



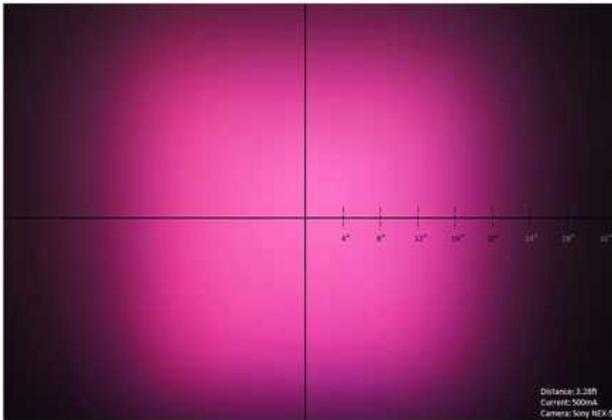
HORTICULTURE ARTICLE

The Role of LED Grow Lights in Photosynthesis

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To understand why LED grow lights are so well-suited to growing plants, we should have a look at plant biology.

Photosynthesis is a process employed by plants to convert light energy into chemical energy that is used to fuel the plants' activities, such as growing and producing fruit. Plants perform photosynthesis using two types of chlorophyll, each of which responds to particular areas of the light spectrum.



Chlorophyll A has a peak absorption response at 430nm and 680nm, and chlorophyll B has a peak absorption response at 450nm and 660nm. Plants mostly use red light in the 650nm to 700nm range, but science shows that plants also need blue light for proper growth. Blue light tells the leaves to open their stomata and allow carbon dioxide in.

So the best light source for optimal plant growth is one that provides specific blue and red wavelengths. And humans who need to see the plants appreciate a little light in the green part of spectrum, which is where we see best.

Actual F3 spectrum taken with standard digital camera.

Illumitex high-efficiency LED light fixtures offer a series of custom spectra that can facilitate optimal ranges for photosynthesis and photomorphological responses. For example, our most widely used spectrum is the self-titled "F3" spectrum. This spectrum provides the best biomass and growth rates, while still providing a small amount of green light for plant-quality assessment.

HID lamps as as HPS or MH produce light that is meant for industrial applications such as street or overhead factory lighting. The spectra offered for HID lamps is not tuned, specifically, for plant growth. Typically a mass of wavelengths is emitted, yet very few of those wavelengths truly benefit the plant's photosynthetic rate. In addition, HID lamps are less efficient at transferring the watts into light output, which results in the increased heat emitted.

Illumitex offers the most photosynthetically efficient light systems on the market. Properly configured Illumitex horticulture LED light fixtures such as NeoSol and Eclipse provide plants with the optimal light treatment they need to accomplish the most efficient photosynthesis and therefore the best growth and best production.