

## **Not all Greenhouses are created equal, light matters!**

What is a greenhouse without quality light? There are vast differences in modern greenhouse designs, the options can seem virtually endless. Each type of glazing offers different pros and cons. The key element to the effectiveness of any greenhouse is first and foremost the type of glazing. Common glazing types are polycarbonate, glass acrylic, and polyethylene film which is primarily used for Hoop House structures. The quality of light transmitted through these different materials is not only varied on type of material, but also by manufacturer as well. Having a poor quality or degraded glazing on your greenhouse can greatly reduce or even completely eliminate the PAR in your greenhouse, essentially starving your plants. Our greenhouse systems are paired with the absolute best available polycarbonate panels available to ensure continued quality of light for the life of the panel. All polycarbonate sold by AWG Inc is backed by the best warranties in the industry, 15 year labor backed warranties. Thoroughly tested for its PAR values, our panel systems ensure your greenhouse will produce far greater yields. The LUX in the interior of our greenhouse systems produce light values that far exceed any other greenhouse on the market while simultaneously reducing environmental control costs.

What is PAR in light measurement? PAR, **Photosynthetic Active Radiation** is the wavelengths of light within the visible range of 400 to 700 nanometers (nm) which drives photosynthesis. It is often misunderstood in its use in horticulture usages due to its varied sources including artificial light fixtures.

PPFD – Photosynthetic Photon Flux Density  $\mu\text{Mol}/\text{m}^2/\text{s}$ . PPFD measures the amount of PAR light (photons) that arrive at the plant's surface each second. The PPFD is measured at various distances with a Full-spectrum Quantum Sensor, also known as a PAR meter. Natural sunlight has a PAR value of 900-1500 $\mu\text{Mol}/\text{m}^2/\text{s}$  when the sun is directly overhead. For a grow light to be effective, it should have PAR values of 500-1500  $\mu\text{Mol}/\text{m}^2/\text{s}$ .

PPF – Photosynthetic Photon Flux  $\mu\text{Mol}/\text{s}$ . PPF measures the total amount of PAR that is produced by a lighting system each second. Although PPF does not tell how many of the light photons land on the plant, it is an important metric for lighting efficiency.

Supplemental grow lighting offers many varied types, spectrums, and additional benefits for plant species that require more or less light exposure than the current daylight hours might offer. The newest type of supplemental lighting systems are LED. While this ever changing type of light source is not yet perfected, improvements are in a cycle of continued advancement. LED supplemental grow lights often produce multiple light spectrums that are not measured by PPFD, or PPF. When a poor quality or degraded glazing system is in place, it is common for growers to be forced to run lighting systems simultaneously during daylight hours. This greatly increases operations costs. One of the most vital decisions when it comes to your greenhouse project is your light source.