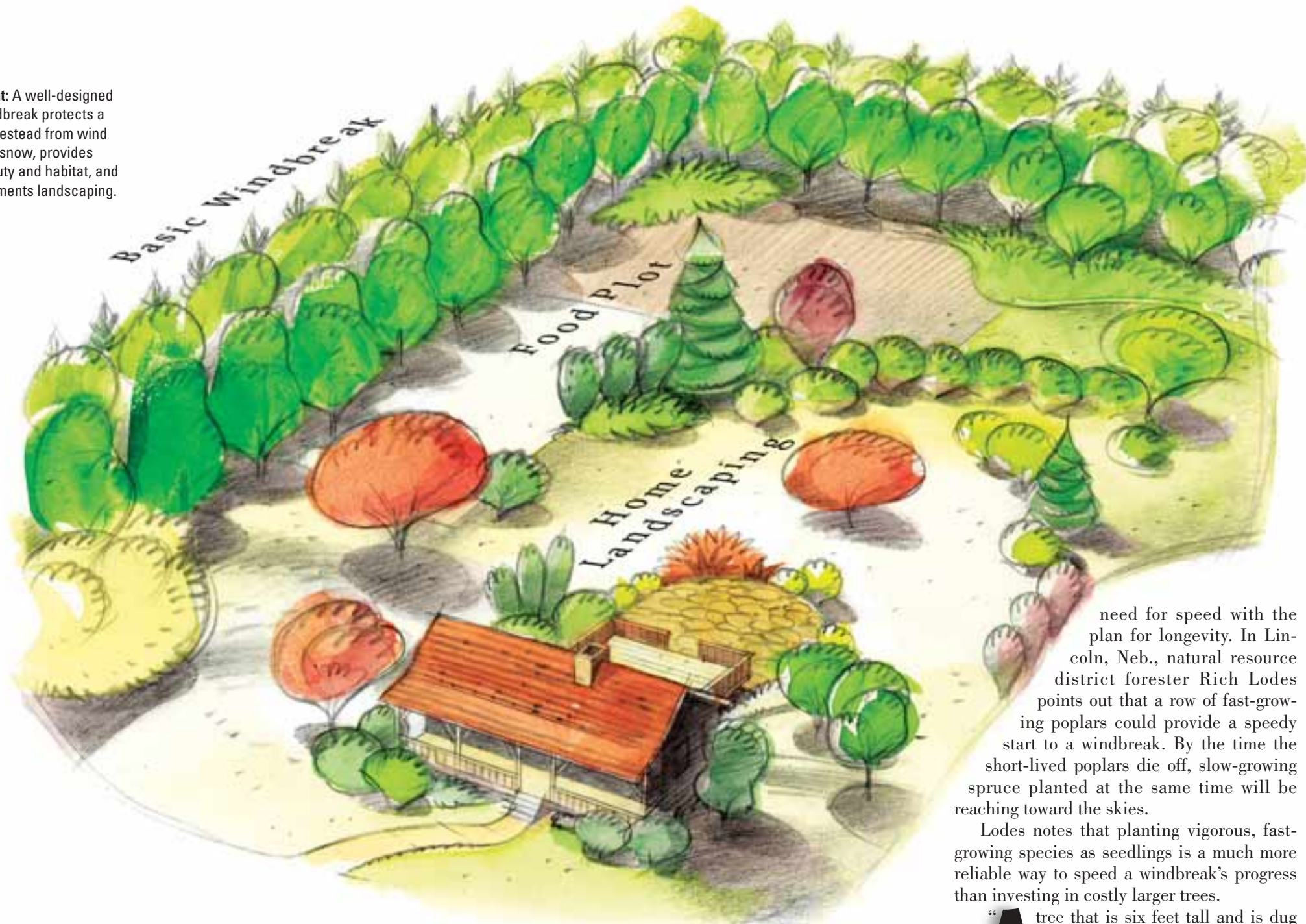
Fortunately, notes Jim Brandle, shelterbelt ecologist at the University of Nebraska, landowners who already have a windbreak planted too close to their house can add a snow trap of trees or tall shrubs 100 feet or so upwind to protect their windbreak from at least some of the snow blowing its way.

Choose carefully. The next big step is choosing trees and shrubs that will grow well in the soil and conditions on your property, says Straight. "Even if you do all the rest of it right but you don't pick trees adapted to your site, you're toast," he notes.

Like all the steps in planning a windbreak, it really helps to get advice from your local soil and water conservation district, USDA Natural Resource Conservation Service, or state forestry agency. They know the ins

Left: A simple poplar windbreak slows the breeze to shelter a pasture. **Above:** A line of dense conifers, along with rows of other trees and shrubs, will soon form a living snowfence.

Right: A well-designed windbreak protects a homestead from wind and snow, provides beauty and habitat, and augments landscaping.



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—Rich Straight

and outs of local vegetation, and may even be able to provide a great selection of reliable seedlings for a fraction of the cost of buying landscaping-size trees from a nursery.

Once you’ve got a list of trees that can thrive in your windbreak, choose several of the species, suggests Brandle. “There should be a minimum of three species,” he says, “Five is better, and six to seven is ideal.”

Good hedge. Species diversity hedges your bets against losing trees to disease or insects, Brandle explains. It also fine-tunes windbreak performance, attracts or repels certain wildlife species, and offers aesthetic choices.

At the National Agroforestry Center, Straight agrees. To make a windbreak that’s beautiful as well as functional, think beyond the traditional straight rows and deep greens.

“Windbreaks don’t have to be straight rows,” he points out. “You can put in curves. Facing the world, you might want uniform stands of pine or spruce. The house side is where I’m going to get creative with color and texture, maybe add some fruits to attract songbirds. Just be sure that trees planted adjacent to each other are similar in size and form so one species doesn’t crowd out the others.”

Species diversity can also balance the

need for speed with the plan for longevity. In Lincoln, Neb., natural resource district forester Rich Lodes points out that a row of fast-growing poplars could provide a speedy start to a windbreak. By the time the short-lived poplars die off, slow-growing spruce planted at the same time will be reaching toward the skies.

Lodes notes that planting vigorous, fast-growing species as seedlings is a much more reliable way to speed a windbreak’s progress than investing in costly larger trees.

A tree that is six feet tall and is dug out of the ground has a relatively small root mass in proportion to its height,” he explains, “so it’s got to expend its energy on rebuilding its root system instead of putting it into top growth.” In fact, seedling Scotch pines can grow twice as fast as the same species planted as six-footers, Lodes says. Within five years, the seedling trees can overtop the ones that started out taller.

Another key element in helping windbreak plantings off to a strong start is good site preparation, says Straight. Depending on soils, local conditions, and what grew there before, that could range from a light disking



to a thorough rototilling, or even just a broad-spectrum herbicide followed by mulch and a good, cold winter to mellow the soil.

“Site prep removes competing vegetation and loosens up the soil so when you plant your seedlings, the soil will settle around the seedling and give good root-to-soil contact,” Straight says. But you’re not done yet, he notes—young windbreaks need weed control for a couple of years to gain a foothold.

Flexibility. With a little legwork up front, a well-designed windbreak will deliver years of protection and beauty. And it can be tailored to your site and tastes. “Somewhere in that windbreak, you need a couple of rows that are complete,” says Brandle. “Outside of that core, you have a lot of flexibility.” ■

Top: Trees of various heights and densities protect homesteads on the Plains. **Above:** An array of species adds color and texture to this young windbreak.

ILLUSTRATION: PAUL LANGE; ADAPTED FROM USDA NRCS