



Discover a whole new world of
cannabis cultivation

Case Study

PURPLE FROST GENETICS

LOCATION _ San Francisco Bay Area, California

CROPS _ Medical Cannabis

TECHNOLOGY _ Ursa Helios 600W



*photos from Purple Frost's grow experiment

"Targeted broadband spectrum"

BACKGROUND

Purple Frost Genetics is a specialized, high-grade medical marijuana producer in the San Francisco Bay Area. Featured by High Times, SC Cannacup, CaliCannaCup, and HempCon, Purple Frost has cultivated many award-winning strains.

Purple Frost approached URSA LED to replace a section of their current grow facility's 12 high pressure sodium (HPS) lamps with the Helios 600W. URSA provided an industrial grade photosynthetic photon flux density (PPFD) efficiency simulation, and showed that the light output from the Helios 600W is equivalent to the HPS lamps. Coverage of the light output has also increased with the use of URSA's new 90° low ceiling reflector.



CHALLENGES

In the early stages of LED technology, LED fixture manufacturers lacking top-tier experience released a surge of low quality products. Because of this, LEDs in the grow market have received a poor reputation due to ineffective integration of the technology.

The main problem with the cannabis industry is that it requires a light fixture that will produce less heat and more effective light, while maintaining or reducing the wattage used. Current market solutions are driven by HPS and metal halide lamps, which have been proven to produce quality cannabis under the right factors.

"Reduced HVAC
by 50%"

Purple Frost Genetics tasked URSA to replace their HPS lamps with energy efficient LEDs. After replacement, several challenges arose due to the changes in ambient heat, as LEDs generate lower heat levels than HPS lamps. Due to the lowered ambient temperatures, the HVAC system had to be adjusted and turned down. In comparison, the grow space dropped an average of 10°F after switching to the LEDs. This provided exceptional power savings in addition to the decrease in lighting power usage.



BENEFITS

By testing the LEDs under the same exact growing conditions as in the HPS setup, a direct comparison can be made between the two lighting options.

Purple Frost Genetics has reported great results to the cannabis potency and yields grown under the Helios 600W. From a direct comparison on an award-winning strain, the Helios 600W performed better than the HPS lamp. The cannabis flower under the Helios 600W also had more sugar content, and grew more potent than when under the HPS lamp.





Single Source Light Penetration

Single source lighting provides deep canopy penetration. When light reaches the plant, some amount passes through the leaves and continues downward until all the light is absorbed by the plant. If light does not provide adequate penetration, the bottom parts of the plant or canopy will perform poorly.

Flip Chip Opto's advanced 3-Pad LED patented technology has given them the ability to create single source chip-on-board LED engines. This technology overcomes the 500W limitation of other single source LED engines, and when engineered to provide horticultural applications, 3-Pad LED technology gives URSA an advantage no other LED fixture manufacturer has.

URSA 4080 Spectrum

Under the URSA 4080 spectrum, professional growers have noticed exceptional leaf to node strength. This means that the connection between the leaves and stem is more durable, showing increases in tensile strength and exaggerated swollen node connections. There is also a significant decrease in node to node stretching, implying that vertical stacking is magnified – hence more yield grown in the same vertical space. Penetration of the URSA fixture's single source penetration allows light to reach further into the canopy, reducing the appearance of yellow leaves on the lower parts of the plant when compared to HPS lamps.

Under flowering, buds are shown to be denser and have increased sugar production, measured through lab testing after drying and curing. This increase can be noticed through the increase of THC crystal production, which appeared to be correlated through various batch testing.

CONCLUSION

Purple Frost Genetics reports that by replacing their 1200W HPS lamps with the Helios 600W, they achieved additional yields of up to 4%, potency increases of 2%, and reduced their power usage by 55%. An added benefit of the switch was the reduction of maintenance costs associated with the HPS lights, which include changing the bulbs, checking bulb replacement options, and time scheduling.

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