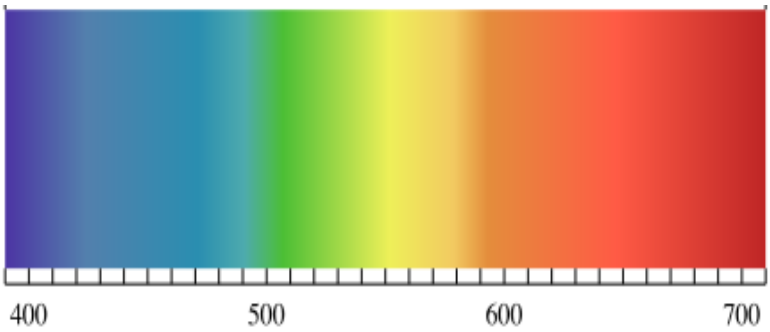
Guide to Choosing a Grow Light

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Seedlings need light for healthy growth. A sunny windowsill seldom provides vegetable crops with enough direct sunlight to produce strong seedlings. Unless you are starting seedlings outdoors in a greenhouse, you will most likely need to provide supplemental lighting in the form of grow lights. Manufacturers of grow lights typically provide information about the “color temperature” and lumen output of the lamp in question. To comparison shop and select a unit suitable for your needs, it can be helpful to understand these terms as well as the basics of light and photosynthesis.

COLOR & COLOR TEMPERATURE

Light is electromagnetic energy measured in wavelengths. The color of visible light varies with wavelength and ranges from blue, green, and yellow, to red. Plants primarily absorb red and blue light for photosynthesis.



Visible Light Spectrum. Wavelengths in nm.

Color temperature (also called correlated color temperature) describes the color of the light produced by kthe grow light. It is measured in Kelvin (K) on a scale from 1,000 (warm/red) – 10,000 (cool/blue). For the curious, the following link shows the relationship between color temperature and wavelength: https://rechneronline.de/spectrum/

Why is the color temperature of a grow light important? Color affects plant growth in different ways. Blue light is necessary for vegetative growth while red light is needed to promote flowering and fruit production. The color temperature of a grow light helps you understand if the overall output of the grow light trends towards blue or red.

In addition to color temperature, some manufacturers also provide a spectral power distribution (SPD) graph, which shows how much light of each color the grow light produces. Since most grow lights do not produce equal amounts of each color, an SPD can give you a more detailed picture of the color output than color temperature alone. The following tool shows SPD curves for several makes/models of grow lights: https://research.ng-london.org.uk/scientific/spd/?page=spd&ids=55

Many grow lights are labeled as "full spectrum," meaning they emit light across the full-color spectrum, including not only blue and/or red light, but also enough green light for the overall output to look like natural light to the human eye. While plants primarily use blue and red light, research suggests that some species perform best with full spectrum light. Therefore, it can be helpful to choose a full spectrum light.

As a general recommendation, choose a full spectrum grow light with a color temperature in the blue range (5,000 - 7,000K) to promote vegetative growth and choose a color temperature in the red range (3,500 - 4,500K) to promote fruiting and flowering.

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LUMENS
Lumens are a measure of the total quantity of visible light emitted from the grow light. Grow lights producing more lumens look brighter and grow lights producing fewer lumens look dimmer. Lumens are ***not***, however, an absolute measure of the overall power of the grow light. This is because the lumen measurement is weighted according to a model of the human eye's sensitivity to various light wavelengths. This means that yellow light, which humans see best, is weighted higher than blue or red light. Use caution when interpreting lumen levels for grow lights. A grow light that has a high lumen output but primarily produces lots of yellow light will not be very useful to plants, because plants require primarily blue and red light for photosynthesis.

Manufacturers may provide two types of lumen measurements for a grow light. Initial lumens (also called initial light output) indicate the output of the light before it has begun to age and lose operational efficiency. Mean lumens (also sometimes called design lumens) provides a measurement of the average output of the light over the duration of the rated life of the grow light.

As a general recommendation, use lumen output in combination with color temperature and consider it a metric for comparing the relative output of different grow lights.

WATTAGE
What about Watts? Watts are a measurement of power consumption but are not necessarily indicative of either light output or light color. High-efficiency lights will emit more light per watt of power used than less efficient lights. Wattage is primarily relevant in determining the cost of operating the light and the compatibility between the grow light and your power source.

HOW MANY LIGHTS?
How many lights do you need? This depends primarily on the size of the growing surface you need to illuminate. Your plants will tell you if your lights are strong enough; weak, leggy plants indicate a need for more light. Most lights should be hung only a few inches from the plants. For the lights we sell at the source supplier, we recommend that the fixture be kept 3-6” from the plant canopy. Be sure to purchase a large enough light (or set of lights) to adequately cover your growing area when the lights are hung at this distance.

HOW LONG SHOULD LIGHTS BE ON?
Vegetables typically need 14 hours of light per day.

Tell us what you think!

We would love your feedback about this information! Please take 1 minute to answer 3 short questions to share your thoughts!

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