

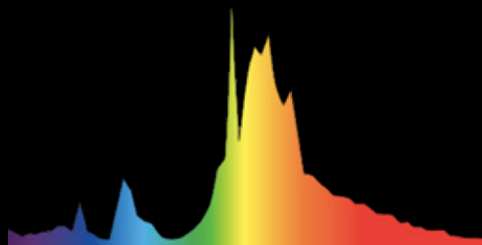
The History of Spectrum

From Stolen Street Lamps
to Programmable LEDs

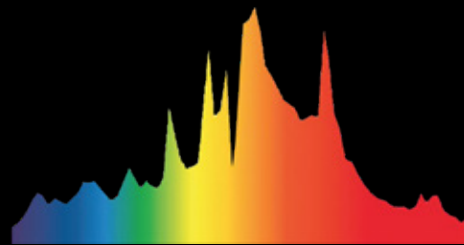


Stolen Street Lamps

Back in the days of basement grows, it was common for growers to use stolen street lamps or purchase outdoor lighting. These were often 600w HPS, which led to the HPS being the dominant grow light for decades.



An HPS spectrum is warm, which drives growth very well as red is efficiently absorbed by plants. However it lacks blue, which can result in leggy, stretched out plants compared to LED.



CMH bulbs were the next upgrade, as they had a fuller spectrum that offered better development. Cultivators looking for a high class finish would start with CMH, flower with HPS and then finish with a 10K blue-white light.

Rotating bulbs to mimic seasons is simple in basements, but can be a hassle in larger facilities.



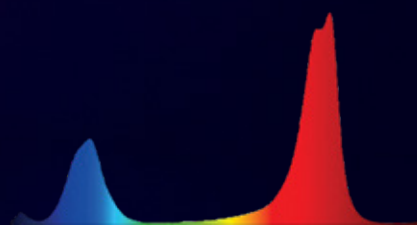
Early LEDs were a Let Down

Underperforming, unreliable,
and unlikely to succeed.



Photosynthetic Efficiency

This shows how efficiently plants absorb the different wavelengths of light. This can be misleading, as it leaves out other colors that trigger chemical responses in plants. Plants grown under blurple lighting tend to be more bland.



'Blurple' LED

'Blurple' is highly efficient and was designed to produce light in the wavelengths plants most efficiently absorb. However it lacks a full range that fully develops plants, but is fine for things like microgreens or supplemental lighting in greenhouses.

Empty Claims Bred Distrust

**2,100
uMole**

Average HPS Brightness

A standard HPS puts out 2,100 uMole when it has a fresh bulb. This quickly declines over the first few months.

**1:1
Replacement**

Early LED Claims

Early LED manufacturers often claimed that a 600w LED was 'equivalent to' or a 'direct replacement for' a 1,000w HPS. This was woefully inaccurate and left cultivators with lasting distrust.

**1,600
uMole**

Early LED Brightness

Most early LEDs were only around 1,600 uMole. This led to severe disappointment when cultivators took down their HPS and put in these, though now most large LEDs produce at least 2,000+ uMole.

Full Spectrum: A Step in the Right Direction

But it's not quite there yet.

Full Spectrum does better than blurple and HPS, but has a few notable problems.

Photosynthetic Efficiency Full Spectrum



‘Full Spectrum’, much like florescent, contains very little of the wavelengths most efficiently absorbed by plants. These lights often compensate by being extremely bright, which drives up electricity costs.

In addition, they have a somewhat low blue content, a color necessary for stimulating terpene, cannabinoid, and color content.



Programmable Spectrum: A Long Term Solution

Never outdated. Always innovative. Ultimately flexible and incredibly long lasting. Programmable spectrum LEDs are gaining popularity in both large scale and craft scale grows for their unique abilities.

BLUE LIGHT

- Denser Plants
- More Terpenes
- Purpler Buds
- Higher THC

FULL SPECTRUM

- Robust flavor
- Better Development

RED LIGHT

- Fastest Growth
- Large Leaves
- Taller Plants
- Trigger Flowering

