

## Rethinking Shelterbelts

By Justin Evertson  
Nebraska Statewide Arboretum

For more than 150 years, trees and shrubs have been planted to protect people, livestock and soils from the harsh Great Plains climate. Although shelterbelts typically are associated with farms and ranches, they also are used to protect and improve important community features such as parks, schools, large public properties, acreages, subdivisions and commercial areas. Shelterbelts also provide habitat for wildlife, help reduce snow drifting and help screen unsightly views.

Shelterbelts became very common in the Great Plains during and immediately following the Dust Bowl years of the 1930s. Such plantings were promoted by state and federal governments to help prevent soil erosion and improve crop production. The shelterbelt design has changed little from that era. Most still consist of just a few species of plants, including a row or two of evergreens, planted in straight lines. Time has proven this traditional method of design to have several shortcomings:

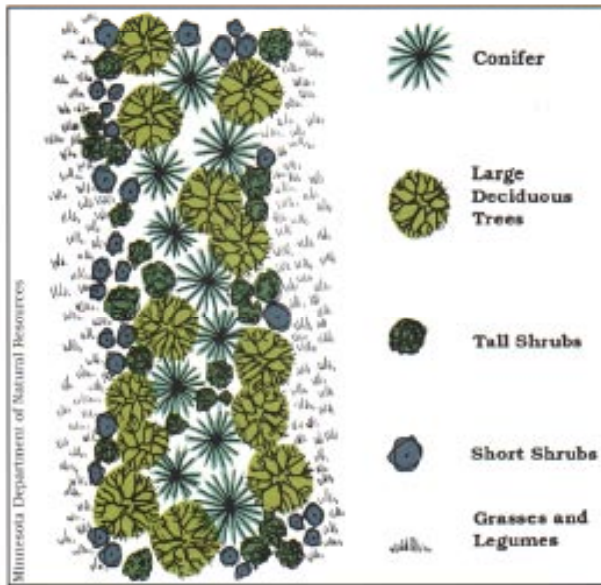
- A lack of plant diversity can lead to large sections of a shelterbelt dying quickly when certain diseases, insect pests or weather events impact a planting. Recently, this has become a very serious problem in southeast Nebraska with the sudden loss of many Scotch pines (*Pinus sylvestris*) from pine wilt disease. Scotch pine has become the most commonly planted tree around farms and acreages and it is possible millions of trees in the region could die in the coming years.
- Evergreens planted tightly in rows

can suffer from several needle blight diseases in the more humid air of eastern Nebraska.

- Species choices often do not reflect soil and topographical changes that occur within the planting line of many shelterbelts.

To help improve the long-term success of shelterbelt plantings in and around communities, the Nebraska State-

- wide Arboretum has developed the following design recommendations.
- Shelterbelts should contain a broader diversity of trees and shrubs than they have in the past. This does not mean planting one of everything, but rather the use of several species in complementary groupings. A good rule of thumb is to limit any single species to no more than 20 percent of the total planting.
  - In the more humid air of eastern Nebraska, evergreen trees are often more prone to foliar diseases. This is especially true where trees are planted tightly together, as in many older shelter plantings. For this reason, new shelterbelts in eastern Nebraska should never be a solid wall of evergreens, but should include many deciduous trees and shrubs. In fact, it is very possible to have an effective shelterbelt here with no evergreens at all.
  - In the more arid western Nebraska,



Shelterbelts should contain a broad diversity of trees and shrubs — no more than 20% of any single species.

evergreens are less prone to foliar diseases and in general are better able to survive the frequent drought conditions than most deciduous types. As such, evergreens likely will be a larger component of a shelterbelt in the western part of the state.

- Several species of deciduous trees and shrubs hold their leaves well into winter or have denser branching that allows them to block more winter wind. Such plants can be used as alternatives to evergreens and include white oak, swamp white oak, shingle oak, boxelder maple, wayfaringtree viburnum and American plum, among others.
- Species selection should better reflect soil conditions. More specifically, species selection should change when soils move from dry uplands to wetter bottom areas. Many shelter plantings go up and down slopes without any change in species.

## Salt Damage to Plants

Most people only think of salt damage and how it affects their cars. Salt becomes toxic to plants when it dissolves in water—the sodium and chloride ions separate. Sodium ions in the salt replace the needed nutrients phosphorus and potassium in the soil, making them unavailable to the plant. Salt absorbs water causing root dehydration, changing root physiology and causing additional plant stress. Meanwhile, chloride ions are absorbed by the roots, transported to the leaves and accumulate there interfering with photosynthesis by impacting chlorophyll production.

In examining plants to determine if road salt is causing damage, be sure to note which side of the plant has more severe symptoms. Damage should be more severe on the side facing the road, with the plants closest to the road most severely affected. Usually, evergreen damage appears in late winter, with needle browning beginning at the tip. Snow covered branches will be less affected than those exposed to salt spray, and branches above the spray zone show less symptoms.

It is more difficult to diagnose spray damage on deciduous plants. Usually, leaf buds facing the road are killed or are very slow to break. Flower buds facing the road often fail, but the unaffected side of the tree or shrub flowers normally. Repeated damage by salt may result in witches brooms or a tufted appearance.

The easiest way to prevent salt damage is to avoid de-icing salts and use coarse sand to provide traction and make sidewalks and driveways less slick. If you must use salt, use it judiciously and erect barriers with plastic fencing, burlap or snow fencing to protect sensitive plants and minimize contact with salt. When possible, use de-icing agents with calcium chloride or calcium magnesium acetate (CMA), a salt-free melting agent made from limestone and acetic acid.

If an area is heavily salted, consider planting salt-tolerant plants like the ginkgo (*Ginkgo biloba*), winged euonymus (*Euonymus alatus*) or Japanese tree lilac (*Syringa reticulata*). Perennials like Statice (*Limonium* spp), sea thrift (*Armeria maritima*) and reed grass (*Calamagrostis acutifolia*) 'Karl Foerster' are often listed as salt tolerant.

Rugosa roses (*Rosa rugosa*) can take salt, too. As an added bonus, numerous cultivars exist, with an array of color and fragrance.



University of Nebraska-Lincoln Extension presents a series of programs, entitled Acreage Insights-Rural Living Clinics, targeting acreage owners and specifically designed to provide knowledge and skills to better manage a rural living environment. The following clinics will be held in Lincoln at the Lancaster Extension Education Center, 444 Cherry Creek Road from 7–9 p.m. For more information, contact Sarah Browning at (402) 727-2775.

**CLINICS ARE \$10/PERSON ADVANCED REGISTRATION;  
\$15/PERSON AT THE DOOR**  
Preregistration deadline is 3 working days before clinic.

### REGISTRATION FORM

PLEASE CHECK WHICH CLINIC(S) YOU ARE REGISTERING FOR

#### Melons, Squash & Gourds

Lincoln—Jan. 16

#### Landscape Design Basics

Lincoln—Feb. 20

#### Farming for Direct Markets

Lincoln—Mar. 20

#### Management of Small Ponds

Lincoln—Apr. 17

Name(s) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

\$10/person advanced registration

Preregistration deadline:  
3 working days before clinic.

Number attending \_\_\_\_\_

Amount enclosed \$ \_\_\_\_\_

**Mail completed registration form and check (payable to UNL Extension) to:**  
UNL Extension in Dodge County  
Acreage Insights  
1206 W. 23rd St.  
Fremont, NE 68025

We assure reasonable accommodations under the Americans with Disabilities Act. For assistance, or if you require language interpretation, contact Extension in Dodge County at (402) 727-2775 three weeks prior to date of clinic.



Tuesday, Jan. 16

### Melons, Squash & Gourds

Do you remember last year when your melon vines suddenly wilted and died? Or did your plants not set fruit well? Were bugs and diseases a problem, too? Good growing conditions, weed control, plus disease & insect control is critical to healthy plants. This program will discuss good growing practices for vine crops — particularly melons, squash and gourds — as well as their unique problems and what can be done to manage them.

Tuesday, Feb. 20

### Landscape Design Basics

Quality acreage landscapes successfully integrate proper access and utility locations, comfortable attractive outdoor living spaces, natural area protection and enhancement, and sustainable plantings. This seminar will outline a basic design process/approach to help ensure quality acreage design as well as highlight what to look for when shopping for an acreage home site with high landscape quality potential.

Tuesday, March 20

### Farming for Farmers Markets and Other Direct Markets

Farmers markets and direct marketing of locally grown produce is stretching the ability of the existing producers to meet the expanding needs. Additional producers are needed to meet this increased demand. Topics will include the selection of vegetable and fruit species, the growing of the produce and finally tips on marketing these products.

Tuesday, April 17

### Management of Small Ponds

Is your pond turbid after a rain? Is your pond covered with a green slime in the summer months? Do rooted pond weeds and/or shoreline vegetation reduce angling access and recreation on the pond? If you answered yes any of the questions or have questions pertaining to pond management then you will want to attend. This seminar is designed for those who have a 1/2 acre-sized pond or larger.