How Many Hours a Day Should Grow Lights Be On?

Why 12 to 18 hours is the usual answer, how the daily light integral decides the number, and what a 2026 lettuce study found at 24 hours.

Author: Lubor Šimůnek · Published: November 7, 2026 · Productivity
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Most indoor plants want 12 to 18 hours of grow light a day, and the number depends on intensity, not preference: daily light integral equals PPFD times hours times 0.0036. LumenLeaf: PPFD Grow Light is a free iPhone and Android app that measures PPFD and converts it to DLI at a 12, 14, 16 or 18 hour photoperiod.

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

Hours are the easy half. The hard half is how much light reaches the leaf, and LumenLeaf: PPFD Grow Light measures that on the App Store, as does PPFD PAR Meter: Grow Light DLI on Google Play.

How many hours a day should grow lights be on?

Twelve to eighteen hours covers almost every indoor case, and the reason is arithmetic, not custom. Plants respond to the total photons they receive in a day, the daily light integral, or DLI, in moles per square metre per day. DLI is PPFD in micromoles per square metre per second, times hours, times 0.0036. A fixture delivering 250 micromoles over 16 hours gives 14.4 moles.

That formula is why the question has no single answer. The same 14.4 mole target is reached by 250 micromoles for 16 hours, 333 for 12, or 222 for 18. A dim windowsill lamp may need all 18 hours to reach a useful total, while a strong tent fixture overshoots a

houseplant in 10. Set the DLI target, measure the intensity, and the hours fall out of the division.

Why does the daily light integral matter more than the number of hours?

Because the same daily total can be delivered over very different schedules, and plants largely accept it. A 2026 lettuce study in Frontiers in Plant Science compared an 18 hour photoperiod against continuous light at an identical DLI of 16.8 moles per square metre per day, with far red included for a total photon flux of 20.1 moles.

The full open access text reports that at that fixed daily total, continuous light raised light interception by 10 percent in the cultivar Jagger, improved the use efficiency of intercepted light by 7 to 11 percent, and lifted fresh mass by 23 percent, with no tip burn and no bolting. Hold the daily total constant and the schedule becomes a secondary variable, as the formula predicts.

What happens if you leave grow lights on 24 hours a day?

Less than folklore suggests for some crops, and nothing good for others. The same experiment found continuous light produced 16 to 18 percent better energy use efficiency than the 18 hour schedule at the same electricity input, because the extra growth came free. The authors also cite earlier work where, at a lower total of 10 or 13 moles, continuous light barely differed from a 16 hour photoperiod.

Two cautions matter more than the yield figures. Lettuce is day neutral, while short day and long day plants use darkness as a clock, so a 24 hour schedule can suppress flowering outright. Cultivar mattered even within the species: Jagger gained 23 percent fresh mass, Danstar 6 percent. Treat 24 hours as a tested option for leafy greens, not a rule for your shelf.

How do you work out the right photoperiod for your own plant?

Measure the intensity where the leaves actually are, then divide. Put the sensor at canopy height, not on the floor or beside the lamp, because PPFD falls off sharply with distance. Pick the DLI your plant wants and divide it by PPFD times 0.0036. A 12 mole target at a measured 200 micromoles needs about 16.7 hours.

This is the step most people skip, and the step LumenLeaf: PPFD Grow Light exists for. It carries 33 plant presets, each with a target PPFD range, target DLI range and photoperiod, and use case modes covering grow tent vegetative, grow tent flowering, window light, ceiling lamp and microgreens. Switch the readout to DLI and it does the multiplication at 12, 14, 16 or 18 hours.

What does running a grow light that long actually cost?

Enough to notice, and the arithmetic is public. US residential power averaged 17.23 cents

per kilowatt hour across 2025 in the Energy Information Administration's Electric Power Monthly, against an average household purchase of 10,791 kilowatt hours a year, per the same agency. A 100 watt fixture at 16 hours a day draws 1.6 kilowatt hours daily, roughly 48 over a 30 day month, or 8.27 dollars. At 24 hours that becomes 72 kilowatt hours and 12.41 dollars.

> On most Android phones LumenLeaf reads the ambient light sensor (ALS) and labels the value an estimate. Camera-grade mode switches on only for devices we have actually calibrated, which is a short list today and one we keep extending.

That passage is from the app's own English Google Play listing, and it frames everything above: a phone estimate is good enough to compare one shelf against another, not to certify a yield trial. Efficiency is the other lever. The DesignLights Consortium's horticultural requirements V4.0 raised its photosynthetic photon efficacy threshold by 8.7 percent, 45 percent above the most efficacious non LED option.

Which light meter app should you actually use?

Choose Photone - Grow Light Meter if you want the longest track record

- Lightray Innovation GmbH, free, version 4.5.4 of 22 October 2026, iOS 15.0 or later.
- 4,954 US App Store ratings — far more field feedback than anything else here.

Choose PPFD METER - Grow Light Meter if you are on a very recent iPhone

- Candas Pamukcu, free, version 13.02 of 23 October 2026, requiring iOS 18.0 or later.
- 129 ratings and frequent releases, but that iOS 18 floor rules out older hardware the others still serve.

Choose Plant Light Meter if you prefer a one off purchase

- Studio Nano Ship, Inc., 2.99 dollars, version 3.20.1, last updated 13 October 2022, with 1,081 ratings.
- Paid with no subscription, but four years without an update and iOS only, so check it still runs first.

Choose LumenLeaf: PPFD Grow Light if you want the DLI arithmetic done for you

- Free on both stores, 30 MB, iOS 14.0 or later, 23 App Store languages, no ads, no account, no subscription.
- The only one here that converts a live PPFD reading into DLI at a chosen 12, 14, 16 or 18 hour photoperiod.

When is a phone the wrong tool for this measurement?

Whenever the number has to be defensible. On Android the reading comes from the platform

light sensor: the environment sensor documentation specifies TYPE_LIGHT as illuminance in lux, warns that environment sensors are not always available on a device, and tells developers to verify at runtime that one exists. Lux is weighted for human vision, not photosynthesis, so converting it means assuming which lamp you are under.

On iPhone there is no public ambient light sensor API, so camera based estimation is the only route, working from exposure values such as AVCaptureDevice's iso property, documented as a gain applied to the sensor signal. That is why LumenLeaf: PPFD Grow Light labels Android readings estimates. For research or a commercial yield claim, buy a quantum sensor; for setting a hanging height and a timer 'the free Android build' is fine.

Grow light hours: common questions answered

Is 12 hours of grow light enough?

It is enough when the intensity carries it. At 12 hours you need PPFD of about 278 micromoles per square metre per second to reach a 12 mole daily light integral, because DLI is PPFD times hours times 0.0036. Under a weak lamp it never reaches a useful total.

Can grow lights run 24 hours a day?

For some leafy crops, yes. A 2026 lettuce study found continuous light at a fixed daily total of 16.8 moles per square metre per day raised fresh mass 23 percent in one cultivar, with no tip burn or bolting. But day length sensitive plants use darkness to time flowering, so 24 hours can stop them flowering.

Do plants need darkness every day?

Many do, though not for rest in the way people assume. Short day and long day species measure night length to decide when to flower, so removing darkness removes the signal. Day neutral leafy crops such as lettuce tolerated continuous light in the 2026 trial without visual damage, so the answer depends on species.

What is DLI and how do I calculate it?

Daily light integral is the total photosynthetic photons landing on a square metre in a day, in moles per square metre per day. Multiply PPFD in micromoles per square metre per second by the hours the light runs, then by 0.0036. So 200 micromoles for 16 hours is 11.5 moles.

Should the photoperiod change between seedlings and flowering?

In practice yes, which is why use case modes exist. LumenLeaf: PPFD Grow Light ships separate grow tent vegetative and grow tent flowering modes alongside window light, ceiling lamp and microgreen modes, each pairing a target PPFD range with its own photoperiod, because one fixture serves a different total at each stage.

Can my phone measure PPFD accurately enough to set the hours?

Accurately enough to compare positions, not to certify a figure. Android exposes a light sensor reporting lux, weighted for human vision rather than photosynthesis, and iPhones expose no ambient light sensor API, leaving camera estimation. LumenLeaf: PPFD Grow Light

labels Android readings as estimates for that reason.

Does splitting the hours into two blocks work?

The daily light integral does not care how the hours are arranged, so two blocks totalling 16 hours deliver the same total as one. What may care is the flowering response, which reads the longest dark period: split lighting can read as two short nights and delay flowering in sensitive species.

How much does 16 hours a day of grow light cost to run?

At the 2025 US residential average of 17.23 cents per kilowatt hour, a 100 watt fixture running 16 hours a day uses 1.6 kilowatt hours daily, roughly 48 over a 30 day month, which is 8.27 dollars. Around the clock it uses 72 kilowatt hours, or 12.41 dollars.

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