



HEALTHY  PLANTS  PROFITS  PEOPLE™

Lighting Financial Analysis
Horticulture: 1,000 Square Feet
144 Square Feet Footprint

Contact:

Kat A. Donnelly, PhD, P.E.
Founder and Co-CEO
KDonnelly@AZENTIVE.com

Sundarajan Mutialu
Co-Founder, Co-CEO, CSO
SMutialu@AZENTIVE.COM

Request to Purchase: www.azentive.com/contact/

Sunlighting for Healthier Plants and Higher Quality

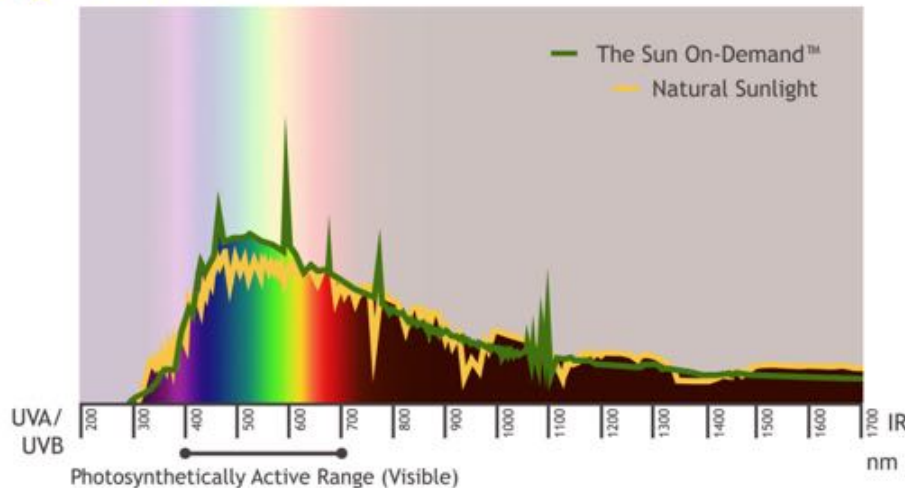
The Sun On-Demand™ Differentiators

AZENTIVE's The Sun On-Demand™ delivers all of the frequencies and permutations of frequencies of true sunlight from UV-B, UV-A, PAR, IR, to far IR, from 285 nm to 1650 nm and beyond. This allows for all of the plant's photo and frequency processes to occur, builds healthy immune systems and circadian rhythms, and penetrates deep into the plant cells, the canopy, and the soil food web. Besides the Sun, no other single light source can provide all these qualities.

The Sun On-Demand™ is the most efficient and effective indoor lighting technology available. Acting regeneratively not only increases nutrient-density and food quality, but it also leads to healthy profits from lower OpEx and CapEx, reduced risks, and product differentiation and enhancement. It's a true win-win scenario that harmonizes healthy profits, healthy plants, and healthy people for you, your business, and the planet.

Thriving Plants with Indoor Sunlighting using the only light capable of supporting regenerative living soil.

- Grow a wide variety of crops indoors well beyond leafy greens and herbs.
- Achieve complete nutrient expression, healthy immune systems and circadian rhythms, and higher quality.
- Jump start your outdoor farm with ready-to-plant hardened teens, overwinter crops, and grow winter crops.



AZENTIVE's The Sun On-Demand™ matches the natural spectrum and frequencies of sunlight (left). Each fixture (right) covers 100 to 225 square feet (crop dependent), making it the most efficient, effective, and cost-effective growing light available.

Aligning with Nature

Lower OpEx with The Sun On-Demand™

Eliminate Losses from Inefficient Artificial Lighting

The following tables compare lighting options for 1,000 square feet of indoor food cultivation. They are scalable to help you customize it to your situation. The Sun On-Demand™ is the most cost-effective and efficient option, keeping money in your pocket every minute of every hour that you are lighting your plants.

Table 1 compares the annual OpEx cost of lighting electricity use and lighting-related heat for one year. In the case of Metal Halide (MH) or High Pressure Sodium (HPS), they also include the cost of replacing bulbs. Finally, we add the annual OpEx costs to calculate a Total Estimated Annual OpEx. You'll see that The Sun On-Demand™ is the most efficient and cost-effective option by a significant margin.

Since The Sun On-Demand™ provides sunlighting, comparisons to artificial lights (e.g., MH, LEDs) are not true apples-to-apples comparisons. The Sun On-Demand™ provides additional financial benefits. Just one example: UV frequencies benefit plant health, contribute to reduced disease, and improve food quality and taste. In addition, growing in sunlighting allows you to cultivate unique, proprietary crops and a large variety of crops, even during the off-season.

Table 1: Lighting comparison - Electricity, Heat Output, & Annual Operational Cost (1,000 sq ft)

	1,045W MH or HPS	650W LED	The Sun On- Demand™	Improvement with The Sun On-Demand™
Number of lights recommended	50	50	7	86% fewer fixtures
Estimated annual lighting electricity cost (Avg. \$0.11/kWh, 14 hours/day)	\$29,370	\$18,268	\$5,309	\$24,061 less than MH/HPS \$12,960 less than LED
Estimated annual lighting-related HVAC cost (Avg. \$0.11/kWh)	\$9,692	\$6,029	1,752	\$7,940 less than MH/HPS \$4,277 less than LED
Annual bulb replacement (MH/HPS only)	\$4,500	\$0	\$0	\$4,500 less than MH/HPS
Estimated annual OpEx	\$43,562	\$24,297	\$7,061	\$36,501 less than MH/HPS \$17,236 less than LED

Table Note: See Page 4, Table 3 for calculation assumptions.

Aligning with Nature

Lower CapEx and OpEx with The Sun On-Demand™

Total Costs of Ownership Goes Way Down!

Table 2 estimates lighting electricity, heat output, and CapEx comparisons, showing a clear advantage for The Sun On-Demand™ over LEDs. Lighting CapEx comparisons are conservative. We do not include additional costs of MH and LED lighting due to additional electrical infrastructure, chemical inputs, air conditioning requirements, additional labor from vertical growing, etc. Total cost of ownership represents the sum of lighting CapEx and OpEx for the first year.

Table 2: Estimated Lighting CapEx Comparison (1,000 sq. ft.)

	1,045W MH or HPS	650W LED	The Sun On- Demand™	Improvement with The Sun On-Demand™
Total lighting electricity use (kW) and lighting Watts/square foot (W/sq. ft.)	52.3	32.5	9	82% decrease from MH/HPS 71% decrease from LED
Watts/Sq Ft	52.3	32.5	9	Meet tightening regulations.
Lighting heat (BTUs/hour)	178,173	110,825	32,206	Runs cooler in the summer.
A/C (tons)	15	9.25	2.7	
HVAC kWh per year	88,109	54,805	25,926	
Lighting amperage	225	135	40	Less electrical infrastructure needed.
CapEx per fixture (USD)	\$500	\$1,495	\$5,999	
Total lighting fixture cost -Based on advertised price -Does not include sales tax and shipping	\$25,000	\$74,750	\$41,660	\$36,660 more than MH/HPS \$33,090 less than LED
Total estimated annual OpEx (Table 1)	\$43,562	\$24,297	\$7,061	\$36,501 less than MH \$17,236 less than LED
Cost of ownership, YR 1	\$68,562	\$99,047	\$48,720	\$19,841 decrease MH/HPS \$50,326 decrease from LED

Table Note: See Page 4, Table 3 for calculation assumptions.

Aligning with Nature

Optimize Production with The Sun On-Demand™

Calculation Assumptions

Please note that when you expand the calculations above to three years or five years or ten years, the financial benefits grow substantially versus all artificial lighting. Hopefully, this document helps you apply the benefits to your facility! Feedback welcome.

Table 3 includes the assumptions that informed the lighting CapEx and OpEx estimates shown in Tables 1 and 2. MH, HPS, and LED coverage footprints and amperage estimates are based on manufacturer specifications. The Sun On-Demand™ footprint is conservative in the calculations. It ranges from 100 to 225 sq. ft. The coverage area will vary depending on crop type. This proposal is based on 144 sq. ft, an average horticulture footprint for The Sun On-Demand™.

Annual energy costs assume year-round operation and a 14-hour vegetation photoperiod. You should be able to reduce The Sun On-Demand™ operating hours, especially when growing in living soil. BTUs/hour are calculated using the ASHRAE standard 0.33 kW of cooling load per kW of lighting electricity.

Table 3: Assumptions for Lighting Comparison & Financial Analysis

	MH or HPS	LED	The Sun On-Demand™
Coverage per light	4' x 5'	4' x 5'	12' x 12'
Wattage per light	1,045	650	1360
VAC	240	240	240
Amps per light	4.5	2.7	5.7

Inputs:

Canopy dimensions: 1,000 sq. ft.

Veg photoperiod: 14 hours

Cost per kWh: \$0.11

Costs to replace MH or HPS bulbs per year: \$90 each fixture

Operation: year-round