LED Lighting

What are the advantages of LED lighting? A few of the advantages are:

* They have a long-life span. Some LED lights have a guarantee 20 year life.
* The are 100% mercury free
* Light weight and shatter resistant because they are plastic instead of glass.
* The out put of light is consistent throughout the bulb
* Low heat emission and low energy consumption
* Resistant to high humidity
* Do not hum

Blue Spectrum

Blue light is a specific light wavelength that is needed by plants for photosynthesis and growth and is ideal for use on seedlings and young plants. Blue LEDs are far more efficient than they were a few years ago and are useful in grow light systems in combination with other light wavelengths. Plants that benefit the most from blue light are green, leafy plants that don't bloom, such as salad vegetables and leafy houseplants.

White Light for Plants

White LEDs are also available, but they are just blue LEDs with a phosphor coating to make them look white, and they are less efficient than single-wave blue LEDs. White light that is provided by fluorescent bulbs is a broad-spectrum light that incorporates different colors that are useful for plants. This is why an ordinary fluorescent light is one of the best lights to use for grow lights. By contrast, white LEDs do not provide a broad-spectrum light.

Red Light Spectrum

Red light is needed by plants to induce flowering and fruiting. Houseplants that are grown for their blooms, such as African violets (Saintpaulia spp.) and begonias (Rieger begonias), or fruiting plants such as tomatoes (Lycopersicon spp.) or peppers (Capsicum spp.) must have red light. However, these plants also need a certain amount of supplemental blue light as well to stimulate healthy growth. These plants would not perform as expected if grown under solely blue or white LEDs.

The Best Light for Indoor Plants

Most plants use a combination of red and blue light, so the best light for indoor plants of all types combines a broad-spectrum light that includes red and blue light. Different plants respond to different ratios of red and blue light at different phases of their development. Studies done by NASA showed that salad crops such as lettuce (Lactuca sativa) and radishes (Raphanus sativus) and other plants that were grown under red light or blue light alone did not grow as well and were more susceptible to disease than those that grew in a combination of red and blue light.

 Sources

 IGS makes stands specifically for African Violets. Professional light stands have a lot in their favor. The light fixtures have a wider separation between the bulbs so that the distribution of light is more even. The light bulbs used are high quality wide spectrum bulbs. The displays come with removable permanest trays. They do have plastic covers that can be purchased to cover the whole stand. This adds humidity in areas that are very low in humidity. The only drawback. They are very expensive!!

Many light stands are home made. If you are going to make your own stand rule of thumb is that the shelves for standards should be between 10” to 12” from the top of the plant to the light source. For minis the separation should be 8” to 10”. To keep the light consistent fixtures should be on a timer. LED lights can now be found everywhere. Generally LED lights put out a lot of light so I recommend they only be on for about 8 hours a day.

Probably the most common homemade set up is the wire stand with 48” fluorescent fixtures. Lowes has them for around $75.00. I like a T8 shop light fixture that Lowes sells, where the bulbs are slightly separated and it is about $18.00, utiltech 0420867. The fixtures come with metal hangers or you can use twist ties. You can buy plastic shelf liners from Amazon, Seville classic shelf liners.

Carol McBryde purchased her T8 LED bulbs from Home Depot. They are Phillips 48-inch cool white bulbs. She used them in IGS and Home Depot fixture. <https://www.homedepot.com/p/Philips-32-Watt-Equivalent-4ft-T8-Linear-LED-Light-Bulb-Cool-White-4100K-10-Pack-472902/303303149>. Produces light for up to 50,000 hours.

 Carol Hixenbaugh purchased her LED lights from Amazon. [https://www.amazon.com/gp/product/B0784V6VFL/ref=ppx\_od\_dt\_b\_asin\_title\_o00\_s00?](https://www.amazon.com/gp/product/B0784V6VFL/ref%3Dppx_od_dt_b_asin_title_o00_s00?ie=UTF8&psc=1)

[ref=sr\_1\_1?keywords=30+pack+warm+white+led+floesent&qid=1547911808&s=Home+Improvement&sr=1-1-spell](https://www.amazon.com/Warm-White-AC120-277V-existing-ballast-one-end/dp/B077SKM1YP/ref%3Dsr_1_1?keywords=30+pack+warm+white+led+floesent&qid=1547911808&s=Home+Improvement&sr=1-1-spell). She She ordered 30 of the cool and 30 of the warm.  Joann, Linda and Nancy have all used them. They have 50,000-hour life span. Suitable for use in existing fixtures with the existing ballast.

Patrick and Taf use Lights Of America Led Undercabinet Fixture. They use for each shelf 2x 24inch at 1100 lumens and 2x 18inch at 800 lumens. They purchased them from Walmart. <https://www.walmart.com/ip/Lights-Of-America-24-Led-Undercabinet-Fixture/752714752>.

Cathy Carter has Honeywell LED 4' Linkable Multi-Mode Shop Lights <https://www.samsclub.com/sams/honeywell-4ft-led-multi-mode-shop-light/prod22050808.ip?xid=pdp_carousel_people-who-viewed-this-item-also-viewed_2>. The fixture has three light settings, 1500, 3000 or 5000 lm. It is also guaranteed for 50,000 hours.

Bobbi has several LED lighting systems at her house

* Sylvania LED RGBW Color Changing Strip Lights RGBW Mosaic Flexible Starter Kit with Remote Control, 2-Feet LED Light Strips [https://www.amazon.com/Sylvania-Changing-Flexible-Starter-Control/dp/B008COVFUA/ref=sr\_1\_4?ie=UTF8&qid=1547839858&sr=8-4&keywords=mosaic+flex+light](https://www.amazon.com/Sylvania-Changing-Flexible-Starter-Control/dp/B008COVFUA/ref%3Dsr_1_4?ie=UTF8&qid=1547839858&sr=8-4&keywords=mosaic+flex+light). Changes up to 15 colors (including White) or one pre-set color, using a remote control. The strip can conform to all corners and surface for easy installation with the added ability to sync with sharp turns in your home. The strip comes with two-year limited warranty
* Home Depot 4 ft. 19-Watt White Integrated LED Shop Light [https://www.homedepot.com/p/Commercial-Electric-4-ft-19-Watt-White-Integrated-LED-Shop-Light-SHOP-4X1-840-HD/306380608 Has the standard 50,000](https://www.homedepot.com/p/Commercial-Electric-4-ft-19-Watt-White-Integrated-LED-Shop-Light-SHOP-4X1-840-HD/306380608%20Has%20the%20standard%2050%2C000) hour life span. Uses only 19-Watts, produces 1850 lumens, & is Energy Star Listed
* Feit fixture full spectrum LED. [https://www.homedepot.com/p/Feit-Electric-2-ft-2-Light-19-Watt-White-LED-Full-Spectrum-Linkable-Plant-Grow-Light-Fixture-Case-of-4-GLP24FS-19W-LED-4/303126164?cm\_mmc=Shopping%7CG%7CBase%7CD27L%7CMulti%7CNA%7CPLA%7CExteriorLighting%7C71700000038718130%7C58700004245149811%7C92700035277638889&gclid=CjwKCAiAsoviBRAoEiwATm8OYPOXxUdAWmZZZQnqZiixuy9N43YQO2pdc2SfIiE5x3xJ6uYtsfPzqBoCUS4QAvD\_BwE&gclsrc=aw.ds](https://www.homedepot.com/p/Feit-Electric-2-ft-2-Light-19-Watt-White-LED-Full-Spectrum-Linkable-Plant-Grow-Light-Fixture-Case-of-4-GLP24FS-19W-LED-4/303126164?cm_mmc=Shopping|G|Base|D27L|Multi|NA|PLA|ExteriorLighting|71700000038718130|58700004245149811|92700035277638889&gclid=CjwKCAiAsoviBRAoEiwATm8OYPOXxUdAWmZZZQnqZiixuy9N43YQO2pdc2SfIiE5x3xJ6uYtsfPzqBoCUS4QAvD_BwE&gclsrc=aw.ds). 2 ft. 2-Light 19-Watt White LED Full Spectrum Linkable Plant Grow Light Fixture, full spectrum LED grow lights for year-round vegetation & budding. Grow light system can link up to 8 of the same fixtures together

Sharon has Hyperikon crystal white glow [https://www.amazon.com/s/ref=nb\_sb\_ss\_c\_1\_7?url=search-alias%3Daps&field-keywords=hyperikon+led+bulbs&sprefix=Hyperik%2Caps%2C172&crid=3CD06X3Q8IT36](https://www.amazon.com/s/ref%3Dnb_sb_ss_c_1_7?url=search-alias=aps&field-keywords=hyperikon+led+bulbs&sprefix=Hyperik,aps,172&crid=3CD06X3Q8IT36). Combined with GrowLED Thinklux LED T8 - LED Grow Light Tube. [https://www.amazon.com/GrowLED-Thinklux-LED-Hydroponic-Greenhouse/dp/B01J0DE4ZE/ref=sr\_1\_fkmr0\_1?ie=UTF8&qid=1547932171&sr=8-1-fkmr0&keywords=Thinklux+48%E2%80%9D+led+plant+lights](https://www.amazon.com/GrowLED-Thinklux-LED-Hydroponic-Greenhouse/dp/B01J0DE4ZE/ref%3Dsr_1_fkmr0_1?ie=UTF8&qid=1547932171&sr=8-1-fkmr0&keywords=Thinklux+48”+led+plant+lights).

Check out the internet as well you are only limited by your imagination.

When trying new types of lights, it can be difficult to compare the light output. To compare, there many free light meter apps on the phone. They may not be 100% accurate compared to expensive light meters, but would be good enough to compare lights on shelves. Light meters measure lux. The lux needed for African violets is 1200-1600.