

Light Intensity Meter

INTRODUCTION

The Hydrofarm Light Intensity Meter is a pocket-sized, portable, light sensitive instrument capable of reading illumination up to 5000 footcandles (lumens per square foot).

The logarithmic response of the Hydrofarm Light Meter provides the operator with accurate meter deflection and easy reading at all light intensities.

A clear epoxy dome is affixed over the cell as a permanent protective feature to assure maximum durability.

The light meter incorporates a silicon photovoltaic cell that converts radiant light energy into electrical energy, eliminating the need for a battery. The photovoltaic cell exhibits a very fast reading and has a stable, linear and reproducible

output per light intensity. The cell displays no fatigue and has unlimited life expectancy. (The photovoltaic cell used is superior to light meters using selenium cells in efficiency, stability and lack of fatigue.)

The light requirements listed were compiled from materials supplied by the Department of Agriculture and other authoritative sources. We suggest you contact the USDA in your state for specific recommended light intensities of plants not listed here, or for additional specific information on a particular plant.

LIGHT INTENSITY

Of all the limiting factors in photosynthesis, light intensity is the most important. The light of full sun on a clear day is approximately 10,000 footcandles. (A footcandle is the amount of light cast by one candle at the distance of one foot.)

The rate of photosynthesis is proportional to the light intensity received by the leaf to a

maximum of 5000 footcandles. At 5000 footcandles, most plants are at 100% efficiency and light intensity levels above this measurement are of little benefit and can only cause heat exhaustion and undue drying of a plant. Therefore, the light meter has been calibrated to 5000 footcandles.

PLANTS GROWN UNDER GROW LIGHTS

If a grow light is purchased, be sure that it emits the full spectrum of light when compared to sunlight. With a grow light emitting the full spectrum, plants can be grown successfully. They reach proper maturity when exposed to a maximum light intensity for a specific period of time. (Intensity of about 1000 footcandles is minimum.) The minimum daily quantity of light is 10,000 footcandles, which is the light intensity

reading multiplied by the duration of exposure in hours.

The use of high intensity lighting fixtures such as Halide and Sodium (for indoor plants requiring higher intensities than can be supplied by fluorescent fixtures) have proven to be the best source of light for optimum plant growth that the serious gardener can utilize.

PHOTOPERIODISM

Photoperiodism is the length of time a plant is exposed to light. Plants of our temperate zone can be categorized into short-day, neutral and long-day plants. The dividing line between day lengths favorable to vegetative growth and those tending to cause seed and flower formation is called the Critical Light Period. For most species the critical light period is between 14 and 16 hours.

The intensity of the light and the duration of exposure combine to let us know the quantity of light received by the plant. Taking the amount of footcandles and multiplying by the number of hours will give you footcandle hours as shown in the lighting recommendations.

LIGHT METER SPECIFICATIONS

POWER SOURCE	LIFETIME PHOTOVOLTAIC CELLS
FOOTCANDLE SCALES	0 TO 5000 FOR SUN and H.I.D. 0 TO 500 FOR FLUORESCENT
MULTIPLIER	10X ON BOTH SCALES
ACCURACY	±2%

HIGH INTENSITY LIGHTING

High Intensity (also known as HID) systems utilize large bulbs that contain inner arc tubes which contain various gases and metal salts. When energized, these gases produce very intense light that is sun-like and many times brighter than fluorescent or incandescent bulbs. High intensity light is very beneficial to plants because it occupies the region of the color spectrum which, like sunlight, fuels the process of photosynthesis. The two main types of HID lamps are halide and sodium. Standard halide lamps produce light in the white/blue region of the spectrum. This color of light encourages vegetative growth and root development. Sodium lamps produce light in the yellow/red/orange areas of the spectrum, the range that stimulates flowering and fruit production.

The output of HID bulbs diminishes gradually over time with use, but the human eye cannot discern this reduced output. Therefore, it is important that users have a way to measure the ongoing footcandle readings from their lamp, in order to know when its output has declined to the point where replacement is recommended. That is where the Light Intensity Meter comes in — it gives the indoor gardener an effective way of checking light output throughout the bulb's life.

AGROSUN® HALIDES

Hydrofarm's Agrosun halides blend powerful halide light with light in the orange and red color range, resulting in a full-spectrum bulb which can be used for start to finish growing. There's plenty of blue light for growth in all halides, but until now, they lacked sufficient red light to maximize flowering and fruiting. Now that's all changed, because the spectrum-enhanced Agrosun bulbs provide more red spectrum than common halides.

OPERATING INSTRUCTIONS

To measure illumination:

To determine the level of illumination on the surface of a leaf, hold the Light Intensity Meter near leaf level.

Avoid positioning your hand or body in such a way that blocks, inhibits or reflects light.

SWITCH POSITIONS

Both scales are OK for reading all types of light.
For higher footcandle levels, use Sun & High Intensity scale.
For lower footcandle levels, use Fluorescent scale.

5000 footcandle scale for higher light level reading
500 footcandle scale for lower light level reading

