

# Growing African Violets with LED Light

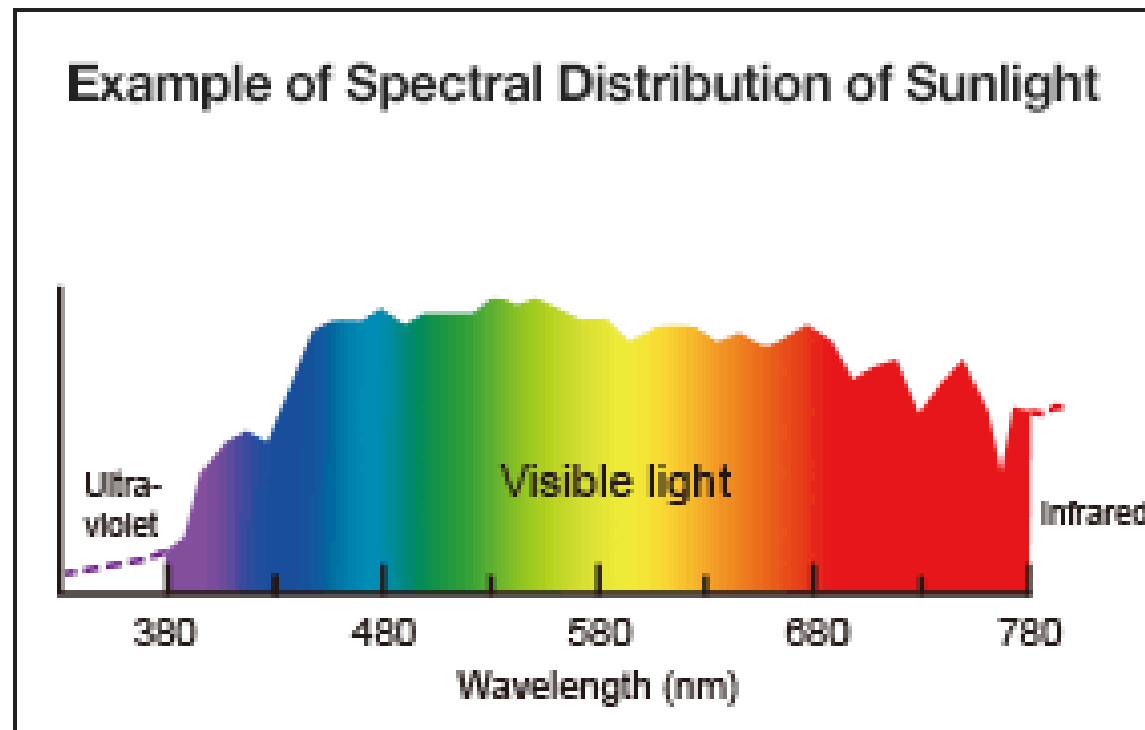
## Lighting for African Violets

- Considered an Indirect Sunlight Plant
- Medium to Low Level Indirect Sunlight
- 500 to 1000 Foot-Candles (5400 to 10,800 LUX)
- Typically 10 to 16 Hours per day.

Fortunately African Violets are considered one of the best flowering plants for growing under artificial lights.

# Artificial Light Sources

When using an artificial light source (incandescent, fluorescent or LED) not only is the intensity of the light on the plant important but also the spectral quality of the light. The goal is to provide spectrum of light that is as close to indirect sunlight as possible. Of particular importance are the frequencies of 400nm to 700nm as shown below.



**400-520nm**

This range includes violet, blue, and green bands. Peak absorption by chlorophyll occurs, and a strong influence on photosynthesis. (promotes vegetative growth)

**520-610nm**

This range includes the green, yellow, and orange bands and absorbed little by plants.

**610-720nm**

This is the red band. Large amount of absorption by chlorophyll occurs, and most significant influence on photosynthesis. (promote flowering and budding)

# Various Light Sources for African Violets

## Fluorescent

- Widely used with Good Success
- Somewhat Inconsistent in Light Quality
- Lots of Options
- Light output degrades over time – Life Span of 10,000 to 20,000 Hours

## Incandescent

- Good Light Quality
- Too Much Heat

## LED

- Cost Effective
- LEDs can be tailored to specific color spectral outputs to produce better yields
- High Output and Low Heat
- Energy Efficient
- Long Life Span +50,000 Hours
- Many Options Available

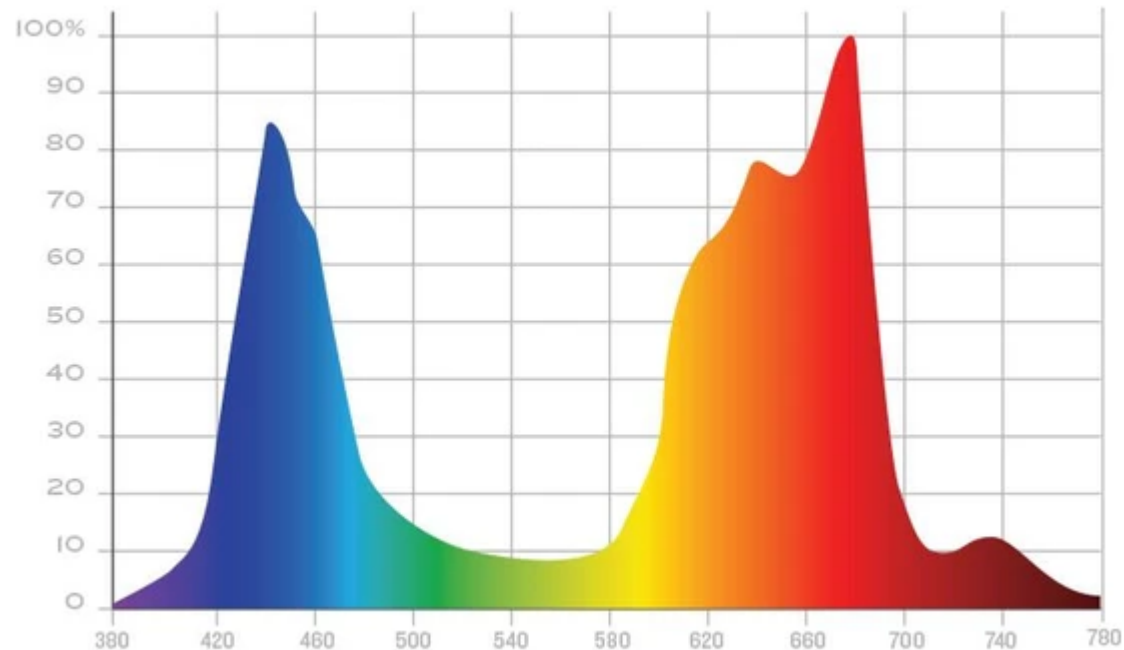
# Lighting Considerations

Problems that can occur when considering lights for plants.

- Not enough Quantity
  - Low or Slow Growth
  - Have reduced pigmentation
  - Begin shade-avoidance response
- Low Quality of the Light Spectrum
  - Physiological - Physical form and external structure, length of stems, smaller than normal leaves, pale stems and foliage.
  - When compared to a healthy plant



# LED Grow Lights



Typical Light Spectrum of LED Grow Lights

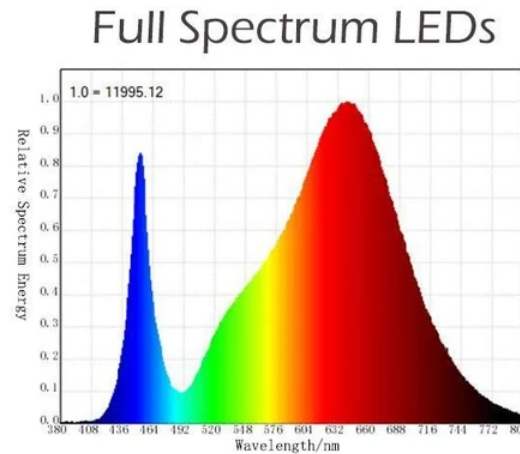
LED grow lights provide a full spectrum of light designed to mimic natural light, providing plants a balanced spectrum of red, blue. The spectrum used varies.

Grow lights are specifically intended to support plant growth, although with varying degrees of success and energy efficiency. Some plants grow better when given more of a certain color light, due to the mechanism of photosynthesis. Specifically more blue wavelengths enhance vegetative growth and development, while the addition of increasing amounts of red light enhances budding, flowering and fruiting.

# Full Spectrum LEDs



More effective  
than Red and  
Blue mixed light



Full-spectrum implies that the light produced emulates the quality of natural light. They deliver the bright, full-spectrum light plants crave, with an additional spike of blue light to stimulate stronger root growth, enhance photosynthesis, and ensure peak growth.

White LED grow lights are designed to emit similar amounts of red and blue light with the added green light to appear white.

# How is Light Measured

When choosing LEDs for growing plants, it is important to consider correlated color temperature (CCT) and color rendering index (CRI) of the LEDs.

## CCT (Correlated Color Temperature)

- CCT describes the warmth or coolness of a light source
- In degrees Kelvin
- Sunlight is Approximately 5700K
- LEDs for Growing Violets range from 4000K to 6500K

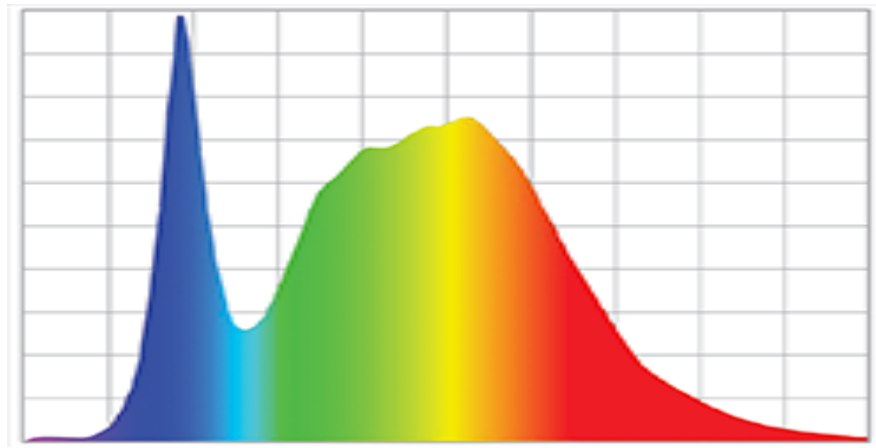
## CRI (Color Rendering Index)

- Ability of the Light Source to render frequencies in comparison to natural sunlight
- Sunlight has a CRI of 100
- The greater the CRI the better the color rendering and better plant growth

Quality LEDs offer high CRI with different CCT values suitable to the various cultivation needs. Based on the stage of cultivation, LEDs can be tailored to specific color spectral outputs to produce better yields.

# Some Recommendations in selecting LED lights for growing African Violets

2/4Ft. Tube  
9/18 Watts  
+5000 K  
+85 CRI  
6 to 8 inches from Plant



For growing plants, full spectrum LEDs with accurate rendering of colors is required because each spectrum initiates different responses from the plants.

White LED grow lights are designed to emit similar amounts of red and blue light with the added green light to appear white.



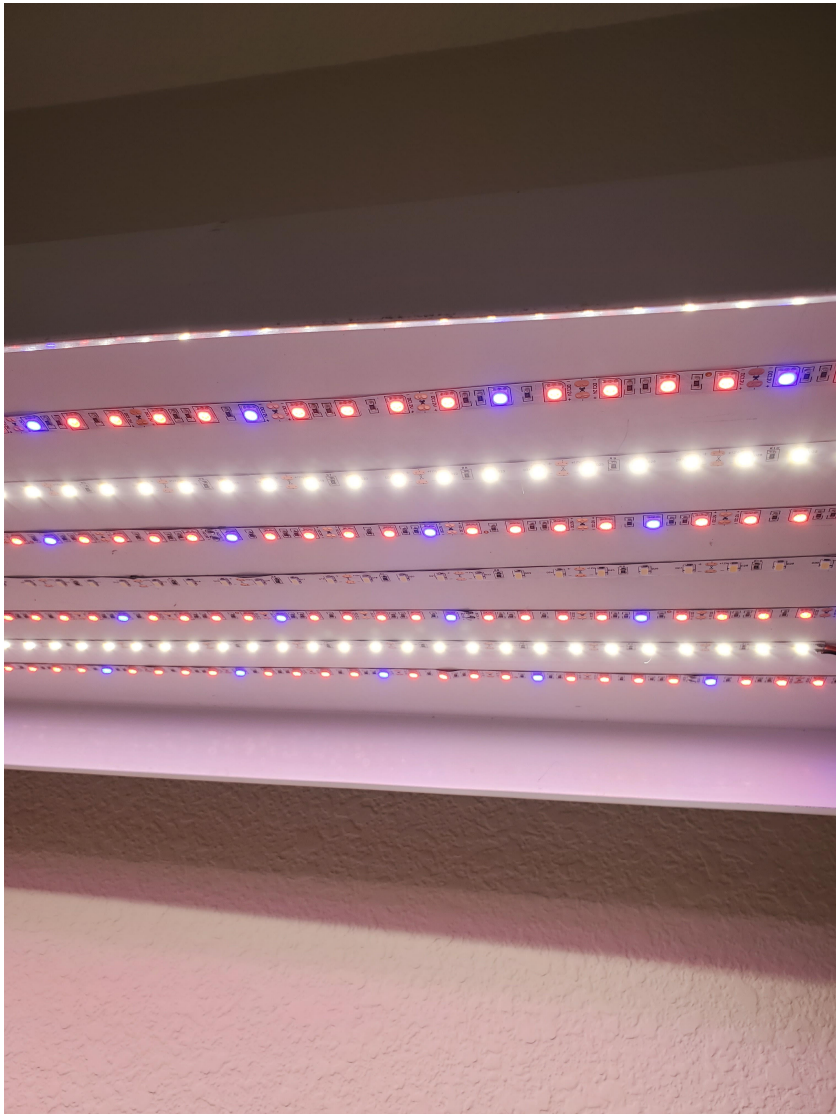
LED Grow Light 20W R:B:W=2:1:1  
5000 to 6500 Lux @ 8" to 9" - 10Hrs



Milang Skies

Very good depth of blossom color  
Good overlapping dark foliage





Custom Grow Light 77W Full Shelf  
Full Spectrum White Strip and Red  
Blue Strip R:B=4:1  
5000 to 6500 LUX @8" to 9" - 10Hrs



Milang Skies

Lighter Foliage and Blossom color



Full Spectrum LED plus LED Grow Light  
7000 to 8000 LUX @ 6" to 9" 10 Hrs



Blue Eyed Russian

Good Depth of Blossom Color  
Dark Green Foliage





Full Spectrum 24W LED Grow Light

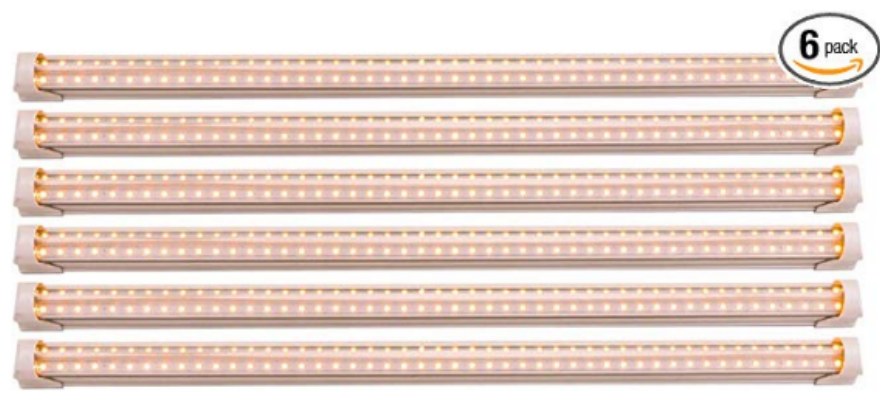


Blue Eyed Russian

Good depth of blossom color  
Bright green leaves



Back to results



# Monios-L T8 LED Grow Light 2FT, 144W(6×24W) High Output Plant Grow Light Strip, Full Spectrum Sunlight Replacement with High PAR for Indoor Plant, 6-Pack

by Monios-L  
★★★★★ 59 ratings | 32 answered questions  
**Amazon's Choice** for "full spectrum led grow light strip"

List Price: \$119.00  
Price: **\$64.99** ✓prime & FREE Returns  
You Save: \$54.01 (45%)  
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Get \$70 off instantly: Pay **\$0.00** ~~\$64.99~~ upon approval for the Amazon Prime Rewards Visa Card. No annual fee.

Size: **2FT**

<b>2FT</b>	<b>4FT</b>
<b>\$64.99</b>	<b>\$109.99</b>
✓prime	✓prime

- **【"V-shaped" Housing Design】** Professional T8 grow Light Strip has two rows of high-quality full spectrum LED chips. Compared with the grow light fixture with single row of chips, it has a wider beam angle and higher PAR value. Perfect for plant seedling, growth, flowering and bear fruit.
- **【Full Spectrum】** Monios-L LED grow light Strip is

**\$64.99**  
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# Active Grow T8/T12 High Output 4FT LED Grow Light Tube for Germination & Microgreens - 22 Watts - Sun White Full Spectrum (High CRI 95) - Direct Wire 120-277V - UL Marked - 4-Pack

by Active Grow  
★★★★★ 9 ratings | 9 answered questions

Price: \$122.95 ✓prime & FREE Returns

Get \$100 off instantly: Pay \$22.95 ~~\$122.95~~ upon approval for the Amazon Prime Store Card. No annual fee.

Size: 4 Foot

- 2 Foot
- 3 Foot
- 4 Foot

Color: Sun White Spectrum



- **INSTANT ENERGY SAVINGS** - Save more than 40% on your lighting and HVAC bill. Bypass the ballast and save even more energy while eliminating buzzing, flickering and longevity issues. **REQUIRES BYPASSING THE BALLAST INSTALLATION**
- **GROW LIKE A PRO** - Designed specifically for horticulture use with a 30% higher PPF (400-700nm) output than other T8 LED grow lamps at 41 µmol/sec
- **SUN WHITE FULL SPECTRUM** - Utilizes the latest phosphor chip technology to mimic natural sunlight conditions that are perfect for all stages of plant growth
- **GROW VERTICAL** - Low heat output make the T8 LED grow light suitable for use in commercial vertical farms or home grow racking systems
- **LONG LIFE & GUARANTEE** - Extra-long 30,000 hour lifetime & 1-year limited warranty. Seattle, Washington based company able to provide local support.

\$122.95  
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📍 Deliver to William - Fairview 75069

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TRUE COLOR



4-PACK



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# (4-Pack) Fulight Full-Spectrum LED Tube Light - T8 4FT 48" 18W (32W Equivalent), Daylight 6000K, F32T8, F34T12/WW, Double-End Powered, Frosted Cover - 95CRI

by Fulight  
★★★★☆ 9 ratings | 9 answered questions

Price: \$69.98 & FREE Shipping

Style: Daylight / 6000K

Warm White / 3000K  
\$69.98

Cool White / 4000K  
\$69.98

Daylight / 6000K  
\$69.98

- \*\*\*Please DON'T buy if you don't expect to modify your light fixture\*\*\*: MUST be directly wired to the 120V AC Power! Please disconnect Ballast (& Starter if there is any) before plugging in the bulb. Installation Manual is attached as the 2nd photo at the left upper corner of this product page!
- TRUTH + HEALTH: Best Daylight White 6000K with 95CRI provides color-correct and most joyful lighting! (Non-Dimmable)
- Significant Energy Saving: Roughly replaces 32-40W fluorescent, saving ~50% electricity.
- GREEN ECO FRIENDLY: No radio frequencies interference, No dazzling, no flickering, no UV light, no buzzing ballast, no mercury or hazardous materials
- Long life time: ~34 Years (+ 3-Year Warranty)

See more product details

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Sell on Amazon



## Advanced Full Spectrum T8 48" LED Bulb, Fluorescent Bulb Replacement, Sunlike Spectrum for Mood, Energy, Performance, Supplement to SAD Light, Near Perfect Natural Color

by Norb  
★★★★★ 6 ratings

Price: **\$79.99** & **FREE Shipping**. [Details](#) & [FREE Returns](#)

Size: **4 Pack**

<b>4 Pack</b> \$79.99	12 Pack \$224.99
--------------------------	---------------------

- **FULL SPECTRUM** Replace your fluorescent bulbs with energy-saving, sun-like spectrum LED lights.
  - **HAPPY** spectrum supports good mood and positive energy. Use as asset against winter blues (SAD).
  - **HIGH COLOR ACCURACY** Enjoy true colors under NorbSMILE, with a color rendering index (CRI) of 96.
  - **HYBRID TYPE T8 LIGHT**, 48 inch, 2-prong for 120V/60Hz circuits, AC100-277V direct fixtures & compatible with instant start electronic ballasts. Not compatible with rapid start ballasts. (CHECK IMAGE LISTING COMPATIBLE BALLASTS BEFORE USE/ ORDERING).
  - **COMMERCIAL QUALITY LED LIGHTING** to support health & wellness in home, office, warehouse, lecture hall, hotel, classroom.
- [See more product details](#)

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## GE Lighting 93097589 18-Watt T8 LED Bulb Grow Light for Indoor Plants, 48-Inch/2-Foot, Full, 1-Pack, Balanced Spectrum

by GE Lighting  
★★★★☆ 32 ratings | 6 answered questions

Price: **\$24.99** FREE Shipping on orders over \$25.00 shipped by Amazon or get **Fast, Free Shipping** with Amazon Prime & FREE Returns

Color: **Balanced Spectrum**



Size: **1 Pack**

- Balanced light spectrum for seeds and greens
- For high light plants (tomatoes, cucumbers and peppers) and low light plants (leafy greens and herbs)
- High output PPF: 36 micromoles per second
- Low energy use / low heat LED technology
- Uses only 18 Watts

See more product details

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# Other Lighting Terms

## PAR

Only part of solar radiation is used by plants for photosynthesis. This active radiation Photosynthetically Active Radiation (PAR) contains the wavelengths between 400 and 700 nanometers and falls just within the visible spectrum (380 - 770nm). The light in this region is called PAR watts when measuring the total amount of energy emitted per second. PAR watts directly indicates how much light energy is available for plants to use in photosynthesis. The PAR required by the plant is expressed in DLI or Day Light Integral.

DLI is a cumulative measurement of the total amount of light (photons) that reach the target during the photoperiod. DLI is measured over a one meter square area in “moles per square meter per day” and expressed as mol/m<sup>2</sup>/d. Typically an African Violet requires 3 to 5 mol/m<sup>2</sup>/d.

The "color" of light sources comes from a complicated relationship derived from a number of different measurements, including correlated color temperature (CCT) or Kelvin temperature (K), color rendering index (CRI), and spectral distribution (PAR Watts). However, color is most accurately described by a combination of Kelvin temperature and CRI.