



Introducing

151 Rock Farming

'We Bring the River to Your Roots'



A 151 Rock Farm Really is Like Bringing a River to Your Roots!

When it comes to **WATER CONSERVATION**, a 151 Rock Farm is Closed Loop, Constant Flow Aquaponics Fish Water. The only times you're adding water is when it's necessary to replace water losses from evaporation or plant uptake. The recirculation of the water between the plants and the fish means the overall plant systems water requirements will be 5-10% of that when compared to a traditional soils garden where mature per hemp plants daily water requirements can be 3-6 gallons of water per day.

When it comes to **WASTE WATER RUNOFF** in a 151 Rock Farm there is little to no water runoff from the property to begin with. However should any water ever happen to escape the closed loop system, the important thing to remember is that when using these practices, you can **NEVER** apply to the plants any fungicides, pesticides, aerocides or nutrients that would harm the fish or the people or animals who would consume our products.



It's not hard to see that in nature **PLANTS LOVE** a river running over the rocks. This was our inspirations for 151 Rock Farms!

Changing the World One Garden at a Time!

www.151farmers.org



Be a Rock Star!

Growing Hemp and Traditional Crops In a Soiless, Closed Loop, Constant Flow Aquaponics, 151 Rock Farm

This presentation will demonstrate how commercial cannabis farmers can optimize their **annual** crop production values, on a **gram/meter** basis, and do so in response to new and emerging government mandated energy and water savings standards.



2 Million Gallon Fresh Water Outdoor Tilapia Tank in the Desert



500 Gallon Indoor Tilapia Tanks for Year Round Cultivation

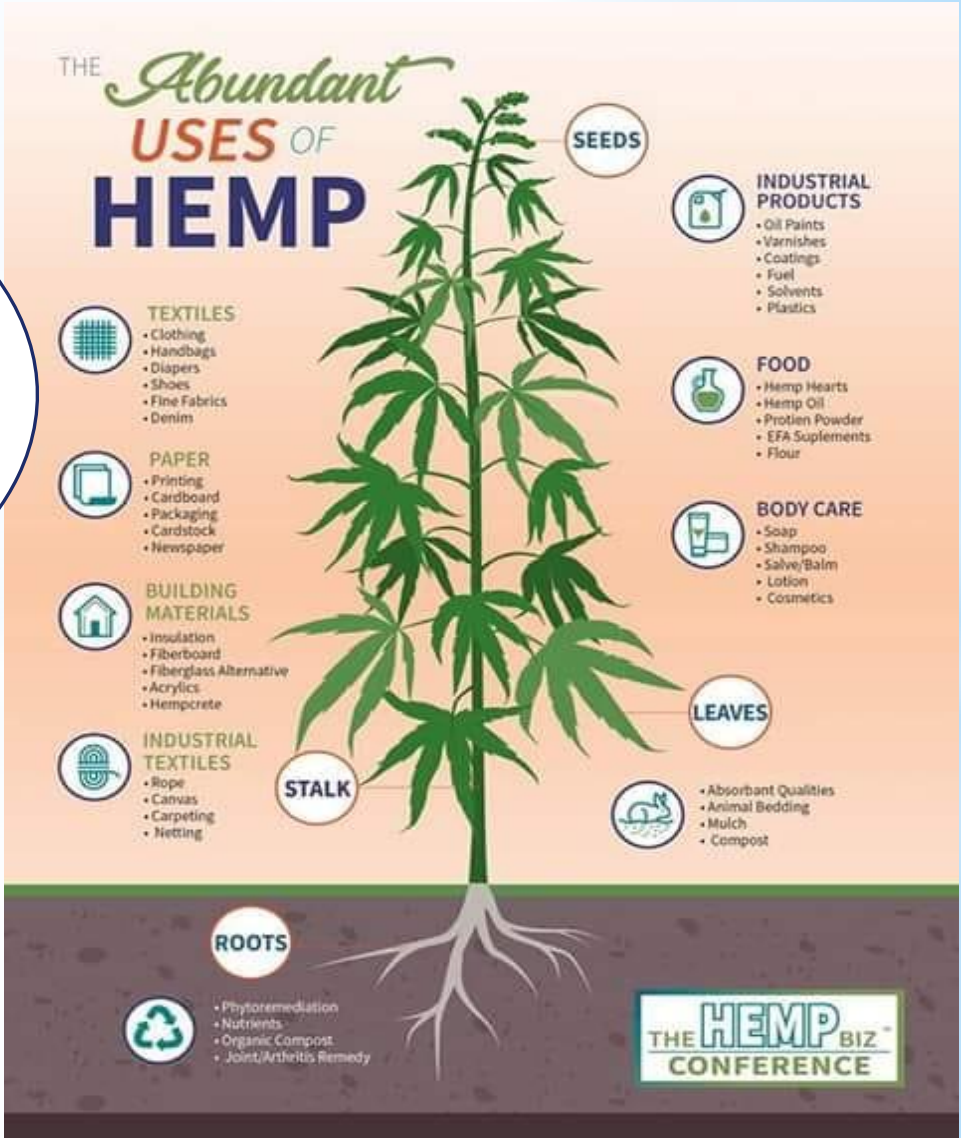
When it comes to organically grown hemp, food and medicine, a 151 Rock Farm will never rely on any nutrients, pesticides, insecticides or fungicides applied to the plants that could harm the fish, or those who would consume these products, in any way.

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!



Why Grow Hemp?

I think the better question should be 'Why wouldn't you grow hemp'? Look at all the uses there are for hemp. And if that's not enough let's not forget that the medical side of this plant is revealing more and more uses as the research continues to replace opiates with plant substance treatments.



Changing the World One Garden at a Time!
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Growing Hemp and Traditional Crops In a 151 Rock Farm

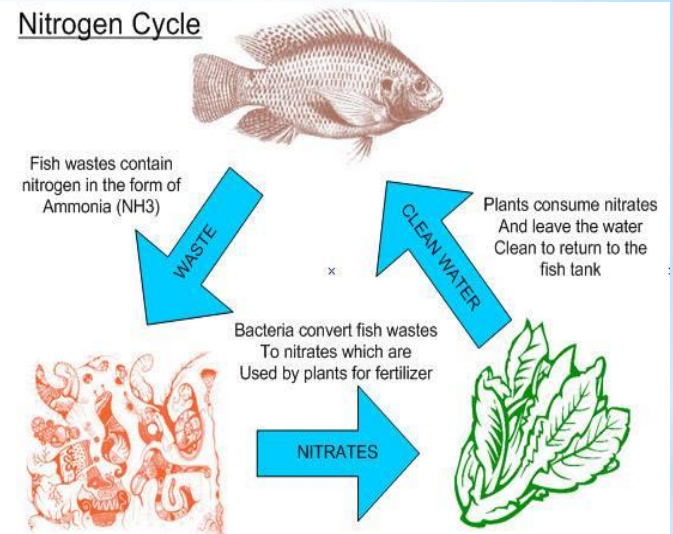
A Closed Loop Aquaponics System relies on the basic chemistry that exists between plants and fish that moves the nutrient rich fish water between the plants and the fish in a traditional flood and drain type of cultivation style.

But, as it relates to cannabis cultivation, we employ some not so traditional techniques that serve to improve crop quality and yield while reducing our energy, water consumption and times to harvest.



Setting up Hoop Houses for a Closed Loop, Constant Flow, Aquaponic Rock Farm

Nitrogen Cycle



Changing the World One Garden at a Time!

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Before we go into greater technical details as to how this all works, we really need to cover the elements of what is a 151 Farm, what it is we do and why it is we're doing it.





What is a 151 Farm?

The name 151 was picked as a way to reference the two main elements of our farms which combine medical cannabis (HEMP) which is the non-psychoactive form of cannabis and food. 151 is a reference to our minimum crop production values of 1 pound of cannabis to 5 pounds of food for 1 community.

or

151 is also an easy way to remember the ideal target ratios relative to the number of fish and their size to the amount of water in the system relative to the plant media bed area.



1 Pound of Cannabis to
5 Pounds of Food for
1 Community

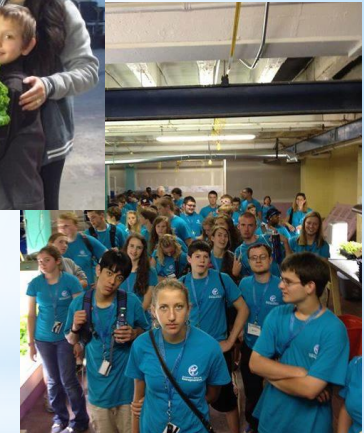
OR

1 Pound of Fish to
5 Gallons of Water to
1 Sq-Ft of Media Bed



A 151 Farmer Uses Their Farm to Promote the Importance of:

- Education and Outreach to the Community and to our Youth, the Farmers of Tomorrow.
- Locally Grown Food and Medicine.
- Maintain and Increase Crop Quality and Yields.
- Ecologically Responsible Cultivation Practices.
- Year Round Polycultural Crop Production.
- Fresh and Unprocessed Food and Medicine.
- Minority and Disadvantaged Business Opportunities.
- Growing from Heirloom Seeds that have not been Genetically Modified.
- Reduction of Our Carbon Footprint.
- Saving Energy and Water.
- Organically Grown Food and Medicine.
- Fish Co-Cultivation in Non-RO Water Systems.
- No GMO's, Meal or Soy Products for our Fish.
- Urban Farms Development Opportunities.
- Locally Sourced Jobs and Products.
- Essential Oils Research and Development.
- Political Stewardship in Affecting Positive Change in our Local, State and National Food and Drug Policies.
- 151 Franchise Opportunities. We Need More Gardens Not Less!



Fresh Tilapia Represents an Educational and Co-Cultivation Opportunity at our 151 Farms





151 Rock Farms are a Lesson in Environmental Stewardship

Cannabis farmers are by nature, a creative and resilient group. If they have been cultivating for any length of time, they have dealt with disease, pest infestation, theft, interdiction, lack of water and a host of other issues that would have most people giving up and walking away. But that's not most cannabis farmers.

Cannabis farmers are tough cookies and they will work within the law if they intend to stay in business. What many of today's cannabis farmers are concerned with though, is will compliance or attempted compliance in a regulated system be the final straw that puts them out of business? These are entirely legitimate concerns, but at least in regards to environmental compliance, it does not have to be.



Cannabis farmers need strategies that would mitigate those environmental issues, whereby these agencies are given the authority to revoke a license for noncompliance. To accomplish that, cultivators really need to be at the forefront of any and all energy and water savings strategies. It is through this approach, of leading by example, that we show how to be the good stewards to the planet while not running afoul of those environmental agencies who oversee any and all licensed and unlicensed cannabis cultivation activities.



A 151 Rock Farm Provides Better Water Management

I get that these are soilless systems and that the water usually recirculates between the fish and the plants but what happens if there is a breakdown and the system were to leak water out? What impact is that runoff going to have on the environment?



While every effort is taken to contain unplanned water losses so that precious water need not be replaced, the reality is that this is just fish water. That runoff is not going to harm the downstream ecology in any way.

When the environmental authorities do show up at your farm, you'll not only get to show them your happy, healthy fish but also your amazing, pesticide free, organically grown plants that derive the majority of their nutrients from fish waste.



For those who are tasked with enforcing environmental laws and to those who would consume our products, when cultivating cannabis in a Soilless, Closed Loop, Constant Flow Aquaponic, 151 Rock Farm the fish really are the 'Canary in the Coal Mine'.



151 Rock Farms *The Magic is in the Rocks!*

When you flip one of the buckets over after a harvest you'll see that the lava rock has really been doing its job! In our constant flow 151 Tubs that measure 10' (L) x 2' (W) by 2' (D) we don't let the water run up to more than 1" of the top of the rocks in the tubs. That means there will be very low evaporative losses as the roots drop down through the buckets to take up that nutrient rich water. Unlike other systems **there is never any chance** of root clog in the systems as the roots will seek that fish water out and get wrapped up in the lava rocks while the water moves from tub to tub then returns to the fish tank. Micro dosing of flowering plants can occur on a case by case basis by top watering the plants.



Since the lava rock is porous it allows beneficial bacteria to live within it. That bacteria lives on consuming the nitrites available in the fish waste. Once consumed the bacteria expels nitrates which of course are the macro-nutrients necessary for happy, healthy and organically grown plants. The symbioses in these Closed Loop, Constant Flow Aquaponic Rock Farms is that the plants need the fish and the fish need the plants in order for both to survive. For the fish it's all about the plants keeping those nitrite levels from being elevated and becoming toxic. For the plants it's all about getting enough fish poop to meet their nutrient levels which is where the 1 lb. of fish to 5 gal. of water to 1 sq-ft of media comes back into the equation.





151 Rock Farms Let's Talk Media

Based on the way we primarily bottom feed our plants from the bottom up the lava rock underneath our buckets has worked very well for us. When it comes to what we put on top of the lava rock to fill those 5 gal buckets over the years we've experimented with many different types of media. For some time what we were most impressed with was a coco-coir/soil mix that allowed us to combine the benefits of a soils garden with that of an aquaponic/hydroponic system.



Over time most media gets compacted and aeration levels drop off deeper within the media. As such I've always been looking for a sustainable media that allowed increased aeration throughout the entire root zone but knew that using any media that would compress would be an obstacle to accomplishing that goal.



Having used spun rock media in the past we were very familiar with the benefits of Grodan and the Rockwool products. When it comes to maintaining water and nutrients in the root zone, spun rock type media is outstanding. Unfortunately the problem remained that this media comes in a highly compressed cube or slab form which does not lend itself to the full plant root aeration we were looking for in a bottom fed watering system such as ours. We thought perhaps it could be modified to fit our needs.



The Importance of Media Recycling

Why Some Media is Just Not Good for the Planet

Before we went about trying to modify the Grodan Rockwool media to see if it could be used for our purposes in a closed loop aquaponic system we discovered a number of unfortunate things about their products that dissuaded us from using them.

The first thing we encountered was that the binding agent they use in the compression process for their blocks and cubes is proprietary. In other words there is no telling what is being used for that purpose. Without that information I'm going to risk putting their products into a system where our fish are potentially going to be exposed to chemical agents being released in the water.



The next thing we discovered about this media is that it is not truly sustainable. Unless the used media is returned to the manufacturer, where it will then be torn down and reconstituted for resale, it is not being reused at all. With a lack of reprocessing centers and the time, money and labor necessary to reprocess this media it comes as no surprise that most growers don't recycle this media. That means it ends up in our landfills leaching nutrients into our aquifers. As a media I like spun rock but these issues are unacceptable.





151 Spun Rock Media

After years of experimentation with Spun Rock (SR) Media, we have established a media for our system that can be used over and over for years in our 151 Rock Farms. This 151 SR Media has been a replacement to our Coco Coir/Soil mix and we're happy to report that when using it less is definitely more. Here are some of the other benefits you can expect when you use it;

- When you first get 151 SR Media you will need to charge it. This means you get it completely saturated in a tub of 5.5 pH water and really work the water into the media. Once saturated it's ready to be put into the buckets.
- The 151 SR Media holds water exceptionally well. We went from summer watering of our outdoor plants once per day to once every 3-4 days. Our indoor plants get a top water of trace minerals from the dosing tank once every 5-6 days. Nutrient levels have been reduced from what was a 1.5EC to a 0.5 EC.
- The plants really are THRIVING with this media! There is no doubt in mind this not only due to the quality of the material but also due to the fluffy consistency of the media having improved the aeration levels in the buckets.
- In a 151 Rock Farm there are no salt build ups that require media change out after each harvest. We have been using the same 151 SR Media now for over 3 without interruption while maintaining an EC 1 level. The plants love it and so do we!

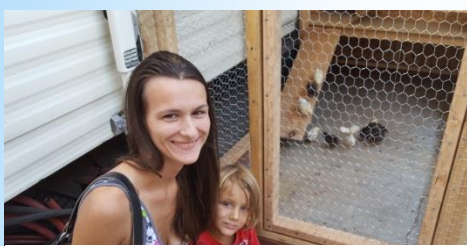


Happy Roots make Happy Fruits! Root development within the 5 gal buckets. Filled with 151 Media.





Release Your Inner Rock Star! Make Your Farm a 151 Rock Farm!



Eva and Elijah with our baby chicks. Chicken poop is an excellent source of food for Tilapia



Hemp @ week 5 from clone. Bottom water only. No top watering in 22 days



2 million gal Tilapia tanks located in the desert. A151 Rock Farm can grow food almost anywhere!

Speaking Against Recreational Cannabis Laws



NBA Coach Casey Inspecting the high CBD Casey Cut Strain



151 Farmers always donates a percentage of our harvests to the local food banks



Check out our week 3 fish grown hemp plants being grown in a 151 Rock Farm as we tilt one of the buckets up. Here you can see how the roots work their way out of the bottom and into the lava rock!



3 week Hemp and Basil growing strictly from fish water and in rock

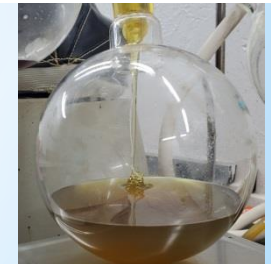


We Promote Bee Farming!
The Importance of Bee's



Fish Grown Hops are AMAZING! Did you Know Hops are the Cousin Plant to Cannabis! Learn More.

[Visit Us @ 151Farmers.org](http://151Farmers.org)



Fresh Hemp CBD Oil for Improved Patient Efficacy