



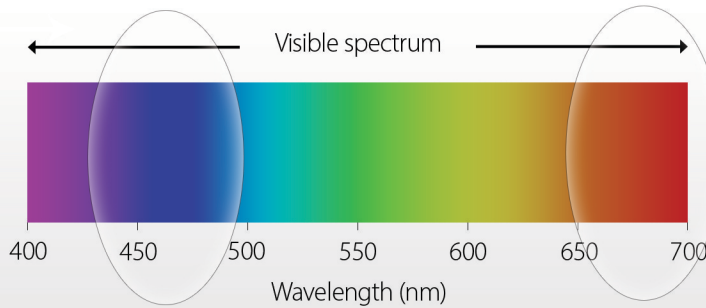
# Greenwall Lighting Guide

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## 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.

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## Plants "See" Light Differently

Plants primarily use the blue and red parts of the visible light spectrum. That is why grow lights are typically red or purple.

## Why Are Plants Green?

The chlorophyll absorbs blue and red light and reflects green and yellow light back into our eyes. As a result, plants appear green to us!

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## How To Measure Light Intensity

Light intensity of brightness is usually measured in foot-candles or lux. Your eyes cannot accurately measure light because they are constantly adjusting to your surroundings. You must use a light meter to measure light accurately.



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

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## Determine How Much Light Is Needed

While there are foot candle guidelines for different plant types, light bulbs aren't sold with foot candle readings, but rather with lumen ratings. Given lumens, distance, and beam angle you can find the corresponding foot candle reading easily. For reference, we have added a table to the right.

Condition	LUX	Foot-Candles
Sunlight	107,640	10,000
Daylight	10,764	1,000
Overcast	1,076	100
Very Cloudy	108	10
Twilight	10.76	1

Plant Type	LUX	Foot-Candles
Low Light	500 - 2,500	50 - 250
Medium Light	2,500 - 8,000	250 - 750
High Light	5,500 - 10,500	500 - 1,000
Direct Sun	10,500 +	1,000 +

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## Greenwall Specific Lighting Issues

- Greenwalls present a unique challenge because they often contain built in irrigation systems. The systems are often designed so that the plants are always being fed water.
- When there isn't enough light, plants slow down their water uptake. However, the greenwall system keeps feeding them water. Eventually the soil gets over saturated and the plants slow down even more. The plants will ultimately end up with root rot in this situation.
- This is different from potted plants as technicians can determine the frequency and amount of water when watering plants. Green wall systems often remove this flexibility.



Weak Lighting



Automatic Watering



Sad Plants

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## 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.

## 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).

(see other side for fixture recommendations)

