

LED Grow Light

By NOVETE® LED Lighting

What is growth lights

Grow light, also known as plant light is an artificial light source that stimulate plant growth by emitting an electromagnetic spectrum appropriate for photosynthesis. It provides a light spectrum either similar to that of the sunray, or a spectrum that is customized to the needs of the plants being cultivated.

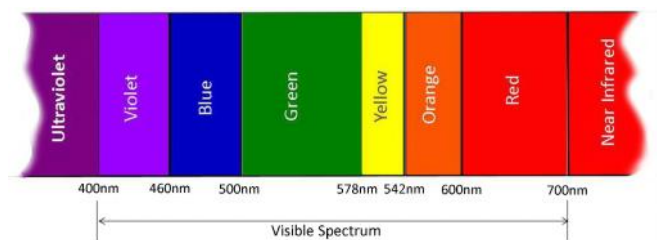
They are commonly used for horticulture, indoor gardening, plant propagation and food production, including indoor hydroponics and aquatic plants. Whereas, outdoor plant lights are mimicked with various colour temperatures, spectral output and light intensity output (lumen) depending on the type of plant and its stage of cultivation.

How it works

Grow lights provide a light similar to sunray that its visible light spectrum could promote photosynthesis for indoor and outdoor plants throughout the vegetative and reproductive growth stages. In some cases, it may be customized to a specific spectrum to mimic varying color temperature and spectral outputs according to the needs of plants being cultivated.

The photoperiod required by the plants, specific ranges of spectrum, luminous efficacy and colour temperature are desirable for use with specific plants and time periods. Growth lights could be mimicked various colour temperatures and spectral outputs as well as lumen output (intensity) for plants during the stages of cultivation, which include the germination and vegetative phase or the flowering and fruiting phase.

The initial vegetative stage requires a blue spectrum of light, whereas the later "flowering" stage is usually promoted with red-orange spectra. Therefore, various light level may be specified by the horticulturist as the plants use the photosynthetically active portion of the visible light spectrum throughout both vegetative and reproductive growth stages are varied.



The lighting levels in a horticultural lighting system are quantified as amount of radiation in the wavelength range from 400 to 700 nm, or photosynthetically active radiation (PAR). It can be expressed in units of energy flux (W/m^2) or photon flux ($mol\ m^{-2}s^{-1}$). It determines which lighting is most appropriate for optimum growth.

Artificial light must mimic the natural light to which the plant is best adapted. If a plant does not get enough light, it will not grow. In addition, many plants also require both dark and light periods (which is also known as photoperiodism) to trigger flowering. Therefore, lights may be turned on or off at set times. The optimum photo/dark period ratio depends on the species and variety of plant, as some prefer long days and short nights and others prefer the opposite or intermediate "day lengths".

The traditional growth lights

Traditional growth lights are mostly using bulbs, such as high intensity discharge lamp, fluorescent lamps. These light sources would essentially require ballasts to excite the lights with specific wavelength and produce a great deal of heat. Thus, they may not be generally corresponding to specific requirements of various vegetative stages of plants.

Metal halide lamps is characteristically yield blue spectrum and ultraviolet light. Blue spectrum light could trigger greater vegetative response thus suitable for vegetative and reproductive growth stages of plants.

High-pressure sodium lights are preferred supplement greenhouse light for the reproductive phase of growth as it has a reddish spectrum. However, it may not appear healthy by using HPS growth light due to its poor color rendering that causes the plants look pale, washed out or nitrogen starved.

HPS and MH combination lights being made as one of the solution attempted to provide a wide spectrum of a luminaire before LED growth lights being introduced as an alternative. It combines the red spectrum of high pressure sodium lamp and blue spectrum of metal halide lamp in a single lighting fixture. Theoretically, this may however promote photosynthesis for propagating and growing of the plants throughout the entire life cycle from vegetative growth through flowering.

Fluorescent lights are available in color temperatures ranging from 2700 K to 10,000 Kelvin. Tubular fluorescent lamps are usually used for indoor vegetables and herbs growing or for starting seedlings to get a jump start on spring plantings. Whereas, compact fluorescent lamps may be used for propagation as well as larger plants growing. It works in a specially designed reflector casting directly towards the plants similar to HID lamps.

NOVETE® LED grow lights

LED growth lights were introduced to the market as an alternative to the traditional growth during this decade attributed by the advancement of technology. The high color rendering LED grow light could provide a wide range of visible wavelength from 400 to 700nm. In term of relative intensity, the latest luminous efficacy had been developed as high as 126 lumen per watt. thus, it is in all respect compatible to fluorescent and high intensity discharge lamps.

Generally, LED grow light is operating at around 45 to 60 degrees celsius that surmounting the technical deficiency of HID lamps and fluorescent. Moreover, it could be featuring switchable, convertible and two-way functions for propagating and vegetatively growing plants growth.

NOVETE® 6630-H series is high intensity LED grow light designed in elongated shape with standard length of 0.6 and 1.0 meter. The sturdy body structure is made of high grade aluminum material anodized in silver color. The luminaire is IP65 compliant which is also resistance to dust and corrosion.



G6630 Full Spectrum LED Grow Light



G8055 Modular High Intensity LED Grow Light



Deep blue and deep red 6630H compact LED batten for indoor hydroponic vegetable plant with good harvesting

Picture on left exhibits the indoor hydroponic vegetable plant using 6630H compact batten. Light source of the luminaire is deep blue mixed with deep red SMD module complete with built-in driver. It was customized in accordance with the horticulturist's designated spectrum promoting the photosynthesis for plants throughout the vegetative and reproductive growth stages.



Propagation process of plant and vegetable by 6630H white color grow light 2

