Landscaping to Conserve Energy

Proper Landscaping

Too frequently people do not use landscape plants to conserve energy. Proper placement of trees, shrubs, and vines around a house conserves energy while adding beauty. Trees are the number-one landscape plant used in energy conservation in the home landscape.

Trees placed properly within the landscape can be as effective as other home improvements in reducing heating and cooling costs. Good selection and placement of trees within the landscape can help cool your house in summer and allow the sun's rays to warm your house in winter. They also can absorb carbon dioxide, reduce the greenhouse effect, and produce oxygen for us to breathe. Trees and other plants can shade houses and office buildings. This benefit reduces air conditioning needs up to 30 percent because less electricity is required for cooling.

Trees can add to the value of property, as well. Well-landscaped property has more curb appeal and can increase residential property values up to 15 percent over property that is not landscaped.

To install properly an energy conserving landscape, you must understand the different positions of the sun at various times of the year. Figure 1 shows the movement of the sun in mid-December (winter solstice). Notice that the sun rises in the southeast and remains low in the sky during the day. The winter sun sets in the southwest. Figure 2 shows the position of the sun on June 22 (summer solstice). The sun rises in the northeast and appears higher overhead at midday. The sun sets in the northwest during summer.

Solar Angle for 32° Latitude North

Figure 1

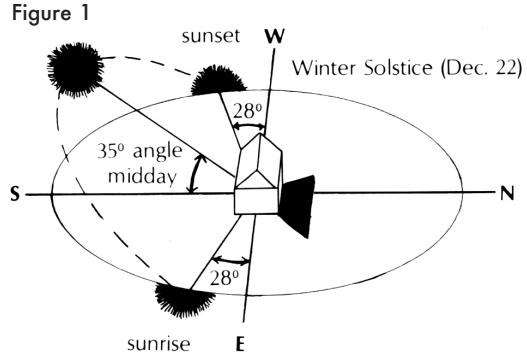
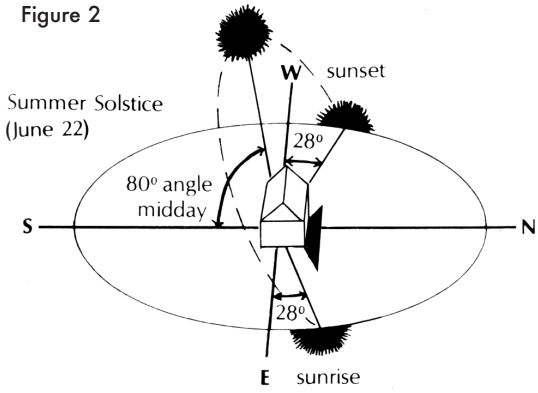


Figure 2



Planning for Summer Shade

Place trees around the house to provide shade from hot morning and afternoon sun. Trees on eastern and northeastern exposures of the house provide morning shade in summer. Trees placed on western and northwestern exposures of the house provide shade during afternoons, as shown in Figure 3. Increase the effectiveness of the cooling effect by having a shrub or a vine shade east and west walls. You can grow vines on masonry brick or concrete walls, but do not allow them to grow directly on walls with wood sidings. Provide a simple trellis for wooden sidings.

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Planning for Winter Sun

Effective tree placement will allow the winter sun to warm the roof and walls of your house. As you can see in Figures 1 and 2, the southern exposure is intense in Mississippi. The most important factor to consider in placing trees on the south side of your house is the use of deciduous tree species. Deciduous trees lose their leaves in winter and allow the sun to warm houses.

Avoid using evergreen trees such as pine, American holly, magnolia, and cedar on the south side of your house. These trees remain green all year, shading the house from the sun in the winter. Houses on properties with a heavy cover of pine trees result in winter shade. Provide winter sun by removing pines that are too close to your house. You can use deciduous trees to provide needed shade for summer.

Placing Trees for Wind Protection

Proper tree placement reduces the effect of winter winds on a house and therefore conserves heat. In most areas of Mississippi, winter winds prevail from the north and from the northwest. A screen planting of evergreen trees along the north and northwest areas of your property will provide wind protection. Figure 4 shows how the planting controls air flow.

Notice that the protected or void area is approximately two times as deep as the height of the trees. The "thumb rule" for placing the trees is to make the protected or void area twice as deep as the trees are tall. Remember, newly planted landscape trees and shrubs will grow in maturity to greater heights. Be sure you place them according to their expected mature sizes.

Planning for Cool Summer Breezes

In most areas of Mississippi, prevailing summer winds are provided by the Gulf breeze from the southwest and from the south. To take advantage of cool summer breezes, avoid dense screen plantings on the southwest and south sides of your property. Prune deciduous trees on the southern exposure of your house to the height of the roof's drip line to provide free air movement into the house.

Tips for Placing Trees for Energy Conservation

- Avoid placing trees too close to a house. Usually 25 feet from the walls or the roof line is adequate.
- Avoid placing trees directly under power lines or over underground sewer, water, or utility lines.
- Space trees properly according to their anticipated mature size.
- Avoid using evergreen species on the south side of a house. Use shrubs or vines to protect east and west wall exposures. Be conscious of where the sun will be at various times of the year.

Figure 3

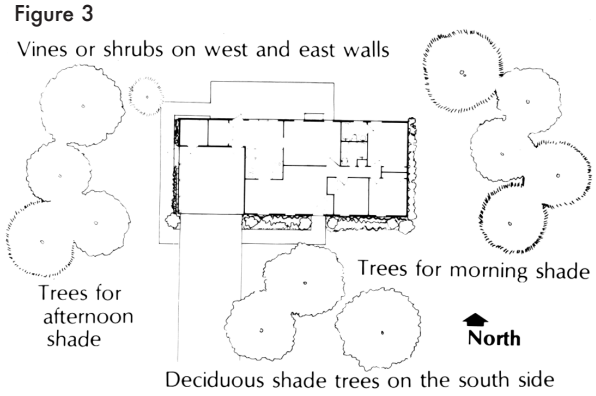
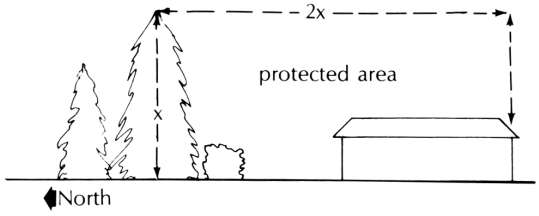


Figure 4



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