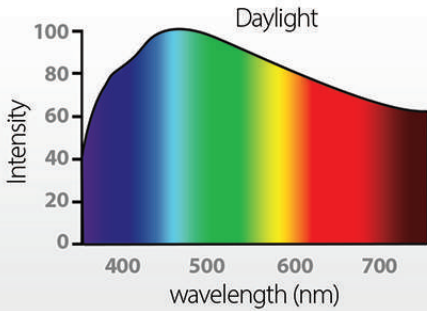


1

Plants NEED Light

The absorption of light by the chlorophyll pigments in the leaves is essential to photosynthesis and plant health. Poor lighting is the #1 problem for greenwalls.

2



Plants "See" Light Differently

White light is actually a mixture of many different colors of light (see graphic). Plants use only the blue and red light for photosynthesis and we refer to that portion of the spectrum as photosynthetically active radiation ("PAR"). Traditional wisdom says that blue light encourages leafy growth and red light triggers a response in flowering plants to create blooms.

Why Are Plants Green?

The chlorophyll absorbs the PAR light (blue & red) and the remainder (green & yellow) is reflected back into our eyes. Thus, we see plants as being green.

3

How To Measure Light Intensity

Light intensity or brightness is usually measured in foot-candles or lux, but unfortunately these measures are calibrated for humans and don't accurately measure light for plants. For plants, we need to measure the PAR light intensity (measured in units of "umol").

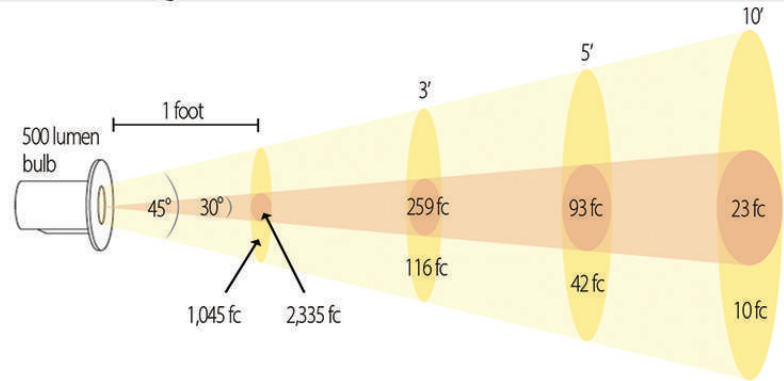


A proper light meter is essential and we recommend the Leaton Digital Luxmeter (\$20) available on Amazon.com

4

Determine How Much Light Is Needed

There are foot-candle & umol guidelines for different plant types, but light bulbs are sold with lumen ratings. Achieving the proper number of foot-candles is a function of the bulb's lumen rating, distance from the plants and beam angle. Higher lumens, shorter distance and a more concentrated beam will all produce higher foot-candle ratings (see illustration).



Plant Type	LUX	Foot-Candles	umol
Low Light	500 - 2,500	50 - 250	60 - 115
Medium Light	2,500 - 8,000	250 - 750	115 - 230
High Light	5,500 - 10,500	500 - 1,000	230 - 350

5

Suite Plants recommends...

...using metal halide bulbs (a type of HID bulb) because they emit a balanced spectrum of light, produce an extraordinary amount of lumens per watt and are long lasting. In certain situations, specialized high-power LEDs and high-intensity fluorescent bulbs may also work. Avoid incandescent and halogen bulbs because they produce too much heat (can burn the plants).



Key Factors For Choosing Light Fixtures & Bulbs

Beam Intensity & Angle: Light intensity weakens over distance, so a more concentrated beam of light is better for the plants. Choose bulbs with a lower beam angle. Avoid frosted bulbs or fixtures with frosted covers, shrouds, diffusers or reflectors that dilute light intensity.

Energy Efficiency: Consider the total watts used to achieve a desired level of light intensity. It can actually be more efficient to use fewer higher powered bulbs rather than an array of more energy efficient bulbs. Furthermore, using fewer fixtures & bulbs also reduces installation time & cost, potential for problems and future maintenance.

Coverage & Timing: Every part of the greenwall needs light. High intensity light beams "reach" farther so they are needed to illuminate hard to reach areas like the bottom of the greenwall. Additionally, the lights should remain on for 12-18 hours per day, not be connected to any motion activated systems and not turn off for weekends or holidays.

	Incandescent	CFL	HID	LED	Halogen	Fluorescent
Rated Average Life (Hours)	750 - 1000	10,000	20,000	45,000	3,000	3,000
Price Of Product	Low	Medium	High	High	Medium	Medium
Cost To Operate (Energy Consumption)	High	Low	Lowest	Low	Medium	Medium
Average Efficiency (Lumens Per Watt)	15	60	up to 120	45	25	25