

Plan For Growth

“To get the most savings out of the trees, the planting must be carefully designed.”

by Brenda Kleinjan

MONEY DOESN'T GROW ON TREES, BUT planting the right trees in the right locations may help save you money down the road.

According to studies, properly placed trees can help homeowners save 10 percent to 25 percent on their annual heating and cooling costs.

“Any house can benefit. When you stop the wind, you slow down the heat exchange outside of the house,” said Gregory Yapp, a resource conservationist with the United States Department of Agriculture’s Natural Resources Conservation Service.

Nearly two-thirds of residential energy use goes to heating and cooling the home, so achieving a 10 percent to 25 percent reduction in these costs can really add up for a homeowner in the long run.

Up to a third of a building’s heat loss comes when air leaks through cracks and other openings. High winds can force cold outside air into cracks around windows and doors that don’t fit properly.

Strategically placed windbreaks and shelterbelts can cut down the force of the wind that hits the home, therefore reducing the amount of air being forced into the cracks.

Gary Johnson, professor of urban and community forestry at the University of Minnesota, points out that trees provide the most savings for older homes.

“The most energy savings are going to occur by reducing winter energy consumption, Johnson said. But he cautioned that, “the more modern the home is, the less likely you will have a significant savings.”

To get the most savings out of the trees, the planting must be carefully designed.

“In South Dakota, your primary windbreak will be on the north and west side of buildings,” Yapp said.

Typically, the windbreaks are planted perpendicular to the prevailing, troublesome

winds. The windbreaks form a sheltered zone downwind of the windbreak that extends as far as 10 to 15 times the height of the windbreak. According to the NRCS, the greatest wind reduction occurs between two to five times the height of the windbreak downwind. So, if the tallest trees in the windbreak stand 40 feet, the greatest benefit will be realized up to 200 feet from the trees, with fewer benefits extending as far away as 600 feet away.

“The taller the trees, the more down wind protection you have,” said Yapp. “You want to look at the 20-year height of the trees – 10 to 15 times that is your shadow protection area.”

The primary windbreak will ideally consist of six to eight rows of trees of diverse species. About a third of the rows will be shrubs, a third medium-height trees and a third tall trees.

“You want a variety of trees – it helps control insect and disease problems. A good mix also provides good wildlife habitat,” Yapp said.

Johnson agrees, favoring five- to seven-row shelterbelts which allow for a minimum of five to seven species of trees.

“With five to seven rows, you have a good chance that some species will do really well,” Johnson said.

Aside from shelterbelts, trees can also provide energy savings when properly planted around homes.

Trees planted to shade west and east windows can provide significant savings on summer cooling bills. However, homeowners should avoid planting trees south of windows because they limit solar heating benefits from the winter sun.

“One of the things about planting trees for energy efficiency is that homeowners can often wind up causing more trouble than help,” said Johnson. “One common example is planting a dense shade tree on the south of the house. The sun is incredibly intense in the winter – you don’t want to interrupt that from reaching the house on a sunny winter day.”

Johnson said that trees planted close to homes should lose their leaves early in the autumn, stay fairly sparse throughout the winter and leaf out late in the spring.

“You have to take into account the home’s age and energy efficiency and what the home’s greatest source of energy use – for most in the Midwest it’s the winter heating,” Johnson said.

Yapp said before digging in, it’s always a good idea to look up and down and call your state’s underground locate service (South Dakota One Call at 800-781-7474 or Gopher State One Call at 800-252-1166) or check with your local utility company regarding tree placements.

Johnson noted it’s a case of basic math: “If the power lines are 25 feet off the ground, don’t plant a 50-foot tree under it.”



Above: Multi-row shelter belts allow for a variety of species to be planted. The diversity can minimize disease and insect problems and contribute to the success of the plantings. *Photos courtesy of USDA Natural Resources Conservation Service*
Top: Shelter belts and windbreaks planted to the west and north of buildings can provide considerable energy efficiency savings. **Opposite:** This diagram shows recommendations from the National Arbor Day Foundation for planting trees. While some species of trees may be acceptable in the right-of-way, it is a better idea to avoid the situation. Always consult your utility before planting trees near overhead or underground power lines.

Tall trees, such as: maple, oak, spruce, and pine

Plant the right tree in the right place

Plant taller trees away from overhead utility lines

