

## Grow Lights FAQ

The purpose of this FAQ is to help limit the spread of misinformation regarding effective artificial lighting systems, and help those who choose to grow plants under artificial lighting make an informed decision before buying a lamp. Most of the information contained in this FAQ comes from printed sources, and some from electronically distributed files. Very little comes from my own experience, as I have not owned, used or examined most of the systems discussed here. This FAQ is not going to tell you how to use your lamp, that information can be found in most grower's guides.

### Introduction:

There are three major types of lighting systems available right now: incandescent, fluorescent, and high intensity discharge. Incandescent lights are horribly inefficient (especially the screw-in grow bulb type) and really not an acceptable option for plant growth. Although they are inexpensive to purchase, their cost of operation makes them the costliest source of light.

### Florescents:

Until the early 1980's most indoor growers used fluorescent lights to illuminate their garden. These tubes have tremendous advantages over incandescents. They emit about 3 times as much light as an incandescent (given the same wattage), and the light spectrum is one that plants can use more effectively. However, they do certainly have their limitations. Light is emitted over a large area, so it is not concentrated. Because of this, the lights have to be hung very close to the plants, and constantly moved to accommodate plant growth. This makes garden maintenance rather difficult. Florescents are, however, very useful in cloning, and starting seedlings. Because in these stages, a plant is not growing vertically very quickly, the disadvantages of moving the lights are reduced. They also put out a more gentle light than the HID lamps, and release less heat. If you choose to use florescents, it is best to purchase the 'cool white' variety. The ones that are sold as grow lamps (including grow-lux, vitalite, etc.) are much less efficient than a standard fluorescent, and just do not put out enough light to be useful. The slightly different spectrum produced by these lamps does nothing for most plants.

### High Intensity Discharge Lamps (HID's)

High intensity discharge lamps are easier to use, and more efficient. Low wattage HID's are sometimes sold for household outdoor use. Large Wattage lamps are used for lighting streets, parking lots, stadiums and other large areas. They come in two basic flavors:

METAL HALIDES or MH lamps emit a white light that looks slightly bluish. They are used to light stadiums, convention centers, gymnasiums, and other large areas where a natural looking light is desired.

HIGH PRESSURE SODIUM or HPS lamps emit a pink or amber light. They are used for lighting parking lots and other areas where the color of the light is not important. HPS units are much more efficient than MH ones, producing more light and less heat per watt of energy consumed. They are often used alone with no detrimental effect on the plants, and will promote faster plant growth than MH lamps during both vegetative growth and flowering. Combinations of bulbs are NOT required, as the HPS lamp does produce all of the light spectrums necessary for healthy growth. MH lamps are available in 175, 200, 400 and 1000 watt sizes. HPS lamps come in 50, 75, 150, 400 and 1000 watt sizes. Each lamp requires its own ballast, which comes with the fixtures that are designed to use these lamps, and are also available separately.

The following chart shows how much light each lamp emits, and the area that it covers adequately:

### Lamp # of Lumens Sq. Ft 4'FL

(CoolWhite-40W) 2,960 1-2  
 8'FL (CoolWhite-75W) 5,800 2-4  
 MH 175W 14,000 5-10  
 MH 400W 40,000 12-20  
 HPS 70W 7,600 3-6  
 HPS 150W 16,000 6-11  
 HPS 400W 50,000 15-30

Gardens should receive 1000-3000 lumens per square foot. Successful gardens usually are lit at around 2,000 lumens per square foot. During the vegetative stage, plants stretch out when they receive low levels of light. During flowering, the flowers are looser and sparse. So what is the best lamp for growing? It depends on your budget. HPS lamps are by far the best overall, but they are also the most costly to purchase and setup (although some less honest growers have a tendency to steal them from college campuses and the like). However, they are the cheapest to operate, and the utility savings does eventually add up. A quick warning: At least in the US, there are large government agencies whose only

purpose is to eliminate the growth of marijuana. Although purchasing a high powered lighting system does not mean that you will be growing pot (and many people grow other things artificially), it is still not a really good idea to link your name with the purchase of one of these lamps (especially the larger ones). 1) Order online with someone else's credit card (person with no record, like Granny), and have the items delivered to a squeaky clean house. Wait a while before picking the stuff up. 2) Or go into the store knowing exactly what you want, pay for it in cash, and do not give them your name (or give them a false one if they even ask). Most lighting distributors will not ask any questions.