

INTRODUCTION

The Light Intensity Meter is a pocket-size, portable, light-sensitive instrument capable of reading illuminance, luminance, reflectance and transmittance up to 10,000 footcandles (lumens per square foot). The logarithmic response of the meter provides the operator with accurate meter deflections and easy reading at all light intensities. The Universal Light Sensor Probe, specifically designed to be maneuverable to any lighting angle or condition, can be extended to a distance of up to 2.5 feet, giving the operator a much greater degree of flexibility than a self contained instrument could do. A clear epoxy dome is affixed over the photo cell as a permanent protective feature to assure maximum durability. The "Table of Light Requirements" was compiled from materials supplied by the Department of Agriculture & other authoritative sources. We suggest you contact the USDA for recommended light intensities of plants not listed here, or for additional specific information on a particular plant.

LIGHT INTENSITY METER

The Light Intensity Meter is designed specifically for the measurement of radiant light energy that directly affects plant growth, development and seed germination. The meter is not color corrected. With this feature, we can assure maximum accuracy in measuring the intensity of the light emitted from the sun and can compare the light intensity of artificial light sources to the proper radiant color of the sun because the sun is the standard light color that affords plants maximum growth and development. The meter incorporates a silicon photovoltaic cell that converts radiant light energy into electrical energy alleviating the need for a battery. The photovoltaic cell exhibits a very fast reading and has a stable, linear and reproduceable output per light intensity. The cell displays no fatigue and has unlimited life expectancy. It has versatility and assures freedom from personal operator error factors. Although the results will depend upon the visual acuity of the operator, the instrument is sensitive to fractions of a footcandle provided the spectral content of the artificial light and the standard (sunlight; used in our calibration) are identical. The meter is capable of reading up to 10,000 footcandles, can be used to determine brightness, reflectance, transmittance and the most important measurement, illuminance.

TYPES OF READINGS

SUN & H.I.D.

Slide switch up. Read top scale only. Multiply all readings by 10.

FLUORESCENCE

Slide switch down. Read bottom scale only. Multiply all readings by 10.

OPERATING INSTRUCTIONS

FOR PLANTS ALREADY IN POSITION

1. Measure the light intensity at leaf level.
2. Take readings at several distances from a light source.
3. If too much light: reposition plant, shield plant, screen or curtain light.
4. If too little light: reposition closer to light, reposition to another location, or supplement artificially.

FOR NEW PLANTS

1. Take readings at all possible locations and at different times of the day.
2. Take readings at several distances from a light source.
3. Jot down readings of each location and distance.
4. Consult Table of Light Requirements

EXAMPLE

Agapanthus: Maximum 50,000 footcandle hours, Minimum 25,000 footcandle hours

Time	Hours		Footcandles		Footcandle Hours
7:00am to Noon	5	x	2,000 average	=	10,000
Noon to 4:00pm	4	x	1,000 average	=	4,000
4:00pm to 9:00pm	5	x	1,000 average	=	2,500
Total	14			=	16,000

Interpretation: Insufficient Light Intensity

What to do: Move closer to light source, reposition to better location or supplement artificially.

Caution: When supplementing light artificially, do so during the normal light exposure times, preferable late afternoon till 9:00pm. Do not increase exposure time because plants need dark periods for rest.

PLANT LIGHT PREFERENCE LIST

MAXIMUM FOOT-CANDLE HOURS: 50,000

MINIMUM FOOT-CANDLE HOURS: 25,000

*This category of plants will thrive in full sunlight for medium short periods.
East and South exposures are preferred.*

BULBS

Agapanthus	Amaryllis	Anemone	Calla Lily	Freesia
Hoemanthus	Ixia	Montbretia	Oxalis	Ranunculus
Tulbaghia				

FLOWERING PLANTS

Bird Of Paradise	Chrysanthemum	Geranium	Gerbera	Gloriosa
King's Crown	Lilies	Miniature Rose	Passion Flower	Poinsettia
Shrimp Plant				

FOLIAGE PLANTS

Agave	Aloe	Aporocactus	Astrophytum	Bamboo
Capalocereus	Echeveria	Enchinocactus	Echinocereus	Echinopsis
Eucalyptus	Gymnocalycium	Gynura	Herbs	Iresine Jerusalem
Cherry	Kalanchoe	Lobiva	Mamillaria	Notocactus Opuntia
Pereskia	Polyscias	Rebutia	Sedum	Stapelia

SHRUBS

Acalypha	Allamanda	Azalea	Bougainvillea	Citrus
Coccoloba	Croton	Flowering Maple	Hibiscus	Hydrangea
Ixora	Myrtle	Oleander	Privet	Pyracantha
Rhododendron	Stephanotis			

MAXIMUM FOOT-CANDLE HOURS: 37,500

MINIMUM FOOT-CANDLE HOURS: 20,000

*This category requires bright light with little direct sunlight.
East and West exposures are preferred.*

BULBS

Clivia	Daffodil	Hyacinth	Narcissus	Tulip
--------	----------	----------	-----------	-------

FLOWERING PLANTS

Cineraria	Crossandra	Cyclamen	Flame	Violet
Gloxinia	King's Crown	Lipstick Vine	Shrimp Plant	

FOLIAGE PLANTS

Beaucarnea	Coleus	Columnnea	Crassula	Dizygotheca
Euphorbia	Fatsia	Fittonia	Gynura	Haworthia
Hypoestes	Joseph's Coat	Pleomele	Rhipsalis	Rhoeo
Saxifraga	String-of-pearls	Swedish Ivy	Tomiea	Tradescantia
Wax Plant	Zebra Plant	Zebrina		

SHRUBS

Ardisia	Aucuba	Camellia	Clerodendrum	Coffea
Dipladenia	Eleagnus	Eunonymus	Fuchsia	Gardenia
Nandina	Silk Oak			

MAXIMUM FOOT-CANDLE HOURS: 27,500

MINIMUM FOOT-CANDLE HOURS: 15,000

*Plants in this category thrive on bright indirect light with no direct sun light.
North exposures are preferred. Subdued light by screening or a lightweight
curtain will be adequate at East, South or West exposures.*

BULBS

Caladium

FLOWERING PLANTS

Achimenes	African Violet	Begonia	Christmas Cactus	Flowering Tobacco
Impatiens	Orchids			

FOLIAGE PLANTS

Acorus	Anthurium	Brassia	Bromeliads	Cissus
Helxine	Hypoestes	Norfolk Island Pine	Pandanus	Pellionia
Peperomia	Pilea	Prayer Plant		

MAXIMUM FOOT-CANDLE HOURS: 15,500

MINIMUM FOOT-CANDLE HOURS: 7,500

*The plants in this category are best suited to dim light. Light intensities within the
interior of a room away from windows are preferred.*

FOLIAGE PLANTS

Asparagus	Aspidistra	Chlorophytum	Chinese Evergreen	Cyperus
Dieffenbachia	Dracena	English Ivy Ferns	Ficus Liriope	Palms
Philodendron	Pothos	Selaginella	Snake Plant	Spathiphyllum
Syngonium				

SHRUBS

Pittsoporum Podocarpus



Products
for Successful
Gardening™

rapitest®

Light Intensity Meter

LIGHT

Light as will be discussed and measured by the Light Intensity Meter is the radiant energy emitted by the sun, fluorescent and incandescent lamps. The readings are made expressly for the purpose of properly growing plants & seeds, and the "Table of Light Requirements" listed in this book is based upon this fact.

The Color-Spectrum is that portion of radiant light energy within the visible range that consists of the following colors: Violet, Blue, Green, Yellow, Orange, and Red.

Natural Light: The radiant light from the sun consists of a small percentage of ultraviolet, about half in the visible range and the balance in infrared. Green leaves absorb little or none of the ultraviolet and infrared* and these wavelengths are of little importance in photosynthesis. The visible spectrum can be separated by a spectroscope into these colors: Violet, Blue, Green, Yellow, Orange and Red.

**Infrared under Light and Plant Growth*

Artificial Light: Fluorescent tubes emit the visible spectrum and ultraviolet but no infrared. Incandescent lamps emit the full color spectrum (visible) & infrared but no ultraviolet. Therefore, they must be used in combination or lamps must be chosen that emit both visible and infrared. Cool white and warm white tubes in combination provide this spectrum with little heat effect.

LIGHT INTENSITY

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

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. The divisions on the scale of the meter indicate the maximum amount of light that a species can be exposed to for a 14 hour day (As listed in the Table of Light Requirements).

Plants Grown Under Artificial Light: If an artificial light is purchased, be sure that it emits the full spectrum of light when compared to sunlight. With artificial light emitting the full spectrum, plants can be grown successfully. The proper maturity will occur if a plant is exposed to a maximum light intensity for a specific time period. (Intensity of at least 1000 footcandles is minimum). The minimum quantity of light is 15,000 footcandles which is the light intensity reading multiplied by the duration of exposure in hours.

Plants Grown In Natural Sunlight: Plants grown in natural sunlight should be positioned so that the recommended light intensity is measured according to the "Table of Light Requirements". The normal sunrise to sunset, depending upon your latitude, will be the sole controlling factor for time of exposure. With this fact in mind, supplement with artificial light only on overcast, cloudy or dark days & be sure the supplement is during the 14 hour exposure period. Plants must have rest periods, so don't expose them longer than 14 hours.

In the home and in greenhouses, plants are behind windows that absorb the ultraviolet light, but can be grown successfully because the visible and infrared spectrum is not absorbed.

LIMITED WARRANTY

Meter is warranted free from defects for one year from date of purchase. During this period the meter may be returned to Luster Leaf Products Inc., together with proof of purchase and \$5.00 to cover postage and handling, and it will be repaired or replaced. During the initial 90 days of this warranty period the selling dealer is also authorized to replace a defective meter.

This warranty does not cover abuse, as accidental damage, repair by anyone other than Luster Leaf Products Inc., or consequential loss or inconvenience resulting from use of meter.

This warranty gives you certain specific legal rights and you may also have other rights which vary from State to State.

SERVICE

If adjustment or repair becomes necessary after the warranty expires, return the meter to Luster Leaf Products Inc. together with \$10.00 to cover postage, handling and service. Service includes labor and parts as required, except for replacement of externally damaged or lost components.

For service, or information regarding other Luster Leaf products, please address:

Luster Leaf Products Inc.
2220 Techcourt
Woodstock, Illinois 60098
