

Typical windbreak effects

evergreen shrubs are good choices for wind protection.

Trees for winter wind protection should be planted upwind of the area to be protected. This will often mean planting on the west, northwest, and north sides of a building. However, local conditions like mountain ranges may cause prevailing winter winds to be from other directions.

Windbreak trees can be planted in straight or curved rows or in linear groupings. They should be close enough together so their crown edges meet within a few years without overcrowding. Small or narrow-crowned trees can be as close as six to eight feet while larger trees can be as far as fifteen feet apart. Shrubs can be planted as close as two to four feet apart.

Windbreaks can consist of one or two dense rows or several less-dense rows. Wind protection extends downwind ten to twenty times the windbreak height, so the trees need not be planted close to dwellings to be effective. Keep in mind that snow drifting will be the worst at two to three times the windbreak height downwind.

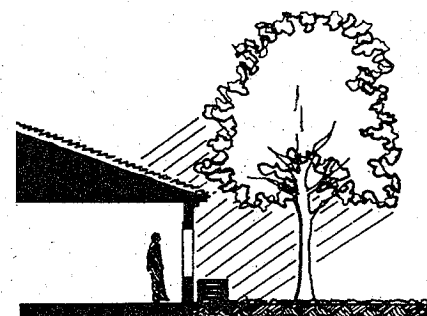
Planting Precautions

Avoid future problems when planting trees. Remember that a four foot tall, two foot wide tree might end up being 60 feet tall and 30 feet across. Learn mature size and crown characteristics of any tree you buy and plant accordingly.

Plant trees far enough from sidewalks, driveways, and buildings so the crown can grow. Trees that naturally keep branches all the way to the ground should be planted at least one-half of their mature crown width from obstructions. Trees that can readily be pruned as they grow, like most deciduous trees, can be planted closer and allowed to overhang low obstructions.

Consider power line location when planting. Trees that grow into power lines cause electrical outages and increased line maintenance costs. They also can end up in poor health because of the severe pruning that is sometimes necessary.

Wildfire hazard also should be considered when planning your landscape. In areas where grass, brush, or forest fires are likely, planting trees and shrubs near your home may not be appropriate. Contact your local fire department for more information on landscaping in fire-prone areas.



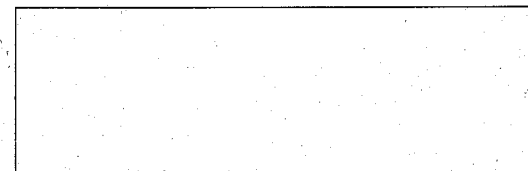
Shaded house and air conditioner

For Assistance....

For additional information on tree selection, planting, and care contact your County Extension office, District Forester, or local nursery. For more information about trees and power lines contact Utah Power or your local power provider.

If you are planning to plant trees in an area with buried power lines or other buried utilities, call Blue Stakes at 1-800-662-4111 (532-5000 in the Salt Lake City dialing area) to have these utilities located and marked.

Credits: Text by Mike Kuhns, Extension Forestry Specialist, Utah State University. Tree drawing used with permission from *Native Trees for Urban and Rural America* by Gary L. Hightshoe.



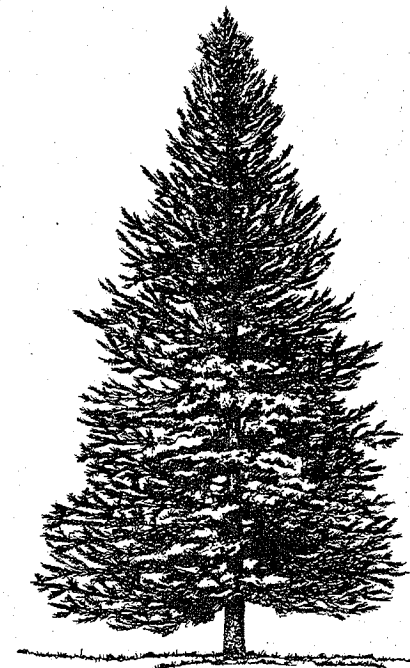
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Planting Trees For Energy Conservation

EL 272



The Right Tree in the Right Place

A joint production of:

- Utah State University Cooperative Extension•
- Utah Division of State Lands and Forestry•
- Utah Community Forest Council•
- Utah Power•

Homeowners go to great lengths to conserve energy in this era of tight budgets and environmental awareness. However, many do not realize that the simple act of planting a tree can result in energy savings.

Planting the right tree in the right place is the key to saving energy with trees. The right tree in the right place provides wind protection, shade, and cool air, while adding beauty, privacy, and wildlife habitat to the landscape.

The right tree in the right place also means tree selection and placement to minimize conflicts with power lines and other obstructions. Many residential power outages are caused by trees interfering with power lines.

The Right Tree

Deciduous trees (trees that lose all of their leaves each fall) save energy in summer by shading houses, paved areas, and air conditioners. Small deciduous trees and shrubs, and especially those with low, dense branches, also can serve as effective wind barriers.

Large and small evergreen trees and shrubs save energy by slowing cold winds in the winter. They also provide shade, but since they often have branches near the ground, their shade is most effective when the sun is not directly overhead.

Both deciduous and evergreen trees save energy in summer by directly cooling the air. This cooling happens as water evaporates from the leaf surfaces, much as our skin is cooled when we perspire.

The Right Place....for Shade

Shade from trees reduces air conditioning needs and makes non-air conditioned homes more comfortable. Plant deciduous trees so they will shade east-facing walls and windows from 7 to 11 a.m. and west-facing surfaces from 3 to 7 p.m. during June, July, and August. Trees with mature heights of at least 25 feet should be planted 10 to 20 feet east and west of the house.

Plant smaller deciduous or evergreen trees with lower limbs northwest and northeast of the building to provide late afternoon and early morning shade.

Trees planted to the southeast, south, or southwest of a building for summer shade can provide significant cooling and energy savings if properly chosen and located. Such trees must be close enough for some branches to extend out over the roof. Trees must be chosen that will develop single trunks with fairly high, wide

crowns and strong branches, such as many oaks, hackberry, and Norway maple.

Trees with low dense crowns, such as flowering pears, crabapples, some lindens, and many others, will cast significant shade even in the winter after their leaves have dropped. To avoid winter shading, locate such trees no closer than 2-1/2 times their mature height to the south of a building. Such trees planted to the southeast or southwest should be about four times their mature height from the building.

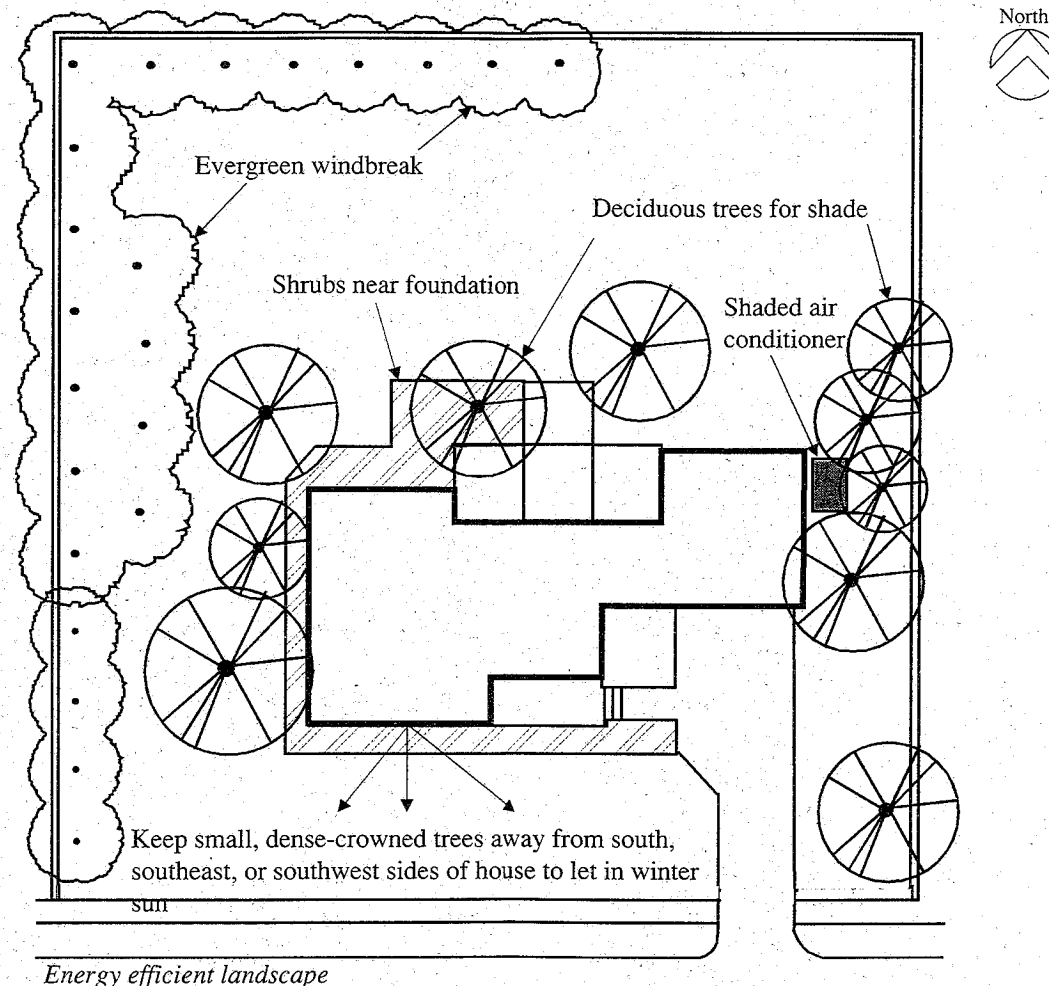
Trees should also be planted to shade paved areas. Light energy striking dark pavement like asphalt is absorbed, causing the air above to be heated. Light colored pavement absorbs less energy, but can reflect it toward a building. Tree leaves reduce heat and reflection as they absorb light energy and use it to evaporate water.

Air conditioners also should be shaded from mid-morning through evening. Prune branches to allow at least several feet clearance around the air conditioning equipment to encourage air flow. Shrubs should not be planted near the air conditioner or they will reduce air flow and cooling efficiency.

The Right Place....for Wind Protection

Trees can reduce energy use for heating by blocking cold winter winds. These winds enter homes through small openings and also carry heat away from the building's outer surfaces.

Effective windbreak trees have crowns that extend to the ground and branches that keep their foliage in winter (evergreens). Junipers, spruces, firs, Douglas-fir, and



Energy efficient landscape