

MJardin Analysis of Thrive Agritech's T5 LED

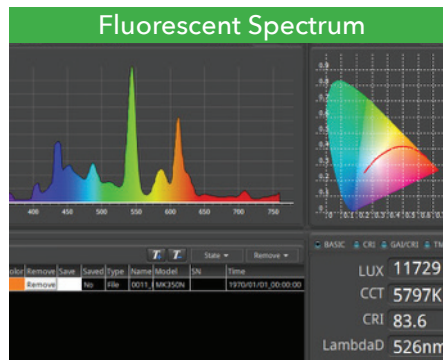
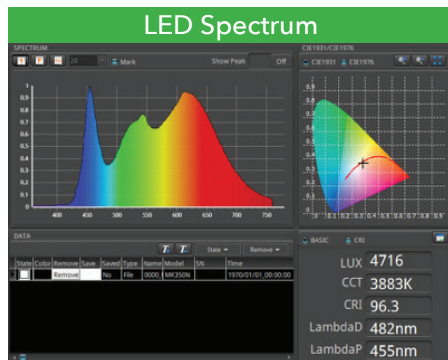
Background

MJardin investigated the performance of Thrive Agritech's T5 LED lamp to determine suitability as a 1:1 replacement of high output fluorescent lamps for cannabis production. MJardin is a professional management company that provides select cannabis businesses across the U.S. with turnkey cultivation services.

Experimental Setup

Thrive Agritech's 30W T5 LED tubes were installed in a 40-day controlled experiment alongside traditional 54W fluorescent T5 tubes in propagation areas in a medical cannabis cultivation facility located in Denver, CO. Plant performance and rooting rates were measured to quantify any differences between the lighting technologies.

Parameter	LED	Fluorescent	Units
Electrical Input	30	54	Watts
Light Intensity	100-120	80-100	umoles/m2/sec
Time to First Root	4-5	5-6	Days
Time to Full Root	Similar	Similar	Days
Root Structure	Similar	Similar	
Cutting Health	Similar	Similar	



"Thrive's LED T5 tube is an excellent option for several applications. It is a great solution for situations where there is very little mounting height for other lighting technologies to get proper spread and uniformity. Another great benefit is the ease of installation. Fixture removal, electrical work, and other infrastructure modifications are not necessary, which helps avoid many of the renovation costs typically associated with the installation of efficient lighting technologies."

- Ben Franz
Director of R&D, MJardin

Medicine Man Analysis of Thrive Agritech's T5 LED

BACKGROUND

Medicine Man conducted a controlled experiment to investigate Thrive Agritech's T5 LED retrofit lamp vs. traditional fluorescent. Medicine Man wanted to determine if the LED T5 would grow cannabis as well or better than fluorescent – while cutting their T5 energy bill in half. Medicine Man Technologies offers cannabis consulting, licensing and state-of-the-art cultivation and dispensary operating solutions.

EXPERIMENTAL SETUP

Thrive Agritech's 30W LED T5 lamps were installed in Medicine Man's grow facility in Denver, Colorado. The LED lamps were evaluated against traditional 54W T5 fluorescent lamps. Both lighting technologies were used to grow cannabis from clones through the vegetative cycle. Plant performance and growth characteristics were monitored during the six-week experiment.

Results

Clones

Growth of the clones was noticeably better using the LED T5 lamps. Plant health was improved as there was no yellow streaking that often occurs as the result of overheating the plants with fluorescent lights. The LED lamp has much less heat in the beam, which prevented the unhealthy yellow streaking.



Vegetative Growth

Plant growth outcomes using the LED T5 during the vegetative cycle were equivalent to fluorescent, with the primary benefit being a 45% reduction in energy consumption for the LED solution. An additional benefit for the LED T5 was the lower heat output that resulted in an additional 8W reduction per lamp for the HVAC system.



"The LED T5 is more than just cost savings for us – the clones actually grow better under the LED light because there's a lot less heat. I wouldn't go any other way at this point."

- **Tyler Schneider**
Director of Operations, Medicine Man

T5 Retrofit Case Study

BACKGROUND

Ajoya is an advanced medical cannabis producer and dispensary based in Colorado. The company wanted to improve its vegetative lighting and reduce total energy consumption and heat. Ajoya's fluorescent T5 lights were retrofitted with Thrive Agritech's plug-and-play LED T5s.

PROJECT GOALS

- 1) **Improve Lighting**
Better quality of light for vegetative production.
- 2) **Reduce Energy & Heat**
Reduce energy and heat, including HVAC reduction.
- 3) **Increase profit**
Increase profit while minimizing upfront expense.

Results

INSTALLATION

Ajoya installed several hundred LED T5 retrofit lamps in its existing T5 fixtures. Installation was quick and simple, and didn't require special know-how or an electrician.

REBATE

Colorado utility, Xcel Energy, provided a \$6,186 rebate to Ajoya. This reduced the cost of the project by 34% - from \$17,863 to \$11,677.

PAYING FOR THE LED T5s

Rather than purchasing the LED T5 lamps upfront, Ajoya chose a 24 month payment plan. This enabled a cash positive project from Day 1, and throughout the life of the project.

CASH FLOW & OPERATING PROFIT

85,777 kWh of energy are saved each year, which translates into cash savings of \$8,577 per year. Cash from the energy savings will make the 24 monthly payments for the LED T5s. Over the 5-year warranty, Ajoya will generate a profit of \$38,134 all without using any of the company's cash to pay for the upgrade!



"The rebate from Xcel Energy paid for 1/3 of the project, and put money in our pockets immediately. And the cost savings from converting to LED continues to generate cash every month - even after making the monthly payments for the LED T5s."

- **Francine Gindi**
Director of Operations, Ajoya

T5 Retrofit Case Study

FINANCIAL SUMMARY

Cost of LED T5s	\$17,863
Rebate from Xcel Energy	\$6,187
Total Lease Payments, 24 months	\$20,942
Total Energy Savings, 5 years	\$42,889
Relamping Savings, 5 years	\$10,000
Total Project Profit, 5 Years	\$38,134



PERFORMANCE SUMMARY

Energy Reduction / Year	85,777 kWh
Overall Heat Reduction	45%

OPTIMIZED SPECTRUM

With a color spectrum optimized specifically for vegetative growth, plants grown under the LED T5 lamps experience improved rooting times, growth rates and plant morphology.

"At this point, I don't know why anyone would continue using fluorescent T5s."

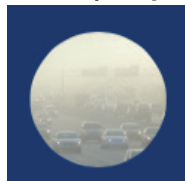
- Kye Brundage
Grow Manager, Ajoya

ENVIRONMENTAL IMPACT SUMMARY

132,000 lbs. of CO₂
reduced per year



Equivalent of removing
11 cars per year



Equivalent of adding 16
acres of trees per year

