

If you plan to build a grow-light setup, first determine how many lamps you'll need. It's easiest to figure in watts per square foot. For example, using two standard 20-watt bulbs 24 inches long, you'll need a tray that's 1 x 2 feet in size to get 20 watts of light per square foot. In the same way, you will need four bulbs for an area that's 2 x 2 feet for 20 watts per square foot.

Depending on what you're planning to grow under your lights, you can get by with less than 20 watts of light per square foot. Foliage plants do well in ten to 15 watts, but blooming plants need all 20. Cactus, other succulents, and orchids need much more than 20 watts per square foot--even up to 30. Naturally, plants placed directly under lamps receive more light than those along the edge of the trays.

There's one more condition to take into consideration when building a grow-light. That's distance from the light, measured in foot-candles. Don't be scared by the technical term. You probably won't use it unless you become a real grow-light specialist. Foot-candles are measured by a foot-candle meter. Light follows an inverse-square law of diminishing brightness, which means that when you double the distance from a light source, you reduce intensity to one-fourth. For example, if you moved a plant that should be six inches from the light to 12 inches, you'd be reducing the light to one-fourth (not one-half) the light it used to get.

Foliage plants should be placed no farther than 15 inches from the light; flowering plants, no more than ten inches. You can help increase light intensity by using reflectors. Using perlite in the bottom of the plant tray helps, too, as perlite is highly reflective.

If you decide to design a unit using incandescent bulbs, you may have problems caused by heat. Incandescents heat up (unlike fluorescents), so most should be kept about two feet above plants to lessen the chances of burning the foliage. Experiment with different light levels to see where you get the most intense light without burning the plants. Incandescents are most efficient when used to spotlight a few favorites; you'll have best luck with the hardier foliage plants. By moving plants around under the lights, you'll have success with flowering specimens, too.