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Design Your Landscape To Conserve Energy
Michigan State University
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Joseph T. Cox, Extension Specialist in Landscape Architecture
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ENERGY FACTS

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Design Your Landscape To Conserve Energy¹

Joseph T. Cox

Extension Specialist in Landscape Architecture

What! No more fossil fuel for lawn mowers?
electricity for hedge trimmers?
fertilizer for lawns and trees?
pumped water in dry weather?

Hopefully energy will never be this scarce, but we had better learn to live with less. The energy consumption in the landscape of one family may not seem important, but when multiplied by the millions of American families it becomes significant.

Landscape logic can make a difference. With proper selection and placement, plants as well as other materials can play a role in decreasing the energy required to keep a home comfortable during both winter and summer.

Trees, shrubs, and other plants protect homes from intense solar radiation, storms and blowing winds. Besides helping to reduce a home's fuel needs, plants help keep them more dust-free and reduce noise from highways and other sources. Energy can also be saved in yard maintenance by choosing plants that need little care.

The following energy-saving alternatives in landscape design will give some of the practical and feasible ways energy can be saved in your own backyard.

SITE SELECTION

Extreme haste and lack of consideration in site planning often results in immediate as well as long-range energy losses. Examples include oversights in design that result in excessive earth moving and the fatal disturbances of tree root systems. Instead use natural rock outcrops and glacial boulders to supplement plants esthetically and at the same time conserve the energy needed to haul them away. Earth moving and tree removal not only consume energy, but are usually ecologically unsound.

A site should be selected that will not be threatened by flood and erosion problems. Rebuilding homes and yards damaged by flooding uses valuable energy and natural resources—to say nothing of lives that are disrupted.

¹Parts of this fact sheet were adapted from *Landscaping to Conserve Energy*, by Robert Black, Florida Cooperative Extension Service.

PLANTING TREES TO CUT FUEL BILLS

Shade for Summer Comfort

A tree planted on the west side of a home will shield it from the afternoon sun in the summer; a tree on the east side shades your neighbor's house. Select deciduous trees because during the winter their bare limbs will allow the sun's rays to warm your home (Figure 1). An evergreen tree will provide year-round shade and may be more desirable in warmer climates.

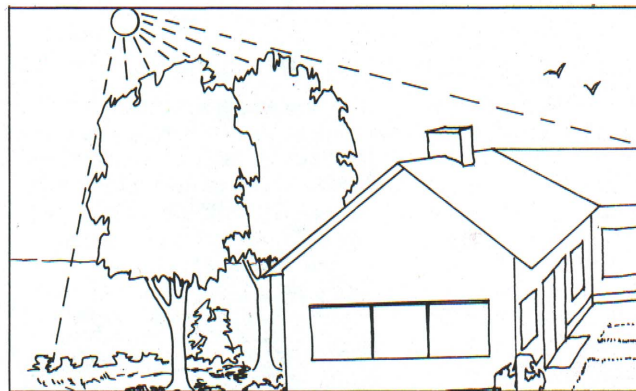


Fig. 1, a) Shade and coolness during summer.



Fig. 1, b) Solar heat penetration during winter.

To shade a roof or wall on a one-story house, plant medium to large trees no closer than 15 to 20 feet from the side or 12 to 15 feet from the corner of the building. In order to obtain the maximum amount of shade, allow the canopy of the tree to extend slightly over the roof.

Protection from Winds

Placed in the right spot, evergreen trees and shrubs can be used to shield a home from cold winter winds. A row of evergreens placed next to a wall creates an area of "dead" air between the plants and the wall. This still or dead air has insulation value and much less cooling power than moving air. The temperature difference between the inside of a home and the outside dead air space is reduced and held relatively constant, which greatly decreases the loss of heat through the walls. In the summer, this dead air space will also insulate your home from hot air. For this method of wind protection to function properly, the evergreens must be very dense and closely planted in the form of a solid wall.

Trees and shrubs can act as an obstructing barrier to reduce wind speed. Trees with dense foliage extending to the ground create a solid barrier, while trees with sparse foliage and removed lower branches form an incomplete barrier. Coniferous evergreens that branch to the ground are the most effective year-round plants for wind control.

Plants not only slow down or deflect the wind for cold protection, but can serve to guide the wind in a desired direction to provide a degree of coolness during the summer. For example, plants placed on the northwest side of your home may protect it from cold winter winds and also direct summer breezes around it. In essence, it produces a louvered effect (Figure 2).

LOW-ENERGY YARD MAINTENANCE

Power equipment used in landscape maintenance may be restricted if fossil energy and its derivatives are in short supply. To overcome the "power tool habit" we have to find new ways to cooperate with nature. Although Americans seem to have a "Green Grass Ethic," there are many places where energy-gulping grass mowing could be eliminated by replacing the grass artistically with uniform height ground covers. Many of these common

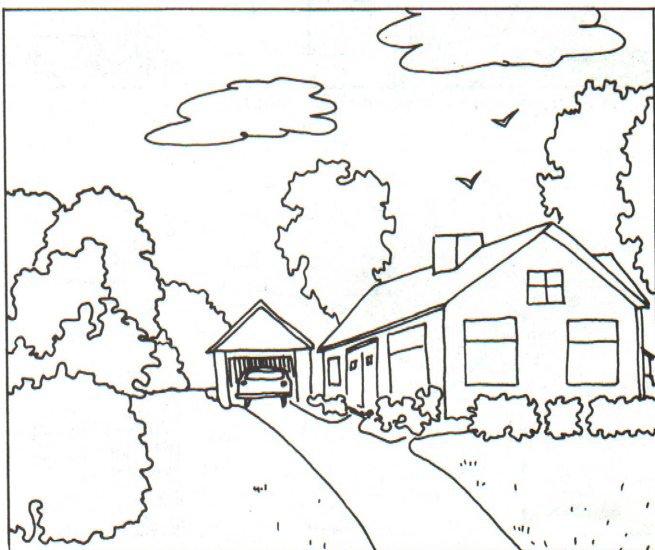


Fig. 2, a) Generous open space gives summer comfort.

plants thrive without mowing and require very little care once they are established.

Under trees and in other shady places, low-light-requirement plants can be used. We can also make use of in-place natural vegetation on roadsides and other erodable land. Even human energy can be used in some cases; if the amount of grass in the yard is reduced, a push lawnmower can be used instead of a gasoline or electric one.

Recycling such organic materials as sawdust, wood chips, compost and agricultural humus will help hold moisture, insulate plant root systems from climatic extremes, and control weeds (Figure 3). This mulching technique allows plant and animal by-products to remain close to their point of origin and saves the transportation costs of hauling away one product and bringing in another.

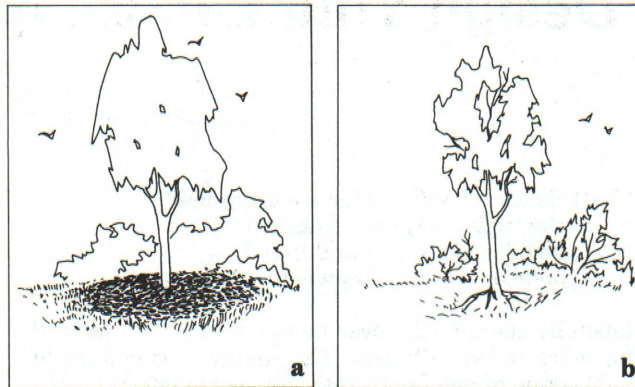


Fig. 3, a) Mulches conserve water and insulate plant roots.
Fig. 3, b) Unmulched plants react poorly to stress.

Habits must change if we are to conserve our limited energy and natural resources. Homeowners must forego the use of scattered plantings, small insignificant grassed areas, and landscape accessories having a petroleum origin. Plantings can and must be arranged to help reduce heating and cooling costs, and yards can incorporate low-maintenance practices or even a "back-to-nature" stance where practical. Rewards for this logical and constructive attitude will be great, including more seclusion, lower energy demands and greater ecological harmony.



Fig. 2, b) Constricted space can cause additional energy use in winter.

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