



HOUSE PLANT CARE: LIGHT

Light is the energy source that allows green plants to grow. Natural light (sunlight) is the perfect energy source, combining the plants' needs for light quality, light intensity, and duration...and it's free! However, indoor plants generally have to make due with less than ideal conditions, and frequently require artificial light to supplement natural light, and plant hobbyists often grow plants solely with artificial light.

Unlike animals, plants manufacture their own food by a process called photosynthesis. Water, air, and minerals are turned into carbohydrates in the presence of light and chlorophyll. If a plant cannot produce enough food, it will die.

For each plant species, there is a minimum light requirement for this process to take place. It is important to either select an appropriate plant for the existing available light level, or to provide an adequate light level for the desired plant. When we talk about a plant's light requirements, we are talking about three factors: light quality, light intensity, and duration.

LIGHT QUALITY refers to wavelength (its **color**). The visible light spectrum is most easily observed in a rainbow or with a prism. Sunlight provides high light over most of the visible light spectrum.

Various plant processes take place most efficiently with different parts of the light spectrum. Photosynthesis, for instance, is maximized in the blue range. Red light is important for flowering. It is important for healthy plant growth that a plant receive the right amount of light in the appropriate parts of the spectrum. This fact is important when supplemental artificial light is used.

LIGHT INTENSITY refers to the **amount** of light emitted by a light source, and is the most important factor in providing a plant's light requirements. The intensity of direct sunlight at noon is far greater than that of daylight filtered through leafy trees. Inside, the light is far more intense just inside the window pane than it is across the room or in a corner.

Light intensity is measured in foot-candles. Full sunlight is 10,000 foot-candles, while a north-facing window may receive around 2000 foot-candles. Inside, sun-loving plants will need to sit in a sunny window, while a moderate or lower light plant can live happily in the interior of the room.

LIGHT DURATION is the **total hours** of light received in a given day. Most foliage plants come from the tropical or subtropical areas of the globe, where the average day length of about 12 hours is fairly consistent year round. In our temperate region, day length varies widely from as little as 8 hours in winter to 14 hours or more in summer. Generally, indoor plant growth slows during the shorter winter days. If supplemental light is used to increase the day length, the plant will continue to actively grow throughout the year.

Some plants are dependent on day length for flowering, a phenomenon known as photoperiodism. The Thanksgiving cactus, for instance, will set buds after several weeks of short days, while geraniums require long days to flower. Most foliage plants are day-length neutral.

Higher intensity light for shorter duration can usually be substituted for lower intensity for longer duration. The intensity must always, however meet the minimum requirement of the particular species. Remember that for many species there is also a maximum amount of light the plant can tolerate, so do not expose a shade-grown plant to direct mid-day sun which can "burn" the foliage.

ARTIFICIAL LIGHT SOURCES:

When looking for artificial light sources for plant maintenance or growth, you need to consider several factors including cost, the aesthetics of the light color and the fixture, and especially the quality of light supplied by the source. Of the lamps used to light interior spaces, incandescent, fluorescent, metal halide, and high-pressure sodium bulbs are the primary sources.

Incandescent bulbs produce more heat than light and provide mostly red light, with very little blue. They do not make a good plant light source.

Fluorescent lights are the most popular light source for growing plants in the home. They are more efficient than incandescent bulbs, they provide a lot of light while remaining cool, and combining cool white and warm white lamps provides a wide spectrum for flowering and foliage plants. "Grow" bulbs are designed specifically for plant care, although they tend to cost more than other fluorescent lamps.

Metal halide and *high-pressure sodium* lamps require commercial style fixtures and are relatively expensive, although they provide nearly natural light and are very long-lasting.

Any foliage or flowering plant can be grown with solely artificial light assuming the right quality, intensity, and duration of light is provided.

UP-LIGHTING: Light in nature is obtained from above, and most energy is absorbed through upper leaf surfaces. Up-lighting can be used for dramatic effect, but should never be the sole or primary lighting source.

*The Great Big Greenhouse & Nursery, 2051 Huguenot Road, Richmond, VA 23235
Phone (804) 320-1317 Fax (804) 320-9580 website www.greatbiggreenhouse.com*