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### G97-1341 Landscapes for Shade (Revised April 2003)

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## Landscapes for Shade

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This NebGuide includes information on gardening in the shade.

The cooling effect of a shade garden in midsummer can be one of life's great pleasures. The combination of shade and dappled sunlight encourages people to stop and enjoy a cool, quiet respite from a busy day.

While some may think of shade as a deterrent to gardening, it can be an asset in the landscape if the special needs of shade-loving plants are considered. In addition, there are ways to reduce the amount of shade to allow more sunlight and air circulation into the landscape. To solve shade garden problems, both the positive and negative aspects of shade need to be considered.

### Types of Shade

There can be distinct degrees of shade in the landscape.

*Dappled shade (Figure 1)* is produced by trees and creates a moving pattern of sunlight and shade. This shade allows for the widest range of gardening options for growing both shade- and sun-loving plants.

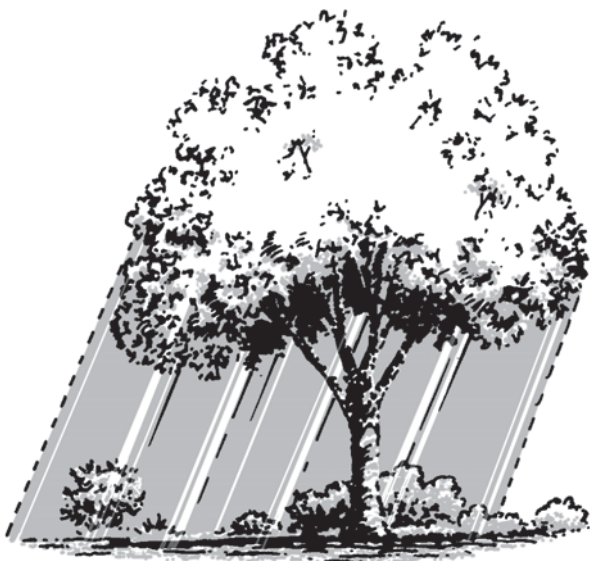


Figure 1 Dappled shade.

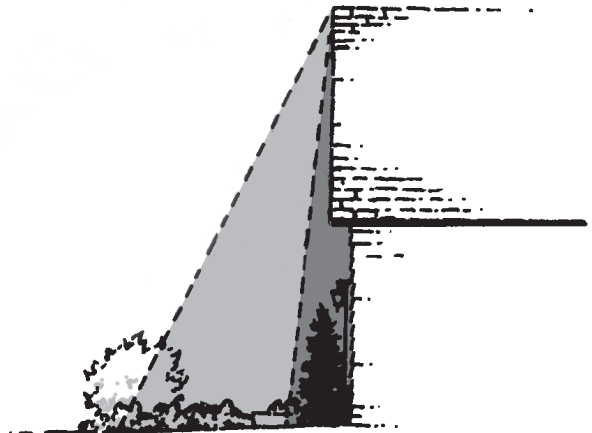


Figure 2. Open shade.

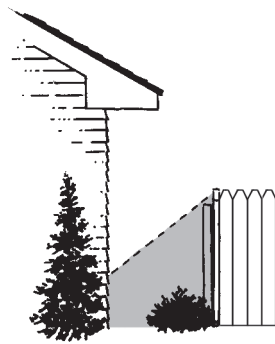
*Open shade (Figure 2)* is created in a north-facing yard for as many feet out as shade is cast by an adjoining wall, fence or building. The distance the shade is cast will vary with the season and time of day. This type of shade can be a challenge for growing shade-loving plants in the middle of summer as the hot afternoon and evening sun may cause burning of leaves.

*Medium shade (Figure 3)* occurs where open shade is further obscured by trees. Medium shade also occurs under decks and south-facing entrances with no direct sun.



Figure 3. Medium shade.

*Dense shade (Figure 4)* is the deepest shade, found where tall walls and fences block all but the narrowest strips of light. Dense shade can also occur under trees with dense foliage such as Norway maples and some conifers. Plant selection for dense shade is limited.



**Figure 4. Dense shade.**

*Dry shade (Figure 5)*. Any of the previous shade situations involving mature trees can also be *dry shade*. Dry shade occurs because most trees are shallow-rooted, removing nutrients and water from nearby plants.



**Figure 5. Dry shade.**

If the shade in the landscape is produced by a house or a fence, the situation is different from that under mature trees. Shade plantings are frequently placed on the north, northeast and east sides of buildings and fences. Although these areas are shaded, the amount of light they receive is fairly consistent unlike the ever-changing shade pattern under a canopy of leaves. Depending on how your house is set on your lot and the time of year, the amount of morning sun your landscape receives can vary greatly. For shade-loving plants, there is a big difference between the intensity of the sun at 10 o'clock in the morning and at noon, especially when light and heat are increased by a fence or wall in the background.

Knowing the amount of sun or shade to give a plant is important for successful growth. Some plants are adapted to

growing in shade. These “shade lovers” usually have more chlorophyll (green pigment) than plants adapted to the sun. Their leaves are more sensitive to light and better able to make use of a reduced amount. However, this sensitivity won’t allow exposure to direct sunlight for an extended time. The direct sunlight bleaches the leaves to a yellow or gray color which will then scorch at the edges or develop burn spots on surfaces facing the sun.

After assessing the amount of light in your landscape, you may discover you can plant part of the area with true shade-loving plants and another part with plants that tolerate some shade. Most sun-loving plants will tolerate some degree of shade during the day as long as they also receive the amount of sun they need. Shade-loving plants will rapidly show signs of distress from too much direct sun (particularly late afternoon sun) even though they receive shade for most of the day.

### Shade Modification

Shade is desirable in the landscape only if it is not too dense to successfully grow plants. In smaller landscapes, a tree’s ability to reduce wind and air circulation can have a harmful effect, especially in humid climates. Air circulation should be maximized to minimize disease problems. This is especially important when growing part sun plants in partial to full shade. Large trees with dense foliage can limit air circulation on hot days and increase the landscape’s humidity by decreasing the amount of available sunlight. The lower a tree’s branches are to the ground, the more it contributes to an airless space. Shade and ornamental trees should be pruned as high off the ground as possible without detracting from the aesthetics of the landscape. Selective thinning of a mature tree’s branches will create dappled shade and allow a wider selection of plants to be grown under its canopy. Overpruning, however, can increase air temperatures within the tree canopy. On a hot summer day, this may lead to decreased food production (less photosynthesis) for the tree. For safety reasons, pruning of large shade trees should be performed by a licensed arborist.

### Site Preparation

Establishing and maintaining healthy herbaceous plantings under trees can be difficult. Mature trees produce large quantities of surface roots, especially when grown in a landscape that receives frequent, shallow watering from sprinklers. These fibrous roots compete for nutrients, space, air and water with underplantings.

To enrich the soil and improve aeration and drainage, spread a 2-4 inch layer of organic matter on the soil surface. Compost or well-rotted manure is best. Chopped leaves or grass clippings can be used although they may tie up some of the available nitrogen in the soil, making an additional application of fertilizer necessary. Carefully dig this into the soil to a depth of 6 inches (if fibrous roots are too thick to dig this deep, start with a 2 inch layer and incorporate 3-4 inches). This is best done by hand rather than with a rototiller which can damage important tree roots. Plants with roots growing

in soil high in organic matter will have better growth than plants grown in soil that is low in organic matter, compacted and with poor drainage.

Some homeowners try to escape the problem of bare, nutrient-poor soil underneath mature trees by installing raised planting beds. They are often frustrated when these beds quickly fill with dense, fibrous tree roots. Studies have shown that many trees have many of their feeder or surface roots within the top 2 to 3 inches of the soil. They will quickly fill in a raised bed area as they take up additional water, nutrients and oxygen exchange. Because of this root competition, it's often difficult to plant large shrubs under mature trees. Dramatically raising the soil level under trees can cause other problems as well, including bark decay if piled against the trunk and limit availability of oxygen to the roots.

In addition, too much disturbance to the roots of sensitive trees may damage or kill them. To avoid problems, plant small trees and shrubs in the open, root-free zones between trees. If you must plant within the root zone of established trees, start with small plants that don't require a large planting hole. Take care not to damage the bark of mature tree roots when you dig. When planting shrubs, trim rather than bend the roots to fit the hole. Bent roots will never straighten out and will eventually die while cut roots will quickly form lateral roots that aid in establishment. Topdress newly installed plants with 2 to 3 inches of organic matter. Do not over mulch or fibrous tree roots will grow up into the mulch.

### Shade and Turfgrass

Many home lawns have heavily shaded areas where it is not easy to establish or maintain quality turfgrass. The competition for light, nutrients and water can stress and weaken turfgrass. The fact that shade attracts people during the hotter periods of the year adds to the problem by increasing soil compaction and wear in the area.

Trees that develop a dense but shallow, fibrous root system, such as silver maple, are extremely competitive with turfgrass for moisture. In addition, research has demonstrated that certain trees like the silver maple excrete toxic substances that have a negative influence on Kentucky bluegrass growth. Trees with heavy shade patterns such as some oaks, maples and lindens, create a poor environment for turfgrass. Trees such as honeylocust that have an open canopy and fine-textured leaves allow more light to reach to the grass.

The shade canopy tends to moderate temperature fluctuations by lowering daytime temperature and keeping it warmer at night by preventing heat loss. This moderating effect on temperature means humidity remains high both day and night. The relatively constant temperature in the presence of high humidity and lower light encourages disease. Turfgrass growing in this environment can be susceptible to heat, drought and disease. In addition, the reduced sunlight promotes turfgrass that is less able to recuperate from foot traffic, mower damage or plant pests.

Since shade is a poor environment for turfgrass, it is essential to develop a good management program in shady

places. First, select shade tolerant grasses. The fine-leaf fescues are considered the most shade tolerant of the cool-season grasses. Creeping red fescue, Chewing's fescue, sheep fescue and hard fescue all have shown promise in heavily shaded areas. Rough bluegrass (*Poa trivialis*) also performs well in heavy shade, but blends and mixes that contain rough bluegrass should be avoided because it does not perform well under heat or drought stress. In moderate shade turf type tall fescue is an excellent choice.

Sow seed in shaded areas in the fall. Fall seedings generally are more successful than spring seedings because they go into the first summer more mature with a better root system and more stored food reserves. Frequent leaf raking is essential to establishment of grasses in shaded areas. Leaves left on the lawn shade the young seedlings and slow their development.

Turfgrass growing in shade generally requires less total nitrogen than grass in full sunlight. Heavy applications of nitrogen on shaded grasses can cause stress and disease.

Late fall fertilization of cool-season grasses is extremely beneficial in shaded environments. This is the only time of the year when the grass plants under the trees can efficiently utilize the applied nitrogen without competition from trees for moisture, nutrients and light. The following management tips will encourage maximum turfgrass growth in the shade.

- Maintain a pH near 6.2 for tall fescue and Kentucky bluegrass. Research evidence suggests that the fine fescues do better at a pH of 5.5.
- Raise the mowing height. Increased mowing height induces larger root systems and healthier plants.
- Irrigate infrequently, but heavily. An irrigation program that minimizes the amount of time shaded areas are moist is beneficial in reducing disease. Infrequent watering also tends to minimize compaction and reduce shallow surface rooting.
- Reduce use of the area. Grasses with little food reserve and thin cell walls cannot bear much traffic without sustaining damage.
- Provide good drainage. Poor drainage increases the possibility of disease, and promotes moss, algae and weeds such as yellow nutsedge.

If attempts to produce turfgrass in shade meet with failure after using the above management program, consider the use of shade-tolerant ground covers.

### Design and Planting Suggestions

A shade garden may have a design that is formal, informal or a mixture of both. A woodland garden strives to recreate the informal style of wild or natural shade plantings found in the woods. A more formal style could include structured planting beds of tender shade annuals. Both garden styles may face the same problems: bare spots under huge lawn trees, dry shade under evergreens and, finally, a site with little or too much shade.



Existing canopy or overstory trees form the ceiling of a shade garden. Capitalize on the open, root-free areas between these established trees wherever possible to create garden “rooms.” Start planning the garden in these areas with understory trees and shrubs, then move to the herbaceous plants. Understory trees bridge the gap between the canopy and shrub layer, duplicating the natural structure of a forest and providing wildlife habitat. Small trees provide a sense of enclosure and a backdrop for the rest of the garden.

Shrubs can be thought of as the walls of a garden room. Include them with understory trees to form an uninterrupted line that flows into the tree canopy. Shrubs can be used to screen unattractive views like driveways and service areas, even the neighbor’s trash cans. Shrubs provide privacy and can be used to create secluded nooks and woodland hideaways. Planting a massing of shrubs at the curve of a path can create an air of mystery.

### **Color and Texture**

Color can be used to change the atmosphere of the shade garden. Warm colors such as yellow and red will brighten the area and make it feel warmer. Masses of warm-colored flowers also make a space appear smaller than it actually is. Shade gardens planted with cool colors such as pale pink, white, green and violet will give the impression of coolness and make the garden appear larger.

Foliage color and texture play an important role in the shade garden. Plants with gray or variegated leaves such as hosta can lighten the garden and give it an air of interest at times when blooming plants are sparse. Plants with attractive foliage and varying textures, shapes and forms such as ferns and viburnums also add impact. And don’t overlook the many other aspects of color that can also invigorate your shade garden and add fall and winter interest such as colorful fruit, seeds and bark.

### **Garden Maintenance**

Successful shade gardening requires not only soil preparation but also adequate water, fertilizer and mulch. Seasonal garden clean up is also important. Mulching will help keep the soil cool during the hot summer months, reduce water evaporation, suppress weed growth and aid in the long-term improvement of the soil. A layer of material 2 to 3 inches deep is usually recommended and should be applied in the spring before weed growth begins and before the summer heat. For winter protection in cold winter areas, replenish the mulch after the ground freezes.

Perhaps one of the most important rules to remember when watering in the shade is to water thoroughly and then let the soil dry out slightly between waterings. Slow, deep watering helps plants develop root systems able to withstand some drought. Frequent light watering results in a shallow root system, and encourages disease and weed growth. It’s easy to overwater shade plantings. The lack of direct sunlight reduces the amount of evaporation and the need for frequent waterings. Although many shade landscapes are easy to overwater, those with a heavy canopy of leaves may not allow the water to reach the soil. In addition, shallow-rooted trees in a shady landscape may compete with other landscape plantings for water. Don’t forget that foundation plantings under house overhangs will not receive moisture from rain or snow and may suffer from drought conditions any time of the year.

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