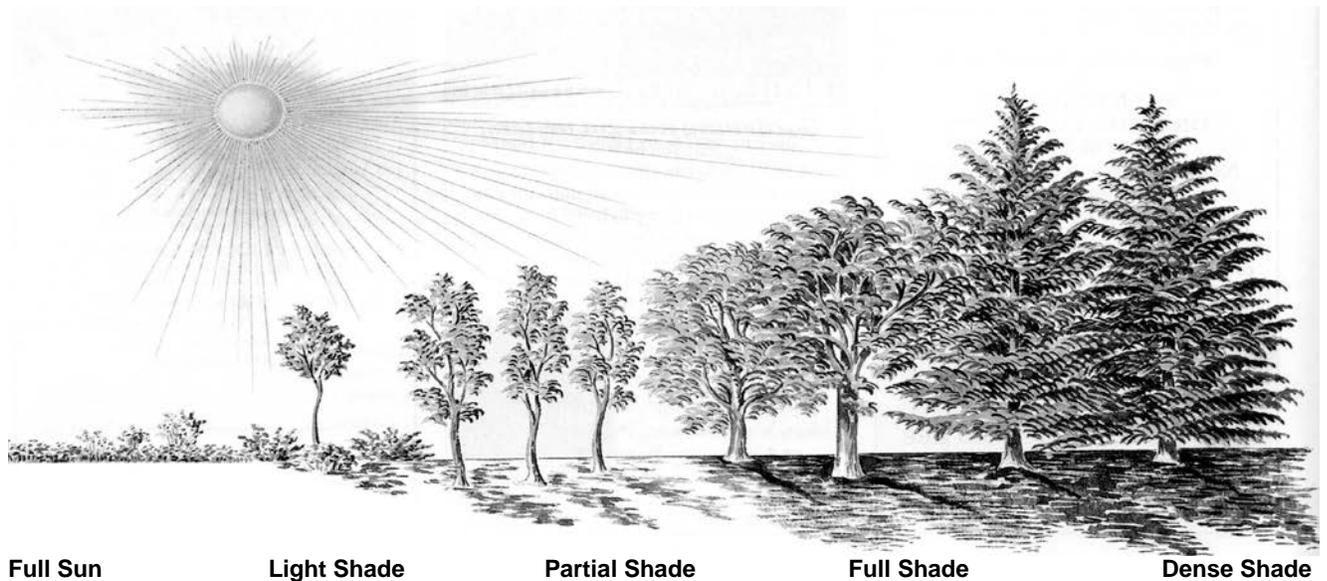


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Awareness of the *microclimates* in your garden is one of the keys to successful gardening. A microclimate is a set of conditions different from those of the surrounding area.

The most significant microclimates on your site are created by sun and shade patterns because these patterns affect temperature, soil moisture content and plant growth. The more directly and longer the sun strikes an area, the warmer the area becomes and the greater the variance between sun and shade. A shaded area may be 10 - 15<sup>o</sup> F cooler, more humid, or darker than the area in the sun.

## Defining Light Patterns



**Full Sun** is direct summer sun for 6 or more hours a day. In nature, full sun is analogous to meadows, prairies and other open country.

**Shade** describes some degree of relief from the sun. As the next page describes, there are basically four classes of shade based on the duration of time without sun, coupled with shade density.

**Light Shade**

- Assumes that plants receive 3 to 5 hours of direct sun in the summer, and shade for less than 4 hours each day.
- Occurs along edges of woodlands and in savannas where trees provide up to 25 percent canopy closure. Trees with high, thin canopies or sparsely planted trees give a lot of indirect light in addition to some direct sun.
- Provides the greatest range of possibilities for planting because a large number of sun-loving plants will tolerate several hours of shade.
- The time of day that the area is in direct sun is important. Some full sun plants can thrive in light shade conditions if the direct sun is received in early afternoon. Be aware that some shade plants may scorch if they are in direct sun during early afternoon.

**Partial Shade**

- Occurs where plants get less than 2 hours of direct sun or are shaded for at least half the day. There is shade in the morning, or in the afternoon or intermittently throughout the day.
- Is found in open woods and small clearings with up to 50 percent canopy closure, on an east or west facing slope or wall, or in the shadow of a building. Building shadows offer a slightly different situation than shade from trees because the site can be quite bright from reflected light.
- Woodland plants and wildflowers do very well in partial shade, as do a number of annuals and perennials.
- Shade-loving shrubbery, such as rhododendron and azalea, are more compact in growth and produce more flowers in partial shade.

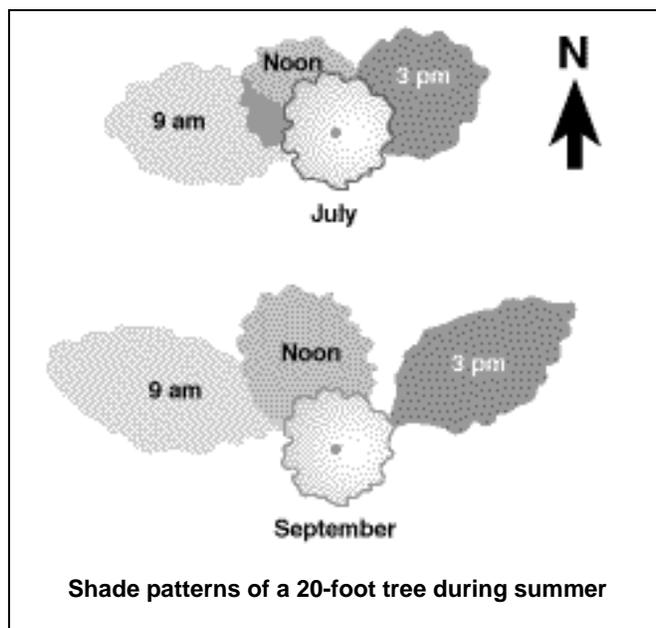
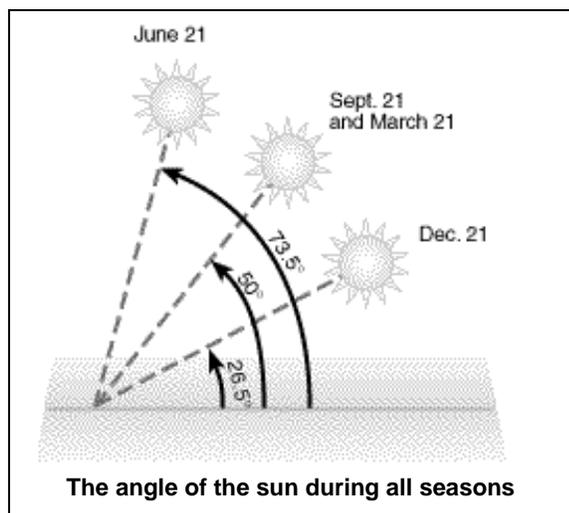
**Full Shade**

- Areas take in less than an hour of direct sun a day though they may glean filtered or dappled light throughout all or part of the day.
- Occurs naturally in forests and woodlands with complete canopy closure from deciduous or evergreen trees.
- Any growing area that faces north, whether it be a border or an area along a wall or fence, will be in constant shade even if it is open to the sky.
- A number of shade-loving shrubs, such as hydrangea and rhododendron, do well in full shade.
- Plant choice is most critical in this situation since only limited plants will perform well in such reduced light.
- When planting in full shade, soil moisture and soil pH are most important. Dry shade presents a special challenge because shallow tree roots compete with smaller plants for moisture. Plant drought-tolerant plants or provide ample moisture.

**Dense Shade**

- Provides little indirect light.
- Sunlight seldom, if ever, reaches the ground. This occurs in coniferous forests, or in gardens where walls or building overhangs block out the sun. It also occurs under shrubs, beneath decks and porches, in a dark corner and in narrow passages between houses. The ground is usually dark and often dry.
- Dense shade is the most difficult and limiting of areas in which to plant. Some ferns and a few groundcovers will grow here but the best solution is to grow plants in containers and rotate them between dark and lighter areas.

## Solar Intensity



The strength of the sun varies with the time of day, the season, and the sun's distance from the equator.

Early-afternoon sun is more intense than morning or late-afternoon sun. Shade plants receiving direct sun in early afternoon may experience scorching.

In the U.S., the sun shines most intensely in June through September. It is stronger in the south than in the north. Thus, a plant grown in light shade in a northern state may require partial or full shade in the south.

## Shade Tolerant

Plants adapt to sun and shade in various ways. Leaf thickness, the size of leaves and their color all play a part in adaptation. For example, hostas should be considered shade-tolerant as opposed to shade-requiring. Their large leaf surfaces act as solar collectors to absorb as much of the filtered light as possible so that they can function in shade. Gold hostas reflect light and heat well and tend to develop their best color in strong light, whereas blue hostas do best in cool shady areas and close to water.

During springtime when tree canopies are still open, many woodland plants and bulbs grow rapidly and flower while direct sun is available and then go dormant as the light level drops. Most shade plants will benefit from bright light or some direct morning sun for a short duration. A plant that tolerates deep shade will grow better in full shade, and a plant that grows in full shade will generally grow lush in partial shade.

## Assessing Your Site

Getting to know our individual microclimates is important. Spend time in your garden at different times of the day and season to become aware of the sun and shade patterns, the extent of the shadows and their density.

- Observe the differing length of the shadows as the seasons change. Notice how the leafing out of the trees changes the shade patterns.
- As your plants mature over the years, they cast larger and denser shadows. What used to be a partial shade area may have progressed to full shade.
- Storm damage to trees may have opened up an area to full sun or light shade. These changes provide opportunities for you to rearrange your plants or try new ones.
- Differentiate between your shade areas that are dry and moist, for tree roots are very competitive for available water in the soil.
- Note which of your plants thrive in a certain microclimate and which ones struggle.
- Look for other attributes that are specific to your yard, such as hedges, fences, structures, neighboring buildings and trees.
- It is important to reassess your site at least annually, more often if you have significant changes such as storm damage. This reassessment becomes more critical prior to any large landscape additions or changes.
- Be especially careful when adding new trees — it's much easier to move your perennials and annuals than a 20-foot oak tree.

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