



By Erik Runkle



Tips for Using Light Sensors

In winter, low light levels can limit production. And in summer, too much light can stress crops. Measuring light accurately is one step to harnessing growing conditions.

From November to March, light is a limiting factor in the production of many greenhouse crops in temperate climates. During this time, the days are short and the instantaneous light intensity is relatively low. Excessive light during the summer can cause heat stress and inhibit photosynthesis, especially for growers in the South. Therefore, it is important to accurately measure light so that we understand our own growing conditions and limitations.

Light can be measured instantaneously (at any one point in time), or it can be measured repeatedly throughout the day and integrated to a mathematical sum. In the latter case, the calculated value is the daily light integral (DLI), which determines plant growth attributes such as plug and liner rooting, stem thickness, branching and flower number. Knowing the instantaneous light intensity is important when making decisions regarding when to turn on or off high-intensity lamps, open and close retractable shade curtains, and provide or remove external shading.

Knowing the instantaneous light intensity is important when making decisions regarding when to turn on or off high-intensity lamps, open and close retractable shade curtain and provide or remove external shading.

Precision Is Key

Regardless of what kind of light meter is used, or whether it is handheld or affixed to the greenhouse, it is important that it be used properly to obtain accurate results. Below are guidelines to ensure that your light sensor readings are most meaningful.

1. Ensure that the sensor is level to the ground. Some sensors have a helpful bubble level, which can

be used to guide the sensor into a perfectly horizontal position. If a stationary light sensor does not have a bubble level, consider using a level when mounting the sensor. Routinely check the sensor's level to make sure it is positioned correctly. Sensors give erroneous readings when not held or affixed in a level position.

2. Place the light sensor just above the plant canopy. Light intensity can vary vertically in the greenhouse, so it is important to place the meter where the plants are growing. If you're interested in light levels provided to a crop under hanging baskets, be sure that the sensor is positioned appropriately.

3. Position the sensor so that it is not routinely wetted. For example, a sensor in a house with boom watering should be positioned above the boom so that water droplets do not fall on the sensor. Also try to avoid wetting the sensor when manually watering plants.

4. Place the sensor away from walls and gutters. Position the sensor in locations that are most typical of your greenhouse, and avoid areas where shadows do not move.

5. Periodically clean the sensor head with rubbing alcohol and a soft cloth or cotton swab. If water comes in contact with the sensor, dissolved solids can accumulate on the sensor, decreasing light transmission.

6. Recalibrate your sensor every three or four years. Over time, sensors can drift from their calibration and give substantially erroneous values. Contact the sensor's manufacturer and ask how to send it in for recalibration.

7. Make sure you understand the sensor's output and, if needed, can convert the readings to meaningful values. For more information on converting light units, visit www.gpnmag.com/articles/lightitupjuly2006.pdf. [GPN](#)

Erik Runkle is associate professor and floriculture extension specialist in Michigan State University's department of horticulture. He can be reached at runkleer@msu.edu or (517) 355-5191 ext. 1350.