



# HORTICULTURE ARTICLE

## PPFD vs. PAR

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Some LED manufacturers tout their high photosynthetically active radiation (PAR) values. Their fixtures produce more PAR, they say, and therefore are superior.

Not so. A lighting manufacturer should tell you that you need to ask about the photosynthetic photon flux density (PPFD).

PAR is defined by the International Commission on Illumination as the total photon exposure in the 400nm to 700nm waveband range of radiation that is absorbed by photosynthetic pigments. PAR is not a quantitative measure; it's merely a description of the light that plants need for photosynthesis. PPFD, on the other hand, is a quantifiable measure of the total number of photons in the photosynthetically active range of wavelengths that fall on a square meter of a given surface (say, a plant canopy) every second. In other words, PPFD is a measured metric whereas PAR is merely a descriptive term for a range of wavelengths.

A light can churn out all kinds of PAR, which is also noted as the fixture's spectral power distribution, but if that light is being diffused and not reaching the plant canopy in a uniform manner, that PAR is useless to your plants. You need a lighting source that delivers the right PAR using



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## Even light levels are critical for uniform growth

the right optics to get the right amount of PPFD to your plant canopy. And you need to understand the quantity of photons that are hitting your canopy — PPFD.

What differentiates Illumitex grow lights are the patented optics developed by our founder. The precision optics enclosing our LEDs direct light in a way no other LED manufacturer can. Other grow light manufacturers use off-the-shelf LEDs with antiquated lenses that send photons off to places that don't benefit your plants. You're buying expensive electricity to generate light that never reaches the plant canopy.

Bottom line: our lights are simply more efficient. We can use less energy to deliver more PPFD per watt, which is what your plants really need.