Bring Your Classroom To Life!

www.aquaponicsusa.com

Bring Your Classroom To Life!

Be a STEM Instructor

With a STEM Food Growing System That actually grows Stems!

Pictured on page 2 is this STEM Teaching & Food Growing System, the FGS-20, offering 22 sq. ft. of Grow Bed space and a 120 gallon Fish Tank. We offer 5 Basic Designs of our STEM Teaching & Food Growing Systems. You select which system you prefer depending on how much grow space you need and how much room you have. These Aquaponics Systems utilize Deep-Media, Rapid Cycle Grow Beds with Loop Siphons and a proprietary Water Delivery Diffusers and Siphon Yokes which are placed at the bottom of the Grow Beds leaving the top clean and clear and fully available to grow plants.

What is STEM? STEM is an acronym for Science, Technology, Engineering and Mathematics, subject areas which have moved to the forefront of importance for preparing our students to meet the challenges of the 21st Century. The National Science Foundation uses a much broader field of STEM-designated areas of importance, which include subjects in the fields of Chemistry, Computer and Information Technology, Science, Engineering, Geosciences, Life Sciences, Mathematical Sciences, Physics, Astronomy, Social Sciences and STEM Education and Learning Research.

Regardless of how narrowly or broadly it is defined, Aquaponics USA's STEM Teaching & Food Growing Systems are the perfect addition to any STEM-focused classroom. These STEM Teaching & Food Growing Systems work to bring education to life for many disciplines within the STEM designated areas of instruction. Ecology, Mathematics, Botany, Physics, Biology, Chemistry, Nutrition, Aquaculture and Culinary Art-Classes become hands-on learning labs full of wonder about a living, breathing, ever-changing Eco-System.

STEM Teaching & Food Growing Systems utilize the latest innovation in food growing technology--**Aquaponics.** And right now, Aquaponics is creating a revolution in agriculture because it can grow vegetables and food fish while using 90% less water than soil gardening.

Aquaponics is also creating a revolution in classrooms like this one.

This STEM Teaching & Food Growing System was set up in the Library of a Bi-Lingual Magnet School in Tucson Arizona during the Christmas break of 2011.

What these instructors and the Librarian have done in the area of Aquaponics Instruction with Elementary students and little to no official curriculum is beyond amazing. We applaud their exemplary achievements!

Aquaponics turns learning into a hand's-on adventure through independent critical thinking. What's so exciting about Aquaponics is that it jumps right out of book pages and comes to life in the classroom through the use of a cross disciplinary teaching tool like no other, **STEM Teaching & Food Growing Systems**. These Systems can be set up in a school Library, Music Room, Classroom, Greenhouse or anywhere there's the appropriate space for students to gather around and learn from what is actually a living Eco System where live fish grow plants without pesticides, petrochemicals or GMO's.

The above **STEM Teaching & Food Growing System** was set up in a Science Classroom at the Rosamond High School in Rosamond, California in August of 2014. Today Rosamond High students are growing tomatoes under their state of the art Grow Lights designed for indoor growing as they learn about the anatomy and physiology of fish and plants.

You can't get anymore hands-on than this. A Davis Elementary student is busily harvesting and trimming the Water Cress that was grown in the Library's **STEM Teaching & Food Growing System**.

These Elementary students attend the Manzo Magnet School where they moved their **STEM Teaching & Food Growing System** from the Music Room into a Greenhouse that the school built especially for it.

They are harvesting lettuce from one of their four 11 sq. ft. Grow Beds in preparation for their Vegetable Sale. One of the main tools of an Aquaponics Farmer is a pair of clippers like the ones shown here.

What's more exciting and satisfying than planting, growing and harvesting your own food? Growing the fish might be even more exciting!

This adorable little one can hardly contain her excitement as the fingerling Tilapia are unveiled before going into their 320 gallon fish tank.

This **STEM Teaching & Food Growing System** went into the Drachman Montessori School in Tucson, Arizona. All 3 Tucson Schools including Davis Elementary, Manzo Elementary and Drachman Montessori got their **STEM Food Growing Systems** from a Feeding America Grant.

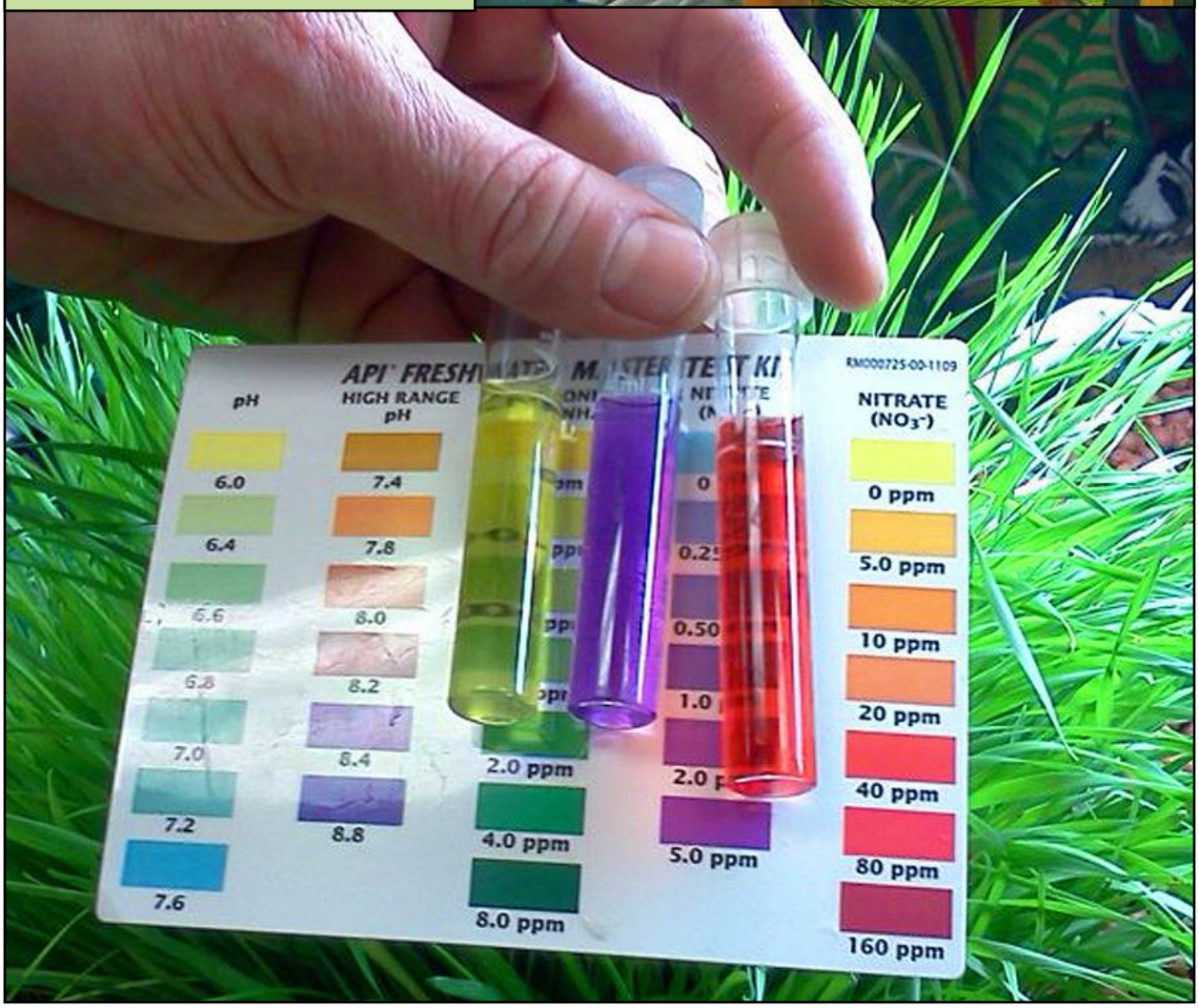
Introduce a STEM Teaching & Food Growing System into your classroom and turn bored teens into inquisitive scientists and flighty little ones into mesmerized stillness eager to learn. Be warned, the fish tank may become the most popular area in your Classroom.

This is a photo of a **STEM Teaching & Food Growing System** that was placed in the Davis Elementary School Library. Notice what was a Library shelf now holds the Water Measuring Kit, the Fish Food, a Spray Bottle and other important **STEM Teaching & Food Growing System** items.

Aquaponics, the food growing technology that **STEM Teaching & Food Growing Systems** use, is a hybrid food growing technology combining the best of aquaculture (growing fish) and hydroponics (growing veggies without soil), and it's completely organic because the processed fish waste is the natural fertilizer which means there are no pesticides. Aquaponics utilizes a cross-linked eco-system in which the fish waste fertilizes the plants and the plants clean the water for the fish. Your Students learn all about the Nitrogen Cycle and how to take water quality measurements using their handy Water Test Kit that comes with their **STEM Teaching & Food Growing System**.

If you're thinking Aquaponics is too complicated for Elementary students, think again. These Davis Elementary students have not only learned about the Nitrogen Cycle, they are creating their own teaching diagrams and teaching their fellow students about how it works.

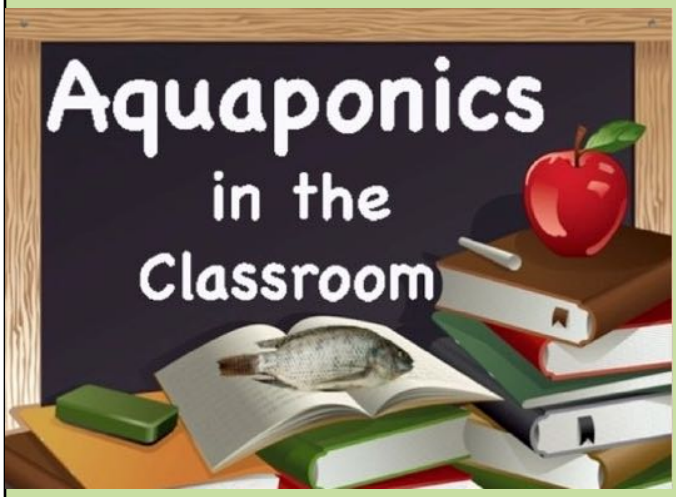
Meanwhile their STEM Food Growing System is sitting right behind them demonstrating the Nitrogen Cycle in living action as they take their Water Quality Measurements using the handy Kit demonstrated below.



An Aquaponics **STEM Teaching & Food Growing System** brings Science to life as students see plants & fish grow right before their eyes.

Below are Elementary students in the fifth and six grades. What Teacher wouldn't love to see a group of students gathered around their **STEM Teaching & Food Growing System** and working so diligently on their clip boards. This scene is a Teacher's dream come true.

Our **STEM Teaching & Food Growing Systems** come with everything you need to start a Classroom Learning Lab of your own. We offer bundled School Packages that include the Lights, the Fish, the Fish Food, a Titanium Heater for your Fish Tank, a Seed Starter Kit, an Automatic Fish Feeder and the Grow Bed Media that you see in the picture above, which is called Hydroton. That way, Teachers can write one Purchase Order which covers everything they will need (except shipping). We have placed these **bundled STEM School Packages** at the bottom of each of our pages that describe our 5 Basic Designs.



STEM Package

The FFGS EZ-15 is a polpular STEM (Science, Technology, Engineering and Math) System so we have bundled all of the things required to set up a complete STEM System in one easy to purchase ADD TO CART Button. The School Package includes the following:

An FFGS EZ-15 System PLUS

The Grow Bed Media

25 Live Tilapia Fingerlings

Fish Food for 1 Year

An Automatic 5 Pound Fish Feeder

A 300 Watt Titanium Heater

Seed Starter Kit

Optional:

Grow Lights Fluorescent or LED to fit the System

(Grow Lights must be supported separately from the System)

AQUAPONICS USA
FOOD FOREVER™
Growing System

FGS-20 STEM

Assembly and Start-Up Manual

www.aquaponicsusa.com 760-671-3053 urbanfarmer@aquaponicsusa.com

Resources & Curriculum Ideas For All Grades
Presenting Your STEM Teaching & Food Growing System

We are so pleased to be presenting this informative Curriculum and Resources document for Teachers and Educators as our STEM Teaching & Food Growing Systems go into more and more schools including Elementary, Middle Schools and High Schools across the U.S.

One of our two founders, Grace Sylke, was a school teacher; so short of creating Aquaponics Curriculum, which she hopes to do some time in the future, she has gathered these helpful Resources from various places to share with educators. Let's start with what we're offering on our website, our Blog, our TV Channel and in our Newsletters.

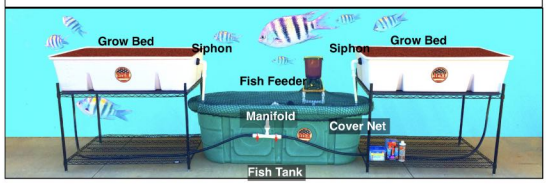
A. Of course, the first thing any teacher who wants to teach Aquaponics has to do is learn Aquaponics. That's one of the joys of teaching—learning. As Oliver Duffy, the other founder of

Aquaponics USA, LLC www.aquaponicsusa.com 760-671-3053

How to Operate the EZ-22

STEM Teaching & Food Growing System

A Training Manual for Teachers



Congratulations on the purchase of the most efficient, educational hands-on, STEM Teaching Labs available–the **EZ-22 STEM Teaching & Food Growing System.**

Your EZ-22 comes with an Assembly and Start-Up Manual that explains in detail how to Assemble and Start-Up your system. But what you need to know is how to maintain and run your new EZ-22 **STEM Food Growing System** so you can teach your students to do it; and that's what this Training Manual is all about. So let's start with the basics: (Refer to image above)

1. The Important Components of Your EZ-22 STEM Food Growing System (All Components and Chemicals are Capitalized in this Training Manual and Ratios or Important Timing Information and Instructions are Underlined)

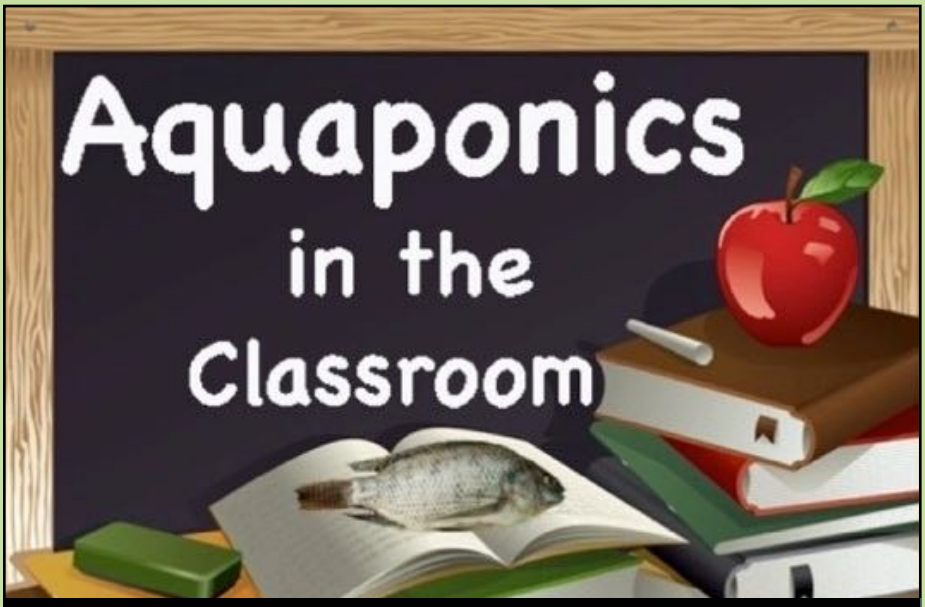
Aquaponics USA Teacher Training Manual 760-671-3053 www.aquaponicsusa.com

All of our 5 Basic Models come with 3 Manuals. Together these Manuals offer many pages of information about Aquaponics and your particular **STEM Teaching & Food Growing System**.

They are filled with pictures and detailed instructions about how to Assemble, Operate and present your chosen **STEM Teaching & Food Growing System** system to your students.

Once you have read them, you'll feel confident that you can easily run a **STEM Teaching & Food Growing System** Classroom Lab and teach your students everything they need to know to be proficient in Aquaponics.

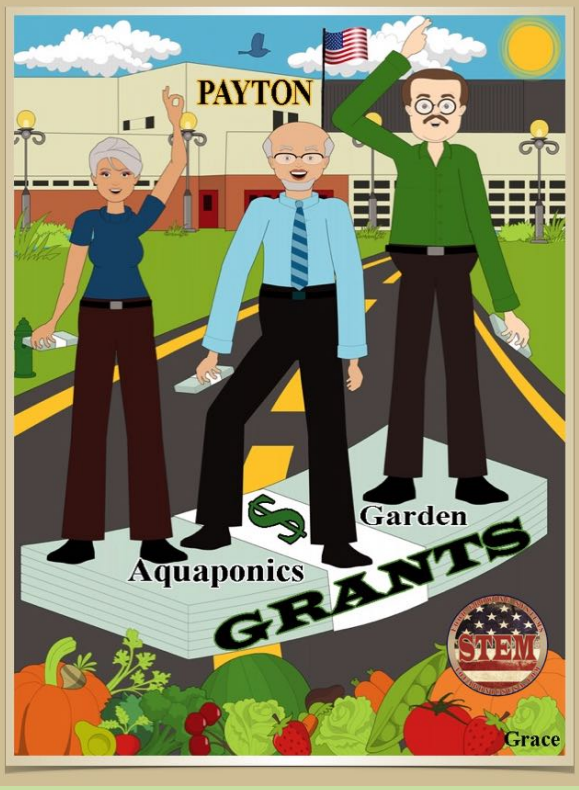
Our AQUAPONICS USA website is full of information on Aquaponics with specific pages aimed at Teachers including an "Aquaponics in the Classroom" page, and a "Where To Get A Grant" page.



760-671-3053 urbanfarmer@aquaponicsusa.com

Where to Get an Aquaponics Grant and What's the Process?

Home About AP Products Growing Systems AP Info Education Cart Contact



Our NEWSLETTERS: We also have a page where we post all of our Newsletters. Our Newsletters are full of educational information about our U.S. Food System including the following Series:

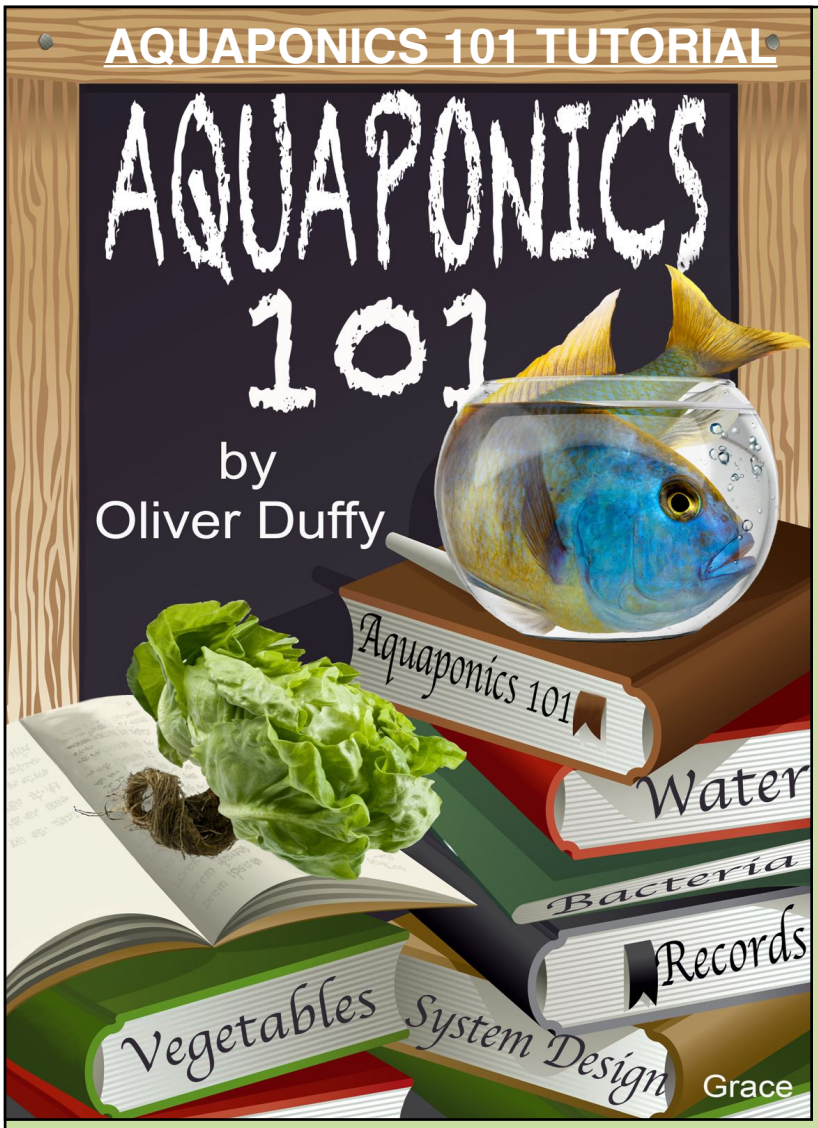
The Food Revolution, a 4 Part Series
The Organic Industry in the U.S, a 3 Part Series
Obesity in America, a 19 Part Series

And, of course, we have Newsletters about Aquaponics USA

These Newsletters are well researched and highly educational and would be most appropriate for High School students. We are not currently writing Newsletters, but what has been written is ageless.

An English Teacher could team up with a Science Teacher to create a Unit of study around the U.S.Food System in which the English Teacher's students could visit and participate in learning about Aquaponics while also learning about our Food System through reading our Newsletter Series on "The Food Revolution", "The Organic Industry in the U.S" and "Obesity in America". Then the English Teacher's students could hone their writing and speaking skills by writing reports and giving Presentations to the Science Teacher's students about these topics.

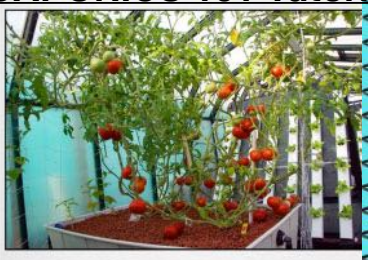
Don't miss our extensive Aquaponics Tutorial called Aquaponics 101.



AQUAPONICS 101
This Tutorial is a great Resource for teaching Aquaponics to yourself and your Students. It would need to be modified to use it with Elementary students.
It has 7 Parts including:
Aquaponics 101 Intro
Part 1: The Bio-Chemical Process, an Introduction of the Nitrogen Cycle
Part 2: System Design
Part 3: System Design Continued
Part 4: System Start Up, Operation & Maintenance
Part 5: System Start Up, Operation & Maintenance Continued
Part 6: Ratio of Fish to Water
Part 7: Improving Water Quality

This Tutorial offers detailed information on how to build and run an Aquaponics system. It was written by our System Designer, Oliver Duffy, who is a retired Aerospace Engineer.
We realize Aquaponics isn't rocket science, but it sure does help to have an Aerospace Engineer designing our **STEM Teaching & Food Growing Systems**.
This Tutorial comes complete with Quizzes and a Completion Certificate for your students. We are offering it FREE on our AquaponicsUSA website.
The following page shows the layout and formatting of Aquaponics 101.

AQUAPONICS 101 Tutorial

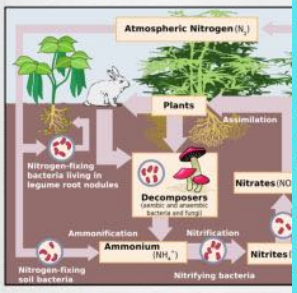


Aquaponics 101 Introduction:

We, here at Aquaponics USA, receive calls daily from Aquaponics enthusiasts with varying amounts of Aquaponics experience. Most are very new to this wonderful technology. When we first started out in late 2008, we were also new to Aquaponics and had to learn. Fortunately, we had lots of help on Murray Hallam's Australian forum from those more experienced folks; and, of course, Murray himself, who was a great mentor. Once we felt we had enough information we started to build our own system and that is where the learning really began.

Being an Aerospace Engineer with over 35 years of experience in many aspects of that industry was beneficial in understanding and implementing the various designs I came up with and also understanding what went wrong when things didn't work the way I expected.

What follows is going to teach you most of what you will need to know about Aquaponics in order to build and maintain your own system. So, if you're curious about the most amazing food growing technology on the planet today, read and



Aquaponics 101 Part 1: The Bio-Chemical Process, an Intro Nitrogen Cycle

What is Aquaponics and why should I care?

Aquaponics is an ancient food growing technology that has bee the Earth has had water with fish and plants growing together n Aquaponics is nature at work. In nature, the fish eat whatever t and their waste is broken down by the bacteria in the water cre the plants. The plants that receive that nutrient rich water then a nutrients; and in doing so, they help clean the water for the fish

The word "Aquaponics" comes from two separate words. The fi which, of course, means water; but in this case, the "aqua" is fr compound word "aquaculture" (the raising of fish). The second which is latin for work, and comes from its use in "hydroponics"

Aquaponics 101 Part 2: The System Design

This is the second in a series of Tutorials on Aquaponics 101 that are going to teach you most of what you need to know about Aquaponics (AP). So, if you're curious about the most amazing food growing technology on the planet today, keep reading and scrolling.

In Part 1, "The Bio-Chemical Process", I talked about what Aquaponics is and why it is important to Preppers (those preparing for what is about to come down the pike).

To quickly review, Aquaponics combines the raising of fish and using the fish waste as plant nutrients so you can grow vegetables. This is done year-round and can provide food fish and veggies for your family.

The bio-chemical process includes the breakdown of fish waste into plant nutrients, the uptake of these nutrients by the plants being grown in separate grow beds and the cleaning of the water to be returned to the fish tank and reused in an endless loop. This is all done in a continuous flow recirculating aquaculture system called Aquaponics.

I'm now going to focus on a particular AP system type and its design, but I'll also

Aquaponics 101 Part 3: The System Design Continued

This is Part 3 in a series of tutorials that are going to teach you moust of what you need to know about Aquaponics.

Some will argue that the standard ratio of grow bed size to fish tank size is two gallons of grow bed container capacity to one gallon of fish tank capacity instead of the one to one ratio I mentioned in Part 2. Again, the number for expanded clay is 1:1 and for gravel about 1.3:1 gallons of grow bed container capacity to fish tank capacity. The reason for this one to one ratio limitation is that the water in the fish tank goes up and down during the grow bed's flood and drain process, and too much variation in water height can stress the fish. You can use the 2:1 number only if you flood and drain some of your grow beds but not all; or if you add a sump tank to catch the water that would otherwise be returned directly to your fish tank. The increase in the ratio for gravel is that it displaces more water than does the expanded clay and, therefore, you need a larger grow bed in order to have room for the same amount of water.

The simplest AP system design has a low to the ground fish tank that is 24 to 30 inches high and grow beds that are up on tables high enough so that the water pumped up from the fish tank to the grow beds can gravity flow back into the fish tank from the bottom of the grow bed siphon and have it function. I prefer 24 inch high fish tanks so the grow beds don't need to be so high and, therefore, you don't need a step up to comfortably reach across them. This allows for at least six inches of extra siphon draw down below the grow bed thereby reducing the grow bed's drain time (more on this later).

The grow beds' siphons activate on their own timeline; but at some point, with multiple grow beds, the siphons arrive at nearly the same schedule. Like two or more metronomes, occasionally they all sync up and drain at the same time filling the fish tank to capacity and then they simultaneously pump water into and fill all the grow beds. With a two to one grow bed to fish tank ratio, the extra water required to fill the grow beds leaves the fish tank with a dangerously low amount of water (if none at all), which will stress the fish.

With a one to one grow bed to fish tank volume ratio, the water level in the fish tank won't go so low as to stress the fish. So, one to one is the number you want to aim at in your AP system design.

Aquaponics 101 Part 3: The System Design Continued

This is Part 3 in a series of tutorials that are going to teach you moust of what you need to know about Aquaponics.

Some will argue that the standard ratio of grow bed size to fish tank size is two gallons of grow bed container capacity to one gallon of fish tank capacity instead of the one to one ratio I mentioned in Part 2. Again, the number for expanded clay is 1:1 and for gravel about 1.3:1 gallons of grow bed container capacity to fish tank capacity. The reason for this one to one ratio limitation is that the water in the fish tank goes up and down during the grow bed's flood and drain process, and too much variation in water height can stress the fish. You can use the 2:1 number only if you flood and drain some of your grow beds but not all; or if you add a sump tank to catch the water that would otherwise be returned directly to your fish tank. The increase in the ratio for gravel is that it displaces more water than does the expanded clay and, therefore, you need a larger grow bed in order to have room for the same amount of water.

The simplest AP system design has a low to the ground fish tank that is 24 to 30 inches high and grow beds that are up on tables high enough so that the water pumped up from the fish tank to the grow beds can gravity flow back into the fish tank from the bottom of the grow bed siphon and have it function. I prefer 24 inch high fish tanks so the grow beds don't need to be so high and, therefore, you don't need a step up to comfortably reach across them. This allows for at least six inches of extra siphon draw down below the grow bed thereby reducing the grow bed's drain time (more on this later).

The grow beds' siphons activate on their own timeline; but at some point, with multiple grow beds, the siphons arrive at nearly the same schedule. Like two or

Aquaponics 101 Part Four: System Start Up, Operation & Maintenance:

This is the fourth in a series of Tutorials that are going to teach you much of what you need to know about Aquaponics.

In Part 1, "The Bio-Chemical Process", I wrote about what Aquaponics is and why it is important to Preppers (those preparing for what is about to come down the pike). Aquaponics allows you to grow food for yourself and your family year-round as long as your AP system is in the proper environment. I also gave a description of the bio-chemical processes involved that make Aquaponics work.

In Parts 2 and 3, "System Design", I wrote about the components of a basic system. To quickly review, I wrote about the need for a bio-filter and that it is usually combined with the grow bed to form a single AP component called the grow bed, which is the most important part of an AP system. I told you about the grow bed media, the grow bed shape, and that you need about one gallon of grow bed-bio filter volume for every gallon of fish tank volume and the reason for this ratio. I discussed the need to flood and drain your grow beds four times an hour and how to properly size your water and air pumps.

I'm now going to focus on how to Start Up, Operate and Maintain your system, but first we need to talk about water. To your AP system, water is life. The water in your system contains elements that provide life to the various organisms living in your system. These organisms include the fish, bacteria and the plants. The one element in your water that is essential to all of these organisms is oxygen in the form of dissolved oxygen (DO). As mentioned earlier, an AP system with ample DO will perform much better than one that is lacking in this life giving element.

Here's a group of fingerlings that are about the size of the fingerlings you receive when you order fish from our website.

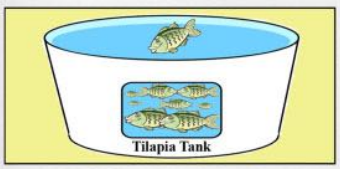
These fish ship overnight and are guaranteed to arrive alive.

You can choose from five different species; and they are all GMO and Hormone free.

Aquaponics 101 Part 5: System Start Up, Operation & Maintenance Continued

I believe the best way to cycle your system is to place your baby fish, be they fry or fingerlings, into the fish tank and begin feeding them small amounts of food. When adding in new purchased fish to your system, you will always be adding in some water from their previous location. This water will contain the bacteria that you need for your AP system. It is a good idea to add some bottled bacteria as well, like API Quick Start that we discussed in Part 4. Slowly increase the amount of food given to your fish while making daily water chemistry measurements. If the ammonia or nitrites get too high (1.0 ppm), reduce your fish food feeding amounts or stop feeding your fish until they settle back down to about 0.5 ppm or less. This is just an indication that your fish feeding increases are getting ahead of your bacteria growth.

After about two weeks, you should be able to feed your fish as much as they will eat and not have an ammonia spike. At that time, you can reduce your water measurement chore to a frequency of once every few days instead of daily. However, you should never go more than a week without making a measurement. It is important not to over feed your fish because the excess food will have to be broken down over time by heterotrophic bacteria. In the mean time, your fish water will become cloudy. During this two week cycling process,



Aquaponics 101 Part 6: the Ratio of Fish to Water

This is the sixth in a series of Tutorials that are going to teach you much of what you need to know about Aquaponics. So, if you're curious about the most amazing food growing technology on the planet today, continue this series of educational Tutorials on Aquaponics 101 and please, become interactive by making comments or asking questions through our email address at urbanfarmer@aquaponicsusa.com.

In Part 1, "The Bio-Chemical Process", I wrote about what Aquaponics is and why it is important to Preppers (those preparing for what is about to come down the pike). An AP system will allow you to grow food for you and your family year round as long as its in the proper environment. I also gave a description of the bio-chemical processes involved that make Aquaponics work.

In Parts 2 and 3, "The System Design", I wrote about the components of a basic system. To quickly review, I wrote about the need for a bio-filter and that it is usually combined with the grow bed to form a single AP component called the grow bed, which is the most important part of an AP system. I told you about the grow bed media, the grow bed shape, and that you need about one gallon of grow bed/bio filter volume for every gallon of fish tank volume and the reason for this ratio. I discussed the need to flood and drain your grow beds four times an hour and how to properly size your water and air pumps.

In Parts 4 and 5, "System Startup, Operation and Maintenance" I talked about an AP system water and all the important aspects of the water like the DO (dissolved

Aquaponics 101 Part 7: Improving Water Quality

This is the seventh in a series of Tutorials that are going to teach you much of what you need to know about Aquaponics. So, if you're curious about the most amazing food growing technology on the planet today, complete this Tutorial series of educational posts on Aquaponics 101.

In Part 1, "The Bio-Chemical Process", I wrote about what Aquaponics is and why it is important to Preppers (those preparing for what is about to come down the pike). An AP system will allow you to grow food for you and your family year-round as long as your AP system is in the proper environment. I also gave a description of the biological processes involved that make Aquaponics work.

In Parts 2 and 3, "System Design", I wrote about the components of a basic system. To quickly review, I wrote about the need for a bio-filter and that it is usually combined with the grow bed to form a single AP component called the

Our AQUAPONICS USA WEBSITE also offers lots of information about Aquaponics including pages on:

The Fish:

The Water:

The Veggies:

There are 5 Basic Models of **STEM Teaching & Food Growing Systems** to choose from.You select your Model depending on the size of the space you have in your Classroom, Library, Greenhouse or other location where you plan to set up your system.

We offer both Family Systems and School STEM Systems so don't be confused by the names. Our Family Growing Systems do not offer a Bundled Package or price. Our company services both the private sector and the public sector. When you order, just look for the word "STEM" in the Letter/Number designations for our systems. Our STEM School Packages bundle the important Add-Ons so Teachers can place their orders using one Purchase Order.

These are state of the art Aquaponics **STEM Teaching & Food Growing Systems** designed by an Aerospace Engineer. They have many originally designed features that make them unique in the field including:

Rapid Cycle Flood and Drain Capabilities

Proven Loop Syphons for Maximum Unobstructed Growing Area

Highly Efficient Deep Delivery Water Diffusers

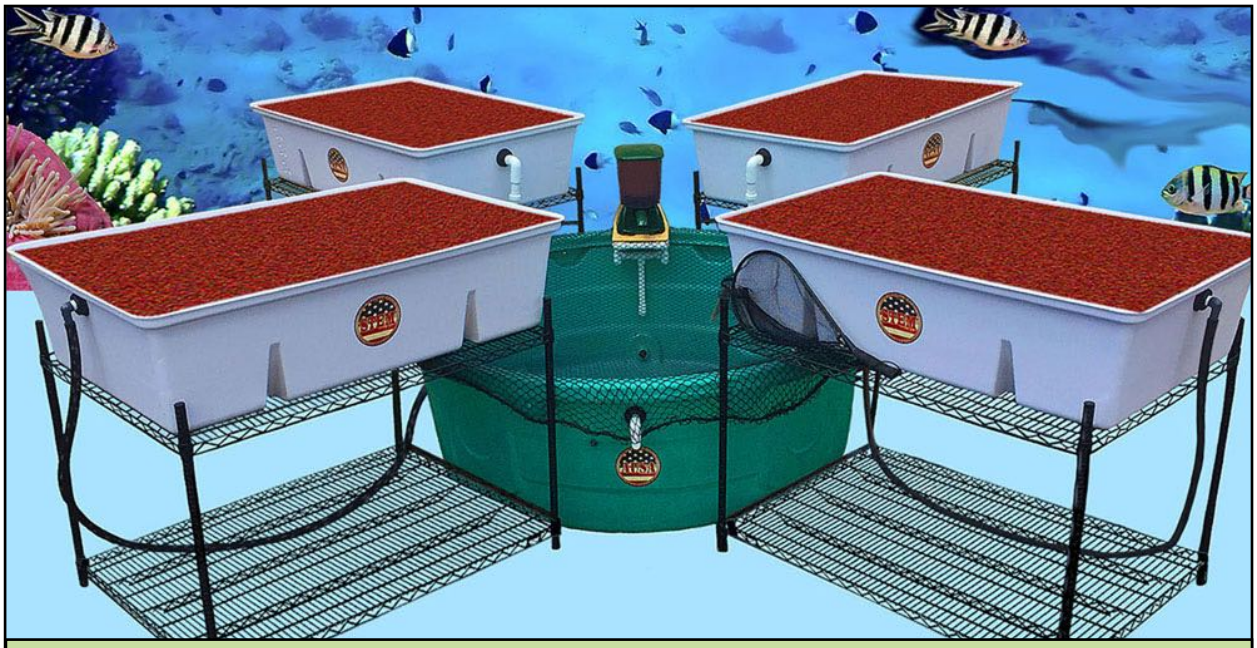
And Much More

This document links you directly to the page that describes each of our Models. Scroll to the bottom of the page for the (STEM) School Packages. **Each Model is described on our Home Page and designated by a unique Name often starting with FGS, which stands for Food Growing System, then followed by a Number which designates the size of the System.**

The FGS-44L STEM School Package

Footprint 6’ x 20’ 8”. This is our newest Model. It has four 11 sq. ft. Grow Beds with a total of 44 sq. foot Linear Growing Area.

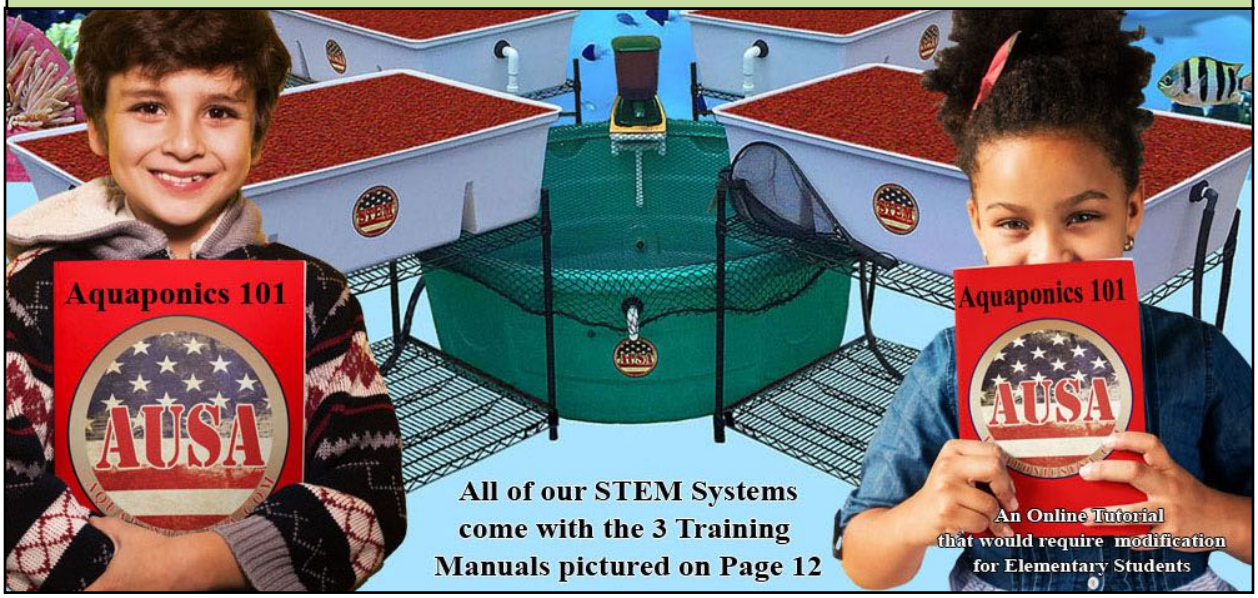
If you have the space, this is a great **STEM Food Growing System**. The FGS-44L STEM Teaching & Food Growing System needs 2’ of walk-around space so students can work on all sides of the system. **Scroll down to the bottom** of the FGS-44L page to find the **FGS-44L STEM School Package.** Below the FGS-44L is being assembled in Tucson, AZ.



The FGS-44R STEM School Package

Footprint 13’ x 13’. This is another configuration of our newest Model. It has four 11 sq. ft. Grow Beds with a total of 44 sq. feet of Radial Growing Area.

If you have the space, this is a great **STEM Food Growing System**. The FGS-44R STEM Teaching & Food Growing System is designed to accommodate numerous students around each of the grow beds and fish tank. **Scroll down to the bottom** of the FGS-44R page to find the **FGS-44R STEM School Package**.



The FGS-20 STEM School Package.

Footprint 4’2” x 10’ 4” plus 2’ walk-around room. It has two 11 sq. ft. Grow Beds with a total of 22 sq. feet of Growing Area. This system makes a perfect classroom system because it’s economical and has a small footprint.

The FGS-20 is half the size of the FGS-44L, and it utilizes the same

Grow Beds.

Scroll down to the bottom of the FGS-20 page to find the

FGS-20 STEM School Package.

The EZ-22 STEM School Package

Footprint 35” x 163” (13’ 7”). This model is perfect for classrooms with limited space because you can place the system right up against a wall. Of course, if you have the space to allow 2’ of walk-around, that’s ideal because it gives your Students three sides of each grow bed to gather around. **Scroll down to the bottom** of the EZ-22 page to find the **EZ-22 STEM School Package**.

When Students and Aquaponics STEM Teaching & Food Growing Systems get together, there are always smiling faces. It integrates Math, Science, Biology, Chemistry and Technology into the fascinating hands-on learning environment of a real, working ecosystem right in your classroom. Turn your Classroom into an integrated Learning Environment for Students of all ages.

The EZ-15 STEM School Package.

Footprint 35” x 120” (10’). This model is perfect for classrooms with limited space because you can place the system right up against a wall. Of course, if you have the space to allow 2’ of walk-around, that’s ideal because it gives your Students three sides of each grow bed to gather around. S**croll down to the bottom** of the EZ-15 page to find the **EZ-15 STEM School Package.**

The Mars-Hydro LED Grow Lights

The Grow Lights: If your STEM Teaching & Food Growing System is inside a Classroom, a Library, an All-purpose Room or any indoor area, you're going to need Grow Lights. Without them, your STEM Teaching & Food Growing System will not work unless it's in an outdoor Greenhouse.

We have what we believe to be the best Grow Lights on the market for the price. When you look at the bundled STEM School Packages, you will see that the Grow Lights are Optional, meaning they can be included with the bundle of other important Add-Ons or not. You will need to have your school Maintenance Crew hang your Grow Lights for you.

Our Mars-Hydro Grow Lights:

These beauties are so good they have replaced both the Fluorescents and LED's we sold in the past. They mimic the sun's spectrum and grow vegetables and leafy greens like crazy while rivaling the price of Fluorescents that can only grow leafy greens. So who needs Fluorescents? Their prices compared to the Color-Specific LED's we sold in the past are very affordable, and they emit broad spectrum White Light, just like sunlight, in specified areas of coverage depending on the Style of LED you choose.

Caution: You will need to instruct your students to not look directly into these lights. They sit several feet above the Grow Beds and as students would need to get right under them, they should be turned off so as not to be detrimental to their eyes. Mars-Hydro LED's emulate the sun and are very bright, so in the same way you would not want to look straight up at the sun, you do not want to look up into these grow lights.

Each of our STEM School Packages, that you will find by scrolling to the bottom of each Growing System Page, has designated which Mars-Hydro LED grow light that System requires.

We have pre-calculated the number of correctly sized grow lights you will need and created one Add To Cart Button. That way Teachers can easily determine the cost of their STEM Package with and without LED Grow Lights.

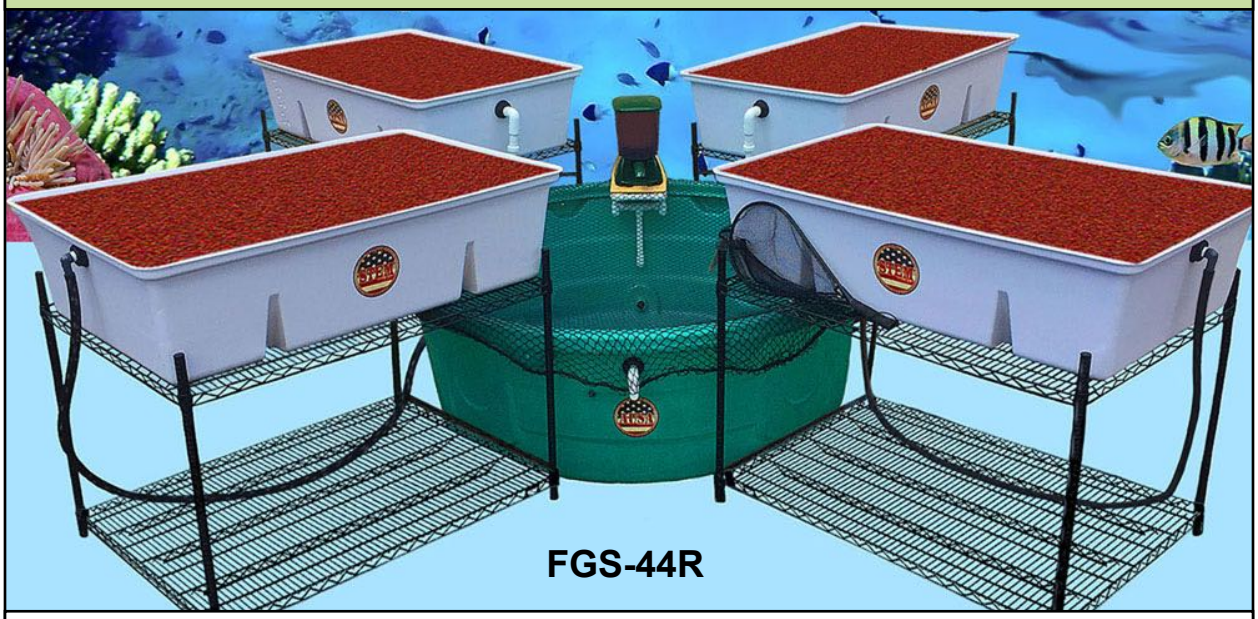
FGS-44L: Below is a Photo of one of our largest Systems. At the bottom of this page is the Mars-Hydro LED that perfectly illuminates these square Grow Beds. Put this System and these LED's together and you have a STEM Teaching & Food Growing System that is unrivaled.

The Mars-Hydro FC-3000

The perfect size for our FGS-44L STEM Teaching & Food Growing System

4 of them are already priced out for you in our STEM Package

FGS-44R: Below is a Photo of the other one of our largest Systems. At the bottom of this page is the Mars-Hydro LED that perfectly illuminates these rectangular Grow Beds. Put this System and these LED's together and you have a STEM Teaching & Food Growing System that is unrivaled. Students can gather around three sides of every Grow Bed.



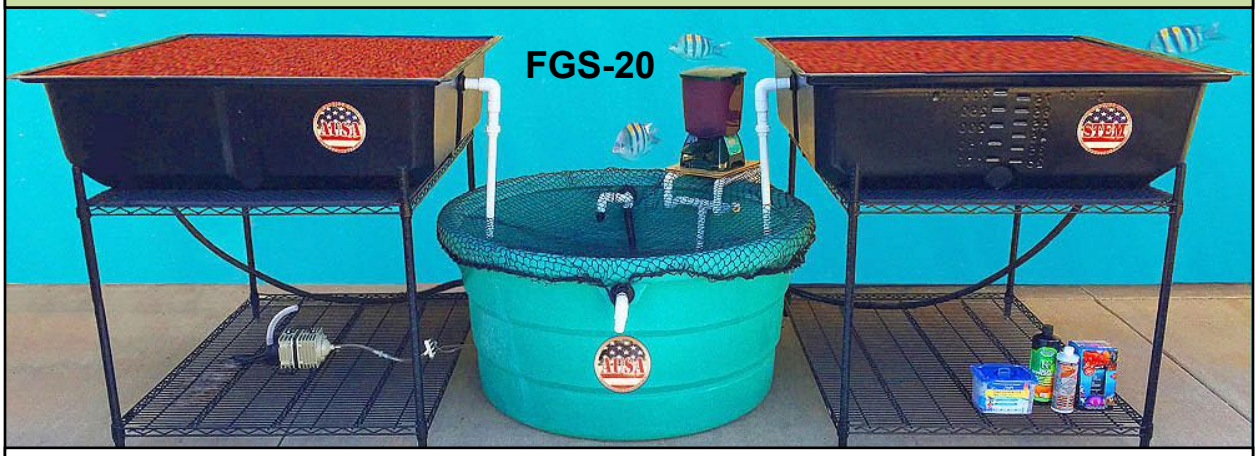
FGS-44R

The Mars-Hydro SP-3000

4 of them are already priced out for you in our STEM Package

The perfect size for our FGS-44R STEM Teaching & Food Growing System

FGS-20: Below is a Photo of our FGS-20 Teaching & Food Growing System. At the bottom of this page is the Mars-Hydro LED that perfectly illuminates this square Grow Bed that utilizes the same Grow Beds that are in the FGS-44L so the LED is the same except you only need 2 of them instead of 4 because the FGS-20 is half the size of the FGS-44L.



The Mars-Hydro FC-3000

The perfect size for our FGS-20 STEM Teaching & Food Growing System

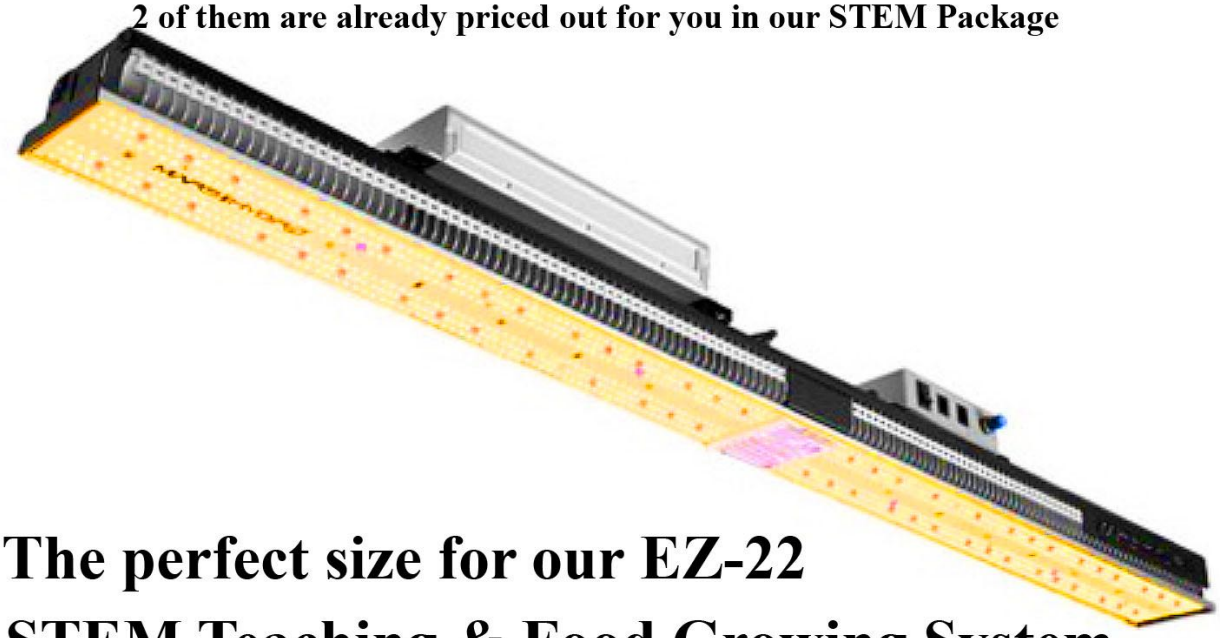
2 of them are already priced out for you in our STEM Package

EZ-22: Below is a Photo of our EZ-22 Teaching & Food Growing System. At the bottom of this page is the Mars-Hydro LED that perfectly illuminates this rectangular Grow Bed that utilizes the same Grow Beds that are in the FGS-44R so the LED is the same except you only need 2 of them instead of 4 because the EZ-22 is half the size of the FGS-44R.

Are you ready to turn your Classroom into a Next Generation Science Standards STEM Compliant adventure in learning? We've got you covered with the perfect systems and accompanying LED Grow Lights.

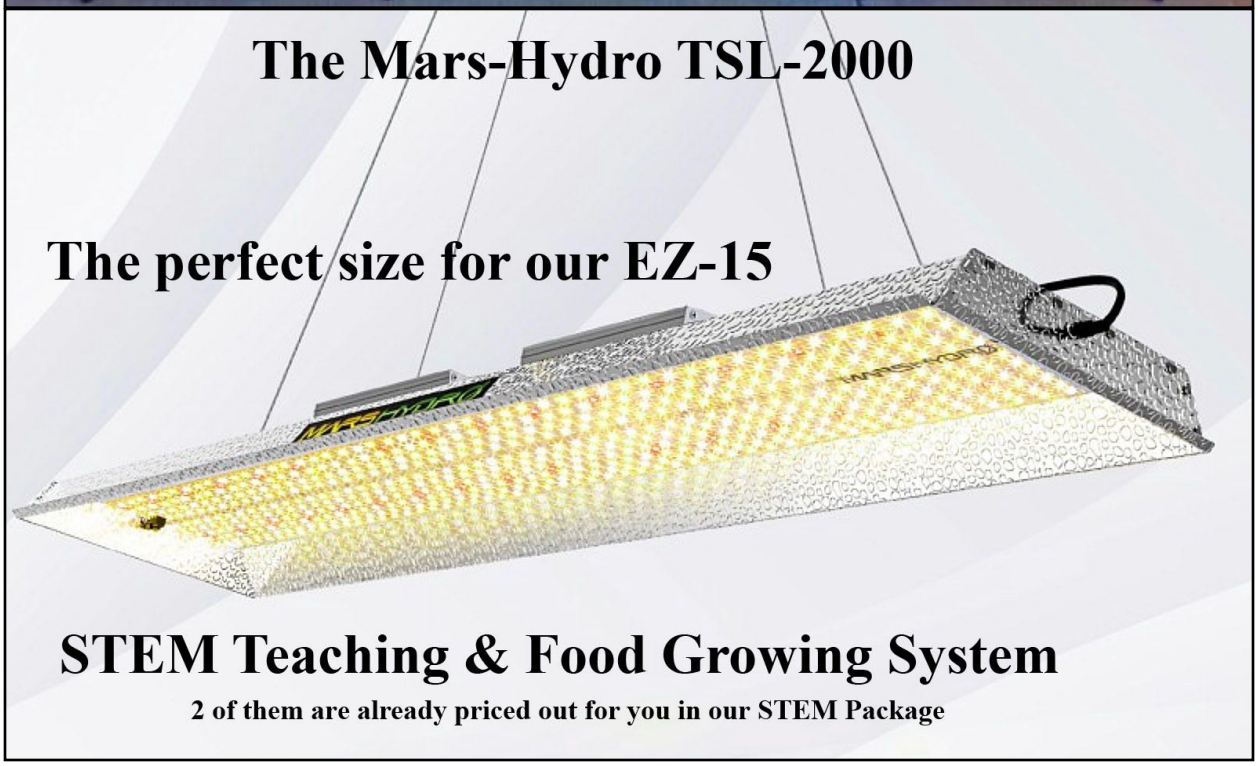
The Mars-Hydro SP-3000

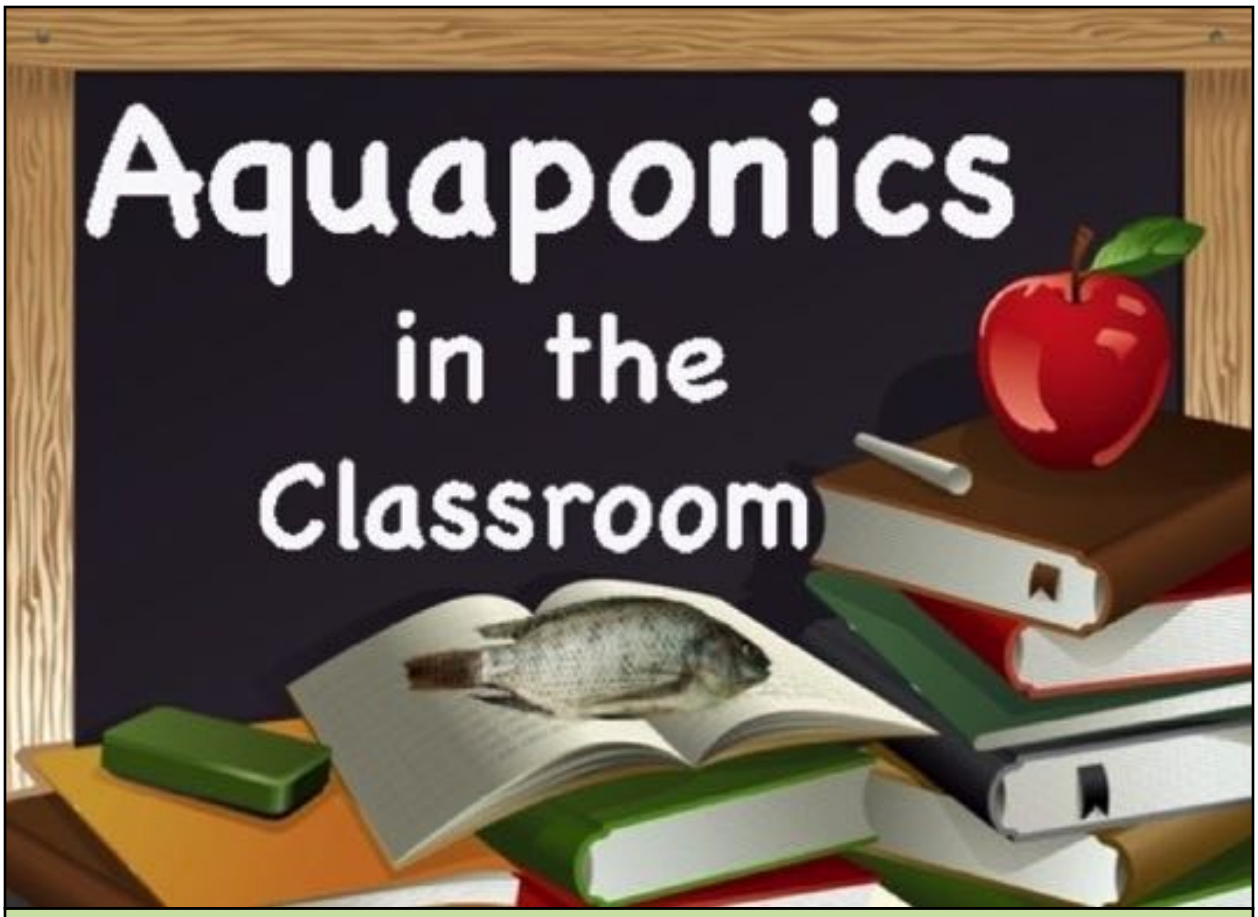
2 of them are already priced out for you in our STEM Package



The perfect size for our EZ-22 STEM Teaching & Food Growing System

EZ-15: Below is a Photo of our EZ-15 Teaching & Food Growing System. At the bottom of this page is the Mars-Hydro LED that perfectly illuminates this rectangular Grow Bed. The EZ-15 is a stand alone System that utilizes a Grow Bed which is not duplicated anywhere else. It therefore also needs a unique Mars-Hydro LED Grow Light.





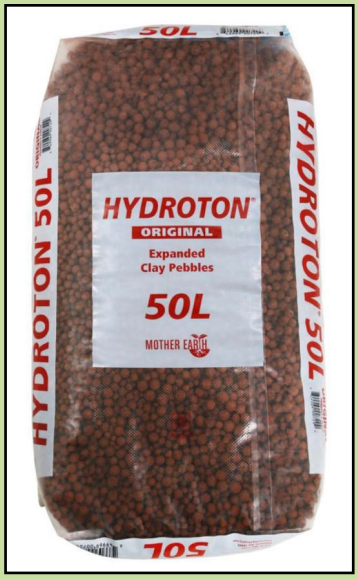
What is in the STEM School Package Bundle? Once we started dealing with Teachers and Administrators, it became clear it was difficult for them to get multiple Purchase Orders processed through their systems; and they wanted to be able to order everything they needed for their STEM Teaching & Food Growing Systems on one Purchase Order.

So we designed our STEM School Package Bundles for one easy to purchase ADD TO CART Button. Here at Aquaponics USA, Schools are our primary customers; and we are eager to get STEM Teaching & Food Growing Systems in every school in the U.S.

Our **Education Pull-Down Menu** at the top of every page on our website has a wealth of important information for Teachers including three “Aquaponics STEM Classrooms in Action” Pages, “Aquaponics In The Classroom”, “STEM Resources” and our “Aquaponics 101 Tutorial”.

The following pages show you exactly what the 6 Bundled Add-Ons are:

1. Grow Bed Media: Every STEM Teaching & Food Growing System needs to have Grow Bed Media because they do not use soil. The Grow Bed Media we have always used and love is called Hydroton. It comes in 50 liter bags and is reusable for the life of your system. We know exactly how many of these bags of Grow Bed Media each of our Models needs to fill the Grow Beds and include it in your bundled shipment. For example, the FGS-20 STEM needs 12 of these Bags.



2. Seed Starter Kit: STEM Teaching & Food Growing Systems require you to sprout your own seeds and for that you and your Students will need a Seed Starter Kit complete with a Heat Mat for those cold nights in your Classroom when/if the heater is turned off. You will also need these handy A-OK Starter Plugs to plant your seeds into before placing them in the Seedling tray.

3. Live Tilapia Fingerlings: A STEM Teaching & Food Growing System will not work without the Fish because they are the engine of the system. The Fish waste is what fertilizes the plants once it's broken down into usable plant nutrients by the bacteria in the system. So, we bundle the Live Fingerlings (about 1" in size when they arrive) into your STEM School Package. Like the photo says, in about 8 months you'll have fish this size. The number of fish you will need depends entirely on the size of your STEM System, and we have worked that out for you also.

4. Tilapia Fish Food For 1 Year: You can't keep the Fish alive without Fish Food. We offer healthy Fish Food that does not contain dead land animal parts as protein filler, which is what's in most of the Fish Food from China. Tilapia Food comes in 5 sizes, but you will only need these 4 of them including: Fingerling Crumble, Fingerling Pellet, Intermediate Pellet and Grow Out Pellet. You will need to keep the Fish Food you are not using in a cool, dark place.

5. **An Automatic Fish Feeder:**This is a must have Add-On for STEM Teaching & Food Growing Systems so your fish don't starve on weekends and holidays. It makes raising the fish a snap because once they're in their Fish Tank, the only thing you have to do is feed them. They take care of everything else themselves.

This Automatic Fish Feeder comes with a handy support stand made especially for your Fish Tank.

6. **500-800 Watt Titanium Fish Tank Heater:** Other than Fish Food, your Tilapia need to be in warm water because they are tropical fish. If the heat is turned off in your classroom for any reason, these 500-800 Watt Titanium Fish Tank Heaters will save the day so you and your Students don't come back to a tank full of dead fish. This Titanium Heater is on our Accessories page, so scroll down to the 4th blue bar to read more about them.

Are you ready to **Bring Your Classroom To Life**? The pictures you've seen in this Presentation can't be faked. What you see is real excitement, real enthusiasm and Real Hands-On Learning. Turn your Classroom **from THIS:**

To THIS:

Once you receive your STEM Teaching & Food Growing System, your Maintenance Crew can help you Assemble it in a matter of hours. Now the plants and fish aren't going to grow in a matter of hours; but you will be surprised at how quickly your plants do grow and how densely they can be planted into these STEM Teaching & Food Growing Systems. This STEM System was in the Davis Elementary School Library for about three months when this photo was taken.

If you have any questions or would like to speak with us for any reason, please call us at **760-671-3053** or email us at:

urbanfarmer@aquaponicsusa.com

We would love to help you create a STEM Program that actually grows Stems while it Brings Your Classroom To Life! Go to our **HOME Page** to see our STEM Teaching & Food Growing Systems and Get Teaching & Growing.

Sustainably,

Grace & Oliver, Aquaponics USA