



# 151 Farmers Making a Difference 'One Garden at a Time'



Ideologies at Work

Fresh

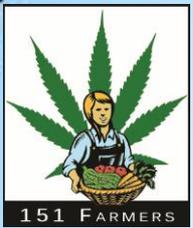
Unprocessed

- Locally Grown
- Sustainable
- Reduce Greenhouse Gas
- Save Energy
- Save Water

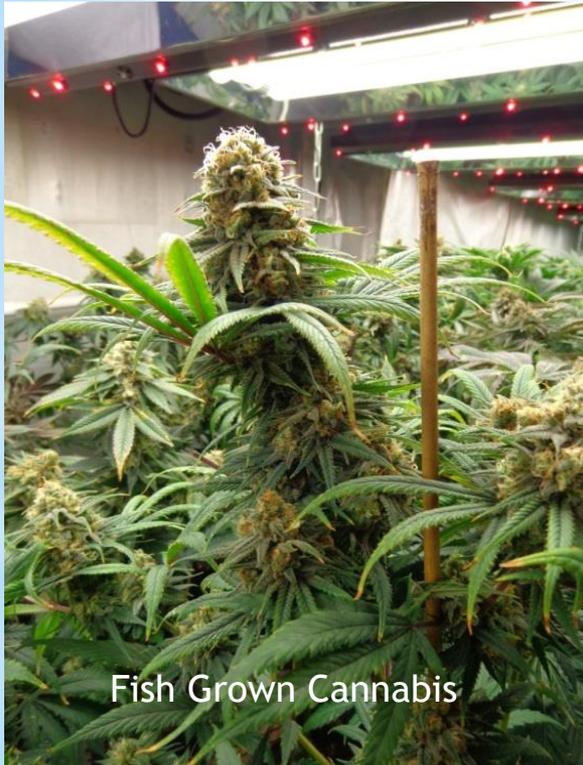


Year Round Polyculture Crop Production

The 151 Farmer pledges to grow, at a minimum, 1 pound of Cannabis to 5 pounds of Food for 1 World. Their World. The World they can influence. The World they can inspire. The World they can change. One Garden at a Time!



# 151 Farmers Combine Food & Cannabis Cultivation



Fish Grown Cannabis

As more states legalize cannabis for medical and recreational use, the timing to unify both food and cannabis cultivation to help meet our local communities increasing food and medical needs, could not be better.



Fish Grown Leafy Greens

The term 151 Farmer was originally coined by Darryl Cotton of Inda-Gro Induction Grow Lights. While developing a variety of inner city aquaponic farms was looking for a term that would describe a farmer who would combine food crop production with cannabis cultivation.



Fish Grown Hops



# The 151 Farmers Purity of Product

We have a serious health crisis in the United States. The abundance of processed food makes it increasingly difficult to find fresh, affordable, organic food. To make matters worse the government subsidizes Big Ag Farmers to grow the processed food staple crops which are corn, wheat, soy and rice making it cheaper to buy a loaf of bread than a pound of broccoli. This must change!





# The 151 Farmers Influence Thru Teaching and Training

Running a 151 Farm is gratifying in so many ways. But teaching others how to farm and give back to their community is the ultimate reward. The 151 Farmer is dedicated to helping others help themselves through open houses, internships, community outreach, consultation and training programs for jobs that won't be taken overseas.



# 151 Farmers Provide for our Communities

There are so many ways that a 151 Farmer is able to give back to their community. Here are just a few examples:

- Our farms are a testament to pure quality while utilizing sustainable and ecologically responsible cultivation practices such as aquaponics.
- We repurpose inner city properties and provide agri-centric jobs for local residents that will often develop that experience into careers.
- As a cash crop, Cannabis helps offset our food crop costs and prices to the community. Many 151 Farmers donate all, or a percentage of their food crops to local food banks.
- Teaching people about our gardens and educating people as to the enormous health benefits of eating fresh unprocessed foods.
- Our crops are grown from heirloom seeds and have not been genetically modified. We also don't use any nutrients, pesticides, insecticides or fungicides that could harm the fish.
- Our fish are fed USDA Certified Organic Fish Feed, No GMO's, no fish meal, and no soy products!
- Growing a diversity of food crops with our cannabis crops allows us to keep nitrite levels safe for the fish when the cannabis is harvested and taken out of the system.
- Water is the new oil. Our closed loop aquaponic systems do not require the use of RO water which can have a 2:1 brine waste,
- We account for every drop of water including those hybridized systems that utilize aquaponics in de-coupled and spray to waste.
- Traditional hydroponic reservoir flushes and the heavy metals that are released into down stream ecosystems are eliminated.



# 151 Farmers are Leading the Way in Energy and Water Efficient Design and Practices.



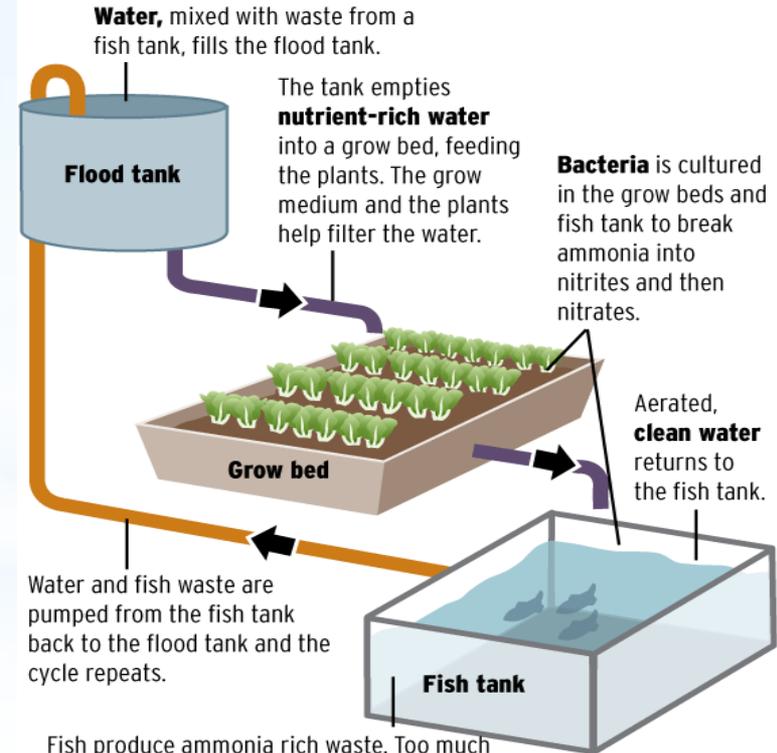
An energy efficient, low heat hybrid lighting system using induction lamps as the primary light source with accessory LED Pontoons in a Deep Water Culture system.



Fish water is piped between the indoor cannabis to the outdoor hops and lettuce gardens for even nutrient distribution.



## How aquaponics works



Fish produce ammonia rich waste. Too much waste is toxic to the fish, but they can withstand high levels of nitrates.

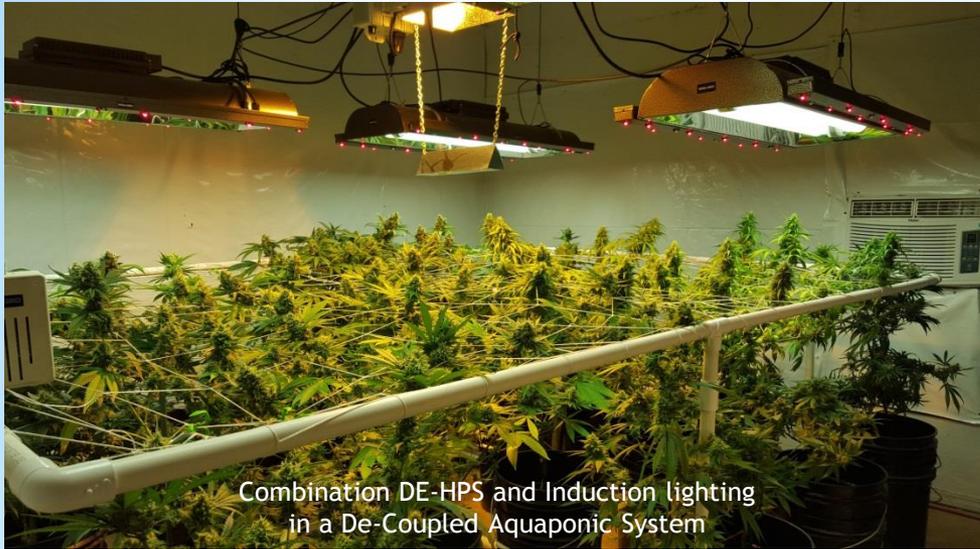
Molly Zisk / The Register

An Aquaponic farm will use 90% less water than a traditional soils garden. Once established the only water that has to be added to the system is to that water lost from plant uptake and evaporation.

*All the plants shown on this page were grown in purely aquaponic fish water.*



# Fish Poop Can Grow Some Really Amazing Plants!



Combination DE-HPS and Induction lighting  
in a De-Coupled Aquaponic System



Week One Roots measure 14"



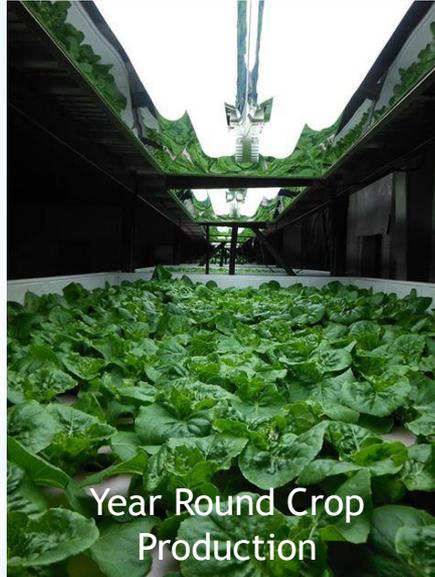
Check out the hop production here @ Day 90. If you brew beer you really should try a  
151 Farmers aquaponically grown hops! The Lupulin production is exquisite!



# When Space Matters 151 Farmers Go Vertical



A top down look at the uniform lighting coverage on a 4' x 8' shelf in a vertically stacked garden.



Year Round Crop Production



Dense Basil Production



Day 36

Certain cannabis genetics are suited to short, stout structures. Here we have a shipping container that has been converted to a climate controlled grow room. Part of the garden utilizes these strains with one tub on top of the other. This allows for increased plant counts in a Sea of Green style grow using the same horizontal square footage. The tubs are also part of a de-coupled aquaponic system.



# 151 Farmers Reduce their Carbon Footprint

*By combining the energy efficient Induction Lamp technology of Nikola Tesla with current generation Light Emitting Diodes, specific wavelengths are used to trigger desired photochemical responses in both lights 'on' and lights 'off' cycles.*

**Lights Off 'Creating Sunset':** When the main lights turn off, the Pontoon utilizes control circuitry which senses when the 660nm diodes turn off. Once off, the 730nm diodes are then powered by built in Lithium-ion batteries for 5 minutes at which time they turn off in gradual steps.

Indoor gardeners may wish to take full advantage of this shortened time to flower by extending their Lights On flowering cycles as much as 13 On 11 Off as a way to mimic natural sunlight conditions for those plants genetics and native photoperiods.

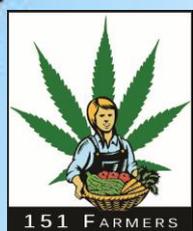


730nm diodes being run @ lights out appear nearly invisible to the human eye although an infrared capture shows how much light the plants actually 'see'. As to canopy penetration check out the shadows being cast on the partition.



**Lights On:** The Pontoon uses the Deep Red, 660nm diodes to meet an important Chlorophyll A peak absorption spectra for flowering, thereby dramatically increasing flowering sites.





# 151 Farmers Research the Benefits of Combined Lighting Technologies



**Day 42: Non-Pontoon Side**  
Fruit Count: 42 - Brix Level: 9  
Mild curling on the fan leaves and some canopy gaps. Fruit is healthy.



In this side by side comparison, where everything was equal with the exception that the tray was partitioned to test the crop flowering benefits between the left side which did not use a hybrid LED and the right side which was outfitted with a 40 watt accessory Pontoon. The Pontoon utilizes both 660 and 730 nanometer diodes to effectively trigger the phytochrome response in flowering plants.



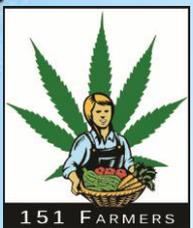
**Day 42: Pontoon Side**  
Fruit Count: 88 - Brix Level: 9  
Dense canopy coverage and heavily weighted trellis. Fruit is maturing faster.



**Day 60: Non-Pontoon Side**  
Fruit Count: 48 - Brix Level: 10  
Beefsteak @ 2.25" diameter  
Average Weight: 6-7 oz.



**Day 60: Pontoon Side**  
Fruit Count: 92 - Brix Level: 10  
Beefsteak @ 3" diameter  
Average Weight 9-10 oz.



# 151 Farmers Improve Quality by Increasing Trichome Production

These images are from a side by side grow of Road Kill Skunk. With the exception of the lighting, all other conditions were kept identical.



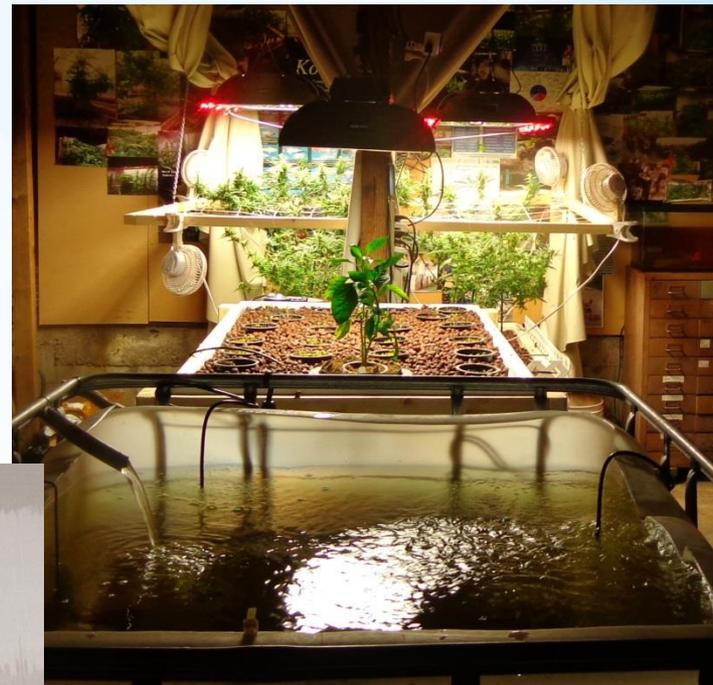
600 watt HPS: This macro image shows trichome production under a narrow spectrum HPS lamp. Here you can see how the trichomes have single stacked and appear bell shaped and somewhat globular.



In this image you can see the difference in how the trichomes form under a broad spectrum Inda-Gro lamp. This plant is producing double and triple stacked trichomes and the geometry is much sharper, similar to cut glass.

*Trichome producing plants will exhibit this production when exposed to sunlight and broad spectrum lighting as a defense refraction against harmful UV-B regions of light.*

# Indoor, Outdoor and Greenhouse Farms



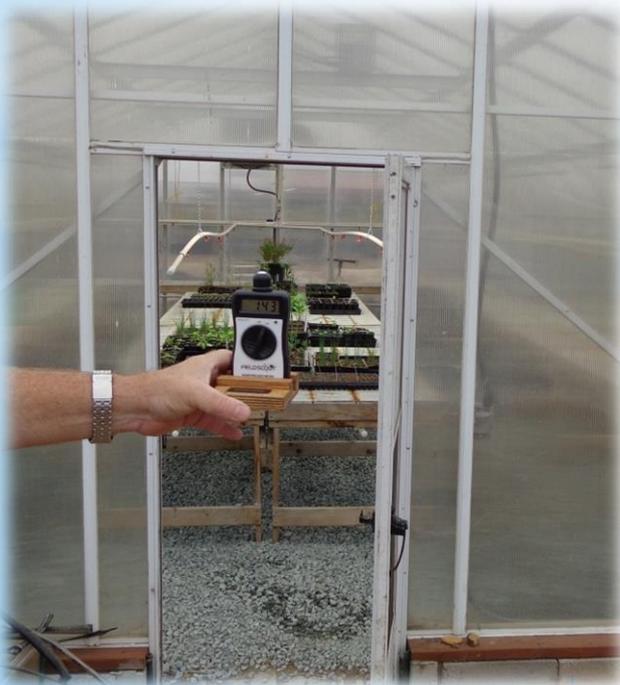
# Helping Mother Nature Along by Optimizing Year Round Crop Production Values

**A comparative greenhouses crop analysis between plants grown only under sunlight and those plants which had sunlight supplementation by an Inda-Gro Daylight Harvester Induction Light.**

Typical Southern CA 'June Gloom' means overcast mornings outside our greenhouse. Today we only read 143 uMoles @ 9:00 am

Inside we only read 82 uMoles. When faced with low levels of light plants will stretch and begin to flower from light deprivation.

With supplemental lighting we are able to reliably meet this crops DLI by increasing the canopy light levels to 274 uMoles.



Leafy greens require an accumulated total of 20 Moles of light per day. In June we receive an equal amount of sunlight to night time so on a cloudy day we want to see metered readings at a minimum of 200 uMoles to assure that daily total is reached. [Click here to view the entire report](#)



## Greenhouse Crop Comparison between Sunlight only and Daylight Harvester Supplemental Lighting



Plant response with adequate lighting results in shorter internodal spacing and rapid root development.

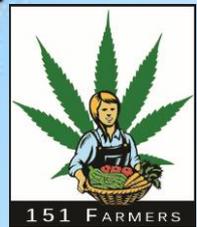


By constantly sensing the available incoming sunlight intensities the Inda-Gro Daylight Harvester series has an on board Local Area Sensor that will instantly adjust the light output from between 50-100% of it's rated output. This means:

- Lower Operating Costs
- Energy Efficiently Meets Ideal Crop DLI
- Eligible for Utility Rebates
- One Lamp for Vegetative and Flowering
- Stable Spectrums for Repeatable Production
- Instant On/Off
- 10 Year Warranty on Lamps and Drivers
- 1/3 Less Heat than Comparable HID Systems
- 100,000 Hour Rated Lamp Life



A Main Sensor will control all of the lights and instantly turn them on or off as ambient conditions warrant.



# Greenhouse Crop Comparison between Sunlight only and Daylight Harvester Supplemental Lighting



Day 9 Sunlight Only Root Mass



Day 9 Inda-Gro Root Development  
Greater root mass and soil aeration



Day 9 Sunlight Only Side  
Light deprivation resulted in stretching & flowering



Day 9 Inda-Gro Side  
No flowers & tighter internodal spacing



# Greenhouse Crop Comparison between Sunlight only and Daylight Harvester Supplemental Lighting



Day 9-Sunlight Only Side: 8 trays shows 4 Basil Plants



Day 9-Inda-Gro Side: 6 trays show 19 Basil plants

Total Power Consumed: 17.5 kW  
Total Cost @ \$0.10 per kWhr: \$1.75  
Total Run Hours: 48 hours  
Total Additional Light: 69 Moles

With a target of 20 moles per day of light the fact that for \$1.75 we got 69 moles of light means we got an extra 3.5 days of light to these plants which can end up giving you an extra crop per year



# Greenhouse Aquaponics

## Inda-Gro Supplemental Lighting – Comparison Grow



Sunlight Only Side



Day 42: Southern California in May  
Our Daylight Harvester Greenhouse Light with  
Optional Flowering Pontoon

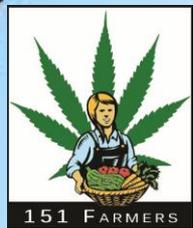


Primary Lighting is Sunlight with  
Supplemental Inda-Gro Side



These images show the huge difference in fruit production when adding just 3 hours of light per day. There are 3 times as many tomatoes on the Inda-Gro side compared to the sunlight only side.





# Greenhouse Aquaponics

## Extended Photoperiods and Increased Fruiting



Under Canopy without Flash



Canopy Coverage @ Lights Out



Under Canopy with Flash



Here we can see just how little light is getting past the plants from the Inda-Gro Side. This was not good news for the plants under the Sunlight only side



Here we can see deep into the background how the plants in the tray adjacent to the main tray have benefitted from the side light that is over 6 feet away from the plants.



# Additional Resources

151 Farmers will always be on the leading edge when it comes to crops and technologies that can improve their farms and those communities they serve. Here are some additional resource links that you may also find of interest as you learn more about these farms and the technologies that are employed.

[Farming Algae for Food and Nutraceuticals](#)

[Energy Consumption of a Commercial Cannabis Cultivation Facility](#)

[Supplemental Greenhouse Lighting Systems](#)

[Increasing Trace Elements for Fruiting and Flowering Plants in an Aquaponic System](#)

[Determining Optimum CO2 Values Based on Ambient Light Conditions](#)

[Understanding Plant Lighting as Spectrums and Total Amount of Light Needed per Day](#)

[Economies of Scale in the Production of Cannabis](#)

[How Much Revenue can Taxes on Cannabis Generate?](#)

[Measuring Plant Light with Technical Comparisons](#)

[Understanding Photosynthesis](#)

[Premium Coco Coir as a Reusable Media in Aquaponic Systems](#)

[National Database for Energy Policies and Incentives](#)





# 151 Farmers Association Professional Services

The following individuals and companies support 151 Farmers and their mission. Please support your local 151 Farmer and any of the Supporting Members whenever you are in a position to do so. If you are a company or farmer interested becoming a 151 Farmer please contact [darryl@inda-gro.com](mailto:darryl@inda-gro.com) for additional information. Thank you.

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Mr. Lance Rogers, Attorney, Bremer, Whyte, Brown and O'Meara Law Firm,  
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Mr. Lance Ott, CEO, Guardian Data Systems, Vancouver, WA

Dr. Sunil Aggarwal, MD, PhD (Dr. Cannabinoid), National Institute of Health  
(NIH), Seattle, WA.

Dr. Samantha Slaughter-Mason, PhD, Oregon Medical Marijuana Researcher



# 151 Farmers Supporting Vendors

The following companies support 151 Farmers and we ask that you show them your support as well by asking for their products or visiting them online. Thank you kindly!

Urban Horticultural Supply  
<http://urbanhortsupply.com>

Cashinbis  
<http://cashinbis.com>

Current Culture H2O  
<http://cch2o.com>

Time4Hemp  
<https://time4hemp.com>

SD PharmLabs  
<http://www.sdpharmlabs.com>

The World Beat Center  
<http://www.worldbeatcenter.org>

Inda-Gro Induction Grow Lights  
[www.inda-gro.com](http://www.inda-gro.com)

Pentair Aquatic EcoSystems  
<http://pentairaes.com>

SupremeGrowers  
[www.supremegrowers.us](http://www.supremegrowers.us)

DLWholesale  
[www.dlwholesale.com](http://www.dlwholesale.com)

Harvest Solutions  
<http://harvestsolutions.us>

Farmer in the Sky Radio Hour  
<http://farmerinthesky.com>

Helpful Hint: 151 can refer to our minimum crop production ratios or it can also refer to the ideal target goals for an aquaponic systems ratio of fish size to water to media bed coverage.

1 lb of Fish  
5 Gal of Water  
1 sq-ft of Media Bed

1 lb Cannabis  
5 lb Food  
1 World