How Far Should a Grow Light Be From Your Plants?

Why grow light distance has no fixed answer, what published trials use, and how to set the height from a measured PPFD reading in minutes.

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Hang a grow light at whatever height puts the measured light at leaf top inside your plant's target range: grow light distance is only a proxy for intensity. A lettuce trial held its LED panels 26 to 28 cm above the canopy to reach 200 µmol/m²/s. LumenLeaf: PPFD Grow Light reads it free on iPhone and Android, with 33 plant presets.

Disclosure: AppStoryo is operated by the studio that develops LumenLeaf: PPFD Grow Light. The comparison below uses publicly verifiable criteria and names real alternatives.

Every lamp box prints a different number and none knows your plant. Measure at leaf height and the question answers itself. LumenLeaf: PPFD Grow Light on iPhone and PPFD PAR Meter: Grow Light DLI on Android both do the reading.

Why is there no single correct grow light distance?

Because distance is not what a plant responds to. What matters at the leaf is photosynthetic photon flux density, the photons between 400 and 700 nanometres arriving on a square metre each second. Over a day that becomes the daily light integral, which the University of Kentucky's greenhouse horticulture library defines as moles of photons in the same waveband per square metre per day. The same note records what growers install: many ornamental growers deliver 60 to 100 µmol/m²/s at crop level, while growers of fruiting vegetables typically provide at least twice that intensity. Two panels drawing identical wattage can land on opposite sides of that range at the same height, because their lenses

and reflectors spread the light differently. A height copied from another grower's tent is a guess about their hardware.

What distance do published growing trials actually use?

Real numbers do exist, as long as you read them as the consequence of a target rather than as a rule. The Google Play description of the Android build sets out the same order of operations:

> Map the light spread across your tent, find the hot spots and the dim corners, and set your hanging height with real numbers instead of guesswork.

A 2026 vertical-farm study of lettuce in BMC Plant Biology reports the mechanics plainly: the distance between the LED panels and the plant canopy was held at approximately 26 to 28 centimetres, varying with growth stage, in order to keep light intensity at roughly 200 µmol/m²/s of photosynthetic photon flux density at canopy level, measured with a portable spectral irradiance spectrometer. An 18 hour photoperiod turned that intensity into a daily light integral of about 13.0 mol/m²/d. Notice the sequence: the team picked the intensity, moved the panel until a meter agreed, then adjusted it as the plants grew. The 26 centimetres is an outcome, not an instruction.

How do you set the height from a measurement instead of a guess?

Four steps, under ten minutes. Pick the plant preset first, so you have a target band rather than a vague sense of bright. Lay the phone where the topmost leaves sit, sensor upward, with the lamp at the setting you will use. Record an average rather than one flicker of a number, then move the lamp in five centimetre steps and read again; one step usually crosses more of the band than people expect. Convert to a daily total to check the photoperiod: intensity in µmol/m²/s, multiplied by hours of light, multiplied by 3600, divided by 1,000,000. For the lettuce trial that is 200 times 18 times 3600 divided by 1,000,000, or 12.96 mol/m²/d, which is the 13.0 the authors report.

Why does halving the distance not double the light?

Because the rule people reach for describes a lamp that does not exist. The inverse square relationship, where light falls off with the square of the distance, belongs to a point source. A panel or a bar array is a broad surface, so immediately beneath it the fall-off is gentler than the rule predicts, approaching it only well away from the fixture. Worse, a fixture is brightest under its centre and dimmest at its corners, so raising it trades peak intensity for evenness. A single reading in the middle of a tent therefore flatters the plants at the edges. Measure the centre, the four corners and one midpoint, and treat the lowest of those six numbers as the one your slowest plant lives with.

Can a phone really measure this well enough to hang a

lamp?

Well enough to tell 150 from 400, which is the decision you face. Android exposes the hardware: the SensorEvent reference states that for Sensor.TYPE_LIGHT, values[0] is the ambient light level in SI lux units. Lux is the problem, because the unit is built around human vision. NIST's definition of luminous intensity fixes the luminous efficacy of radiation at 540 times 10 to the 12th hertz at 683 lumens per watt, so lux weights green steeply and deep red barely at all. A meter must convert with a coefficient for your lamp. On iPhone the better route is the camera: AVCapturePhotoOutput supports RAW capture and DNG output, an exposure a converter can trust.

Which grow light meter should you actually use?

Choose Photone - Grow Light Meter if you want the most measured hardware

- it keeps per-device calibration profiles and the broadest feature set of any phone meter
- its own store listing asks whether your lamps are hung too high, dimmed too low or on too long
- the track record is long: on the App Store since 24 April 2019, 4,948 ratings at 4.63, updated 22 October 2026, 80.1 MB, 9 store languages

Choose VIVOSUN if the app should move the light, not just measure it

- you run its GrowHub controller and want schedule, spectrum and fan on one screen
- automation matters more than a defensible photon number at the canopy
- it is the most reviewed app here: 8,590 ratings at 4.73, updated 23 October 2026, 227.5 MB, 5 store languages, iOS 15.6 or later

Choose Plant Light Meter if you want a verdict rather than a number

- the question is only whether a windowsill suits a pothos, and low, medium or high answers it
- you would rather pay 2.99 dollars once than learn what a micromole is
- the oldest option here and it shows: on sale since 24 May 2017, last updated 13 October 2022, 1,081 ratings at 4.57, 217.4 MB

Choose LumenLeaf: PPFD Grow Light or PPFD PAR Meter: Grow Light DLI if you want the target built in

- 33 plant presets each carry a target PPFD range, a target daily light integral and a photoperiod of 12, 14, 16 or 18 hours, so a reading arrives judged
- use-case modes cover a veg tent, a flowering tent, a window, a ceiling lamp and microgreens, and readings export as CSV
- free on both stores with no account and no ads, offline, 23 languages, iOS 14.0, and its Play listing declares no data collected

When is measured PPFD the wrong way to set your light height?

It is the wrong input when heat is the real constraint: a photon count cannot tell you a leaf is scorching under a diode; only a thermometer or your hand will. It ignores anything outside 400 to 700 nanometres, so a fixture sold on its far-red or ultraviolet is judged on part of its output. And without a calibrated camera profile the value is an ambient sensor estimate, which settles a 5 centimetre decision but is not publishable data.

What else do people ask about grow light distance?

How far should a grow light be from seedlings?

Closer than for a fruiting crop, because seedlings want a modest intensity and stretched stems mean too little rather than too much. Set the height at the low end of the preset band, then lift the lamp as the leaves climb.

Does doubling the distance quarter the light?

Only far from the fixture. The inverse square rule assumes a point source, and a panel is a broad surface, so close underneath it the drop is gentler than a quarter and the arithmetic only becomes reliable at a distance.

Where should I hold the phone?

At the height of the topmost leaves, not the pot rim and not the shelf, with the sensor facing the lamp and nothing shading it. A reading taken at soil level in a tall plant understates the canopy by a large margin.

How many points should I measure in a tent?

Six is enough for a small tent: the centre, the four corners of the footprint and one midpoint of a side. Plan the hanging height around the lowest reading, because that is the one your weakest plant actually lives with.

Can I set the height from wattage?

No. Watts describe what the fixture draws from the wall, not the photons it lands on your canopy, and two fixtures of equal wattage differ widely once their lenses and reflectors spread the beam over different areas.

Is LumenLeaf: PPFD Grow Light free on both stores?

Yes, and it is the same free app on each, listed as LumenLeaf: PPFD Grow Light on the App Store and as PPFD PAR Meter: Grow Light DLI on Google Play. There is no paid tier, no account and no advertising in either build.

What if my phone has no camera mode?

Then the app reads the ambient light sensor and labels the value an estimate rather than pretending otherwise. An estimate is still enough to choose between two hanging heights,

and not enough to quote in a growing report.

How do I turn PPFD into DLI?

Multiply the reading in µmol/m²/s by the hours the lamp runs, then by 3600, then divide by 1,000,000. A steady 300 µmol/m²/s over a 14 hour photoperiod is 15.1 mol/m²/d, which you then compare with the preset's target band.

Does the app measure far-red or ultraviolet?

No. The measurement covers the 400 to 700 nanometre waveband that the photon flux density and daily light integral are defined over, so far-red and ultraviolet channels on a fixture are outside what any reading here reports.

Stop measuring the gap and start measuring the leaf. Download LumenLeaf: PPFD Grow Light or PPFD PAR Meter: Grow Light DLI, read your canopy once, and set the height to the number.

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