

# LIGHTING



An efficient lighting schedule is crucial to maximizing yields, and getting the most out of each watt driving the room. It starts with selecting a light source that works best for the grow. Two of the best options for a grow room light are HID (high intensity discharge) 1000w DE (double ended) fixtures, and LED fixtures.

## TERMS TO KNOW:

It is important to understand these terms to achieve optimal light levels. Different cannabis strains have their own optimal lighting needs, just like they have their own optimal environment.

**ePAR:** (extended photosynthetically active radiation) is a widely used generic term that refers to photons that drive photosynthesis with wavelengths between 400nm - 750nm on the electromagnetic spectrum.

**ePPF:** (extended photosynthetic photon flux; micromoles per second) is the total photon output of a fixture in the ePAR range.

**ePPFD:** (extended photosynthetic photon flux density; micromoles per meter<sup>2</sup> per second) is defined as the number of photons within the ePAR range from a fixture, per unit area (m<sup>2</sup>). Quantum meters measure ePPFD because we only want to measure the amount of light energy that makes it to the canopy, not the total amount of light energy that the fixture puts out. Higher photon flux to the canopy equals bigger yields.

**eDLI:** (extended daily light integral; µmoles per m<sup>2</sup> per day) measures the same parameters as ePPFD, but integrates this over one day (24 hours). These two metrics are directly related and you can convert between the two.

**ePPFD to eDLI** -  $\text{ePPFD } (\mu\text{mol m}^{-2} \text{s}^{-1}) \times 3600 \text{ (seconds in an hour)} \times 12 \text{ (photoperiod)} \div 1,000,000 \text{ (}\mu\text{mol to mol)}$

**eDLI to ePPFD** -  $\text{eDLI } (\text{mol m}^{-2} \text{d}^{-1}) \times 1,000,000 \text{ (}\mu\text{mol to mol)} \div 12 \text{ (photoperiod)} \div 3600 \text{ (seconds in an hour)}$

**Example: Veg** -  $600 \text{ (ePPFD)} \times 3600 \times 12 \div 1,000,000 = 25.92 \text{ eDLI}$

| OPTIMAL LIGHT LEVELS<br>(for most strains) |           |            |            |
|--|-----------|------------|------------|
|  | CLONE     | VEG        | FIOR       |
| ePPFD                                      | 75 - 150  | 300 - 1000 | 800 - 1200 |
| eDLI                                       | 3.2 - 6.5 | 26 - 43    | 35 - 69    |