

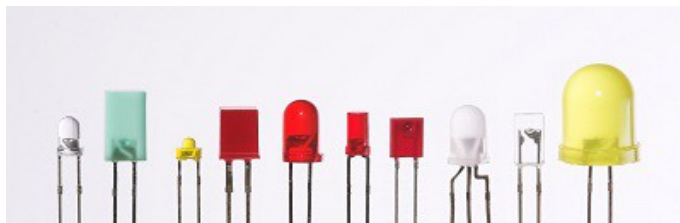
# Growing with LED light



[www.dutch-headshop.com](http://www.dutch-headshop.com)

## Intro

LED means Light Emitting Diode. A LED is an electronic component emitting light when electrical current passes through.



## How it started, the history of LED up to the present

The LED was discovered in the twenties by a Russian scientist. He discovered that diodes are emitting light and applied for a patent on this. However, it took until 1962 for the LED to be further developed. That year the first functioning LED was produced. It was only until the nineties that the LED really became better and brighter. Then it also became affordable and warning lights and small light bulbs were replaced by LED.

Around the year 2000 we've seen developments with high-bright LED's; these LED's are just as good as the light bulb as regards brightness. Since 2006 also blue LED light has been developed and this made RGB color mixing possible.

## Applications

Obviously LED is used in all sorts of consumer electronics, e.g. in cars, but currently LED is also used in horticulture. Because plants do not use the full light spectrum for photosynthesis, energy can be saved by only offering the used light frequencies. LED light is used as an additional intermediate light, but multilayer arrangements, with just LED light, are also used.

## The marijuana plant and LED light

The oldest tests of marijuana plants under LED light we could find, date back to 2006. These tests still saw many problems. Young plants grew long and thin and were looking for light. And when the growing stage was well on its way, the cannabis plants did not flower. Only since 2009 successful tests were performed with LED light. However, still some LED tests failed, also because of the many LED suppliers selling cheap LED lights with incorrect specifications. Dutch-Headshop only sells qualified products having been independently tested by experienced growers on the forum of wiet-zaden.nl.

## The techniques and the colors

As said before, a LED light is a light emitting diode. Due to the use of various types of raw materials, LEDs of different colors can be produced. The colors needed in particular by a cannabis plant are blue for growing and red for flowering. The blue spectrum is found between 440 nm and 470 nm, the red spectrum between 600 nm and 660 nm. In order to reach this full spectrum, Dutch Headshop has a LED with 7 different types of LEDs, so also 7 different colors.

### **The benefits:**

- Low energy consumption
- Less emission of heat
- Long life
- No wear and tear
- Shockproof
- Safe to use

### **Testing**

Because Dutch Headshop doesn't want to sell poor products, these LED lights have first been tested by experienced (amateur) growers. The test results can be found on the forum of wiet-zaden.nl.

### **Conclusion**

Although LED lights have been around for a very long time, it was only until 2005 that successful tests have been performed in

agriculture and the cannabis industry. Not all tests have been successful; in particular we have seen many amateur tests with LED where the cannabis plant did not flower. Only since 2009 high-quality LED lights are available with the correct spectrum.

LED lights can successfully help plants to flourish and grow. The yield with LED is, on average, lower than with HPS. However, one can achieve good results and LED lamps are suitable for home use. The advantages of the LED lamp include: efficient energy usage, safety and durability.

