



The "Dragon" and "Raging Kale," by Scynce (sci-ence), are a new breed of indoor LED lighting solutions that are changing the rules with a focus on increased yields instead of only on power savings. The full spectrum LEDs are tunable across broad spectrum white with additional red energy, providing the optimum amount of light energy for your plants. Our patent pending optics allow for deeper penetrating light, leading to healthy and dense plants from root to canopy. Guaranteed greater yields through scientifically engineered solutions.

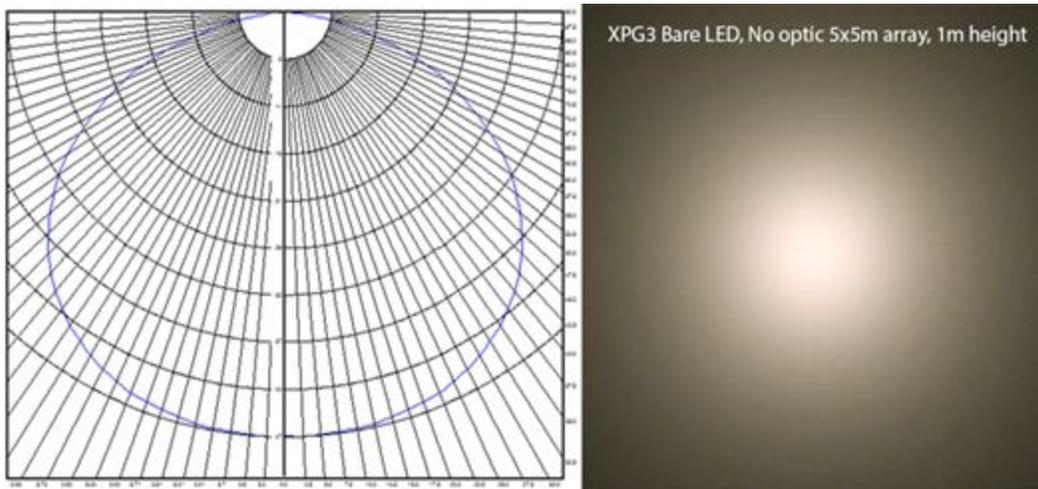
TECHNOLOGY SUMMARY

1. **Par vs. Lumens vs. Broad Spectrum**

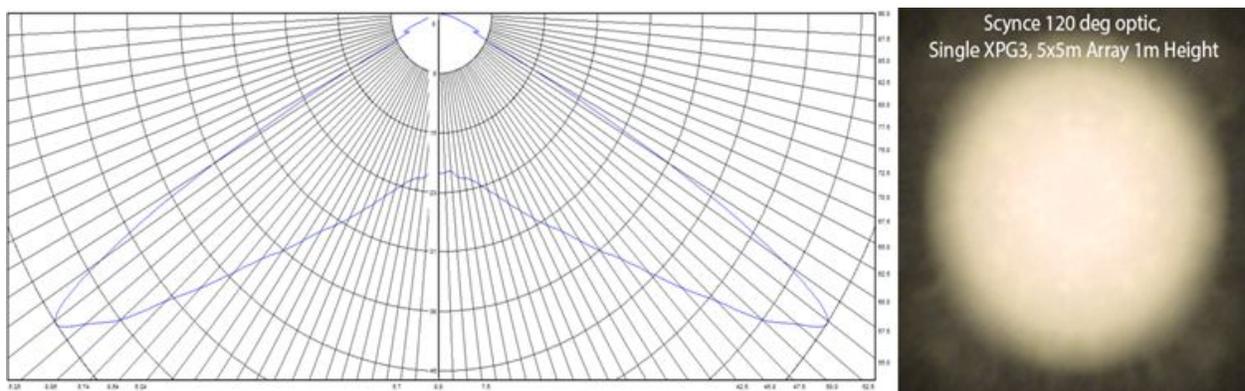
- a. Par is good, but not absolute. Plants need full spectrum light.
- b. Blue and red has been proven to work in simple, leafy greens (lettuce, herbs, etc) but not in flowering or fruit bearing plants (tomatoes, cannabis)
- c. Lumens aren't perfect for plants, but white LED's have equally high radiometric energy while not skipping any of the middle spectrums.
 - i. Based on current LED's, higher PAR is attainable by "cheating" with all red and blue (pink).
 - ii. Red and Blue LEDs have a 60% higher PPF/watt than white LEDs.
 - iii. White LEDs have a 50% higher lumen/watt than red LEDs and 500% higher lumens per/watt than blue LEDs.
 - iv. There is more balanced overall energy emitted out of white LED's per watt, but the PAR reading is lower per watt.
 - v. Our testing has shown that full spectrum white with a red emphasis grows higher yielding and healthier plants than "pink" light.
 - vi. All Synce lights will be available in both "Pink" and broad spectrum white
 - vii. Our recommendation will always be to go with the broad spectrum until results of narrow spectrum light is known.

2. Optics Matter!

- a. Traditional LED's with no external optics will all be in a Lambertian pattern. This is how 99% of the grow lights on the market function.
- b. While they are cheap and easy to manufacture, they can result in poor light distribution on canopy, require more fixtures, and usually must be mounted much closer to the canopy.

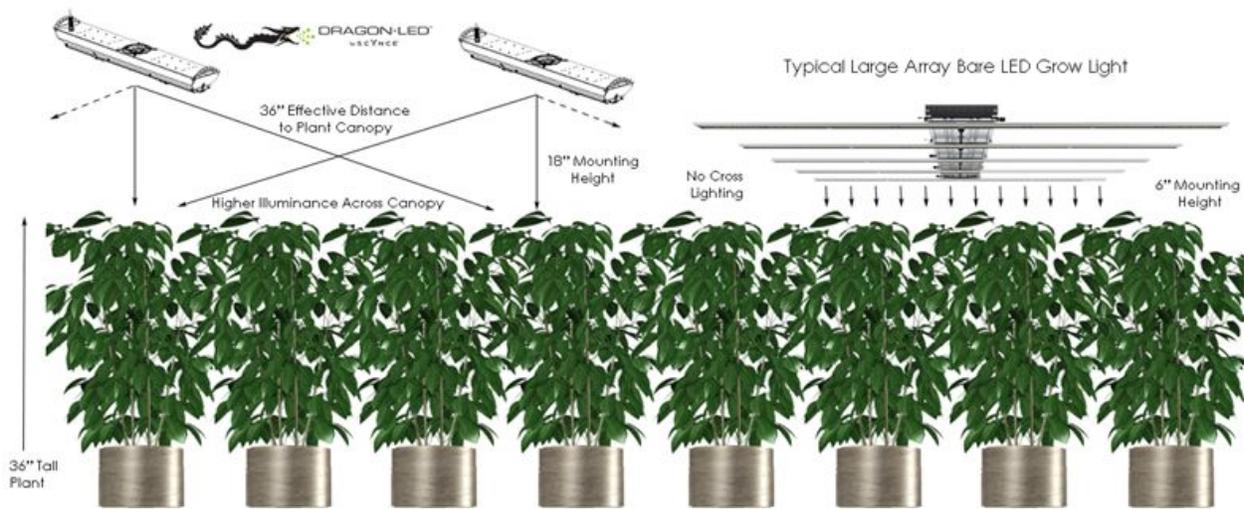


- c. Our patent pending optics were designed so that any plant under the light will receive an equal intensity of energy.

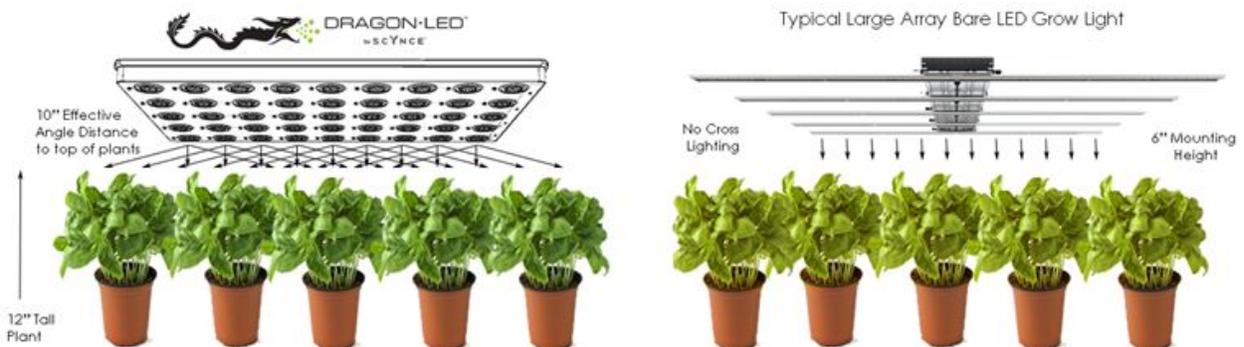


“Optics are like tires on a car, all the horsepower (or light energy) in the world, can’t be harnessed without a good set of tires (or optics)!”

- d. Our patented pending optics increase the effective distance from the lights due to the highest intensity of emitted light coming from the outside of the light beam. Plants see the light on an angle, which is a further distance than from directly down.
- e. The intensity (or illuminance or irradiance) of light or other linear waves radiating from a point source (energy per unit of area perpendicular to the source) is inversely proportional to the square of the distance from the source; so an object (of the same size) twice as far away, receives only one-quarter the energy (in the same time period).



- f. Short stature plants (lettuce or cannabis during the veg and clone stages of growth) require the light to be very close to the plant since the distance from top to bottom of plant is minimal.





3. **Optical Pattern Options**

- a. 120 degrees - This is going to be the ideal optic for indoor Growers. The lights can be mounted between 3” (for vegetables) and 36” (for taller flowering plants) over the canopy and 48” apart for an ideal 600+ par on the canopy in a broad spectrum light.
- b. 70 degrees - This will be ideal for greenhouses and indoor applications where the lights need to be mounted much higher and further away from the canopy or vertical grows where the light is focused on one shelf.

4. **Dynamic Automated Thermal Management**

- a. All Scynce lights have built-in dynamic thermal monitoring.
 - i. For products that utilize active cooling (have a built-in fan), the thermal monitoring controls the speed of the fan, automatically increasing or decreasing the speed based on the air temperature inside the light.
(our fans are made in Germany to IP67 standards and rated at 100k hours of continuous use)
 - ii. For products that utilize passive cooling or for our active cooling products once the fan reaches full speed and the light is still overheating, the onboard processor will automatically reduce output to protect the light while still maintaining a minimal level of output.
- b. Multiple level thermal management protects both the crop and the lights.

5. **Greenhouse optimization**

- a. Our “Dragon” product line offers a 1200w fixture that only has a 2.3 sq.ft. footprint. In greenhouses, the larger the light, the more sun gets blocked. The Dragon XL with 70 degree optics is the perfect greenhouse light for the following reasons.
 - i. Narrow optics to project the light down from a 14 foot mounting height while not wasting a huge amount of light on the sides and wall of the greenhouse.
 - ii. Low footprint area – The Dragon has the highest output for the smallest footprint of any light on the market.
 - iii. Weather sealed housings to mount next to vents or in any environment.
 - iv. Wireless controls, mount, wire power and everything else can be controlled remotely.



6. Tuneable spectrum

- a. All Scynce lighting solutions are designed with a 4 channel tunable spectrum. Each light comes standard (except for the Dragon LP) with the following 4 channels.
 - i. Warm White (3000k)
 - ii. Natural white (4500k)
 - iii. Cool White (6000+K)
 - iv. 660nm Red

** Lights can be customized with any spectrum in any channel*

7. Controls

- a. A wireless mesh network allows for controls through a local or web based GUI.
 - i. Intensity
 - ii. Ramp on time
 - iii. Time on and off
 - iv. Grouping
 - v. Scheduling
- b. This will allow the grower complete control over spectrum and scheduling. An example of the Windows-based GUI is shown below:





8. **Sealed housing**

All of our products utilize IP66 Enclosures – IP rated as dust tight and protected against powerful jets of water.

See a demonstration here: https://youtu.be/IQ_pvbEpCBQ

9. **Patents**

Currently we have 13 patents pending around our optical technology, “Spectune” color mix, power supplies and drivers, mesh wireless network and controls of farming ecosystems.

10. **Why should I care?**

- a. Low profile lighting solutions with patent pending optics that eliminate hotspots or burned plants due to high pinpoint PPF, means increased vertical volume for grow Facilities, allowing for a maximization of available square footage.
- b. Innovative optics that allow plants see equal intensity light from all angles (similar to natural light), resulting in a larger growing surface with more density below the canopy.
- c. Custom optics focus 100% of the light (and thus power) on the canopy or grow bed, eliminating wasteful energy consumption.
- d. Waterproof housing allows trays and racks to be pressure washed between grow Cycles.
- e. Wireless mesh network that links all lights to a central Windows-based control Platform (software) to easily control power, intensity, cycling, spectrum, etc.
- f. 5 year “guaranteed no maintenance” warranty on all our lights.

www.scynce.net

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