

# The Business Of Aquaponics

This is the most important part of this manual for you to understand. Here's why: there are many areas in which your aquaponics business can fail, and this section of the manual is designed to help you identify ways to succeed in all of those areas. Here's a short list of those "failure-mode" areas, after which we get specific and go into detail on each area so you understand it thoroughly. The large-scale aquaponics failures of the last three years all did one or more of the following things:

1. Started big with lots of expenses and little or no cash flow.
2. Just "grew something" without doing test grows, market research, or financial projections first to see if it's a good choice or not.
3. Chose a single outlet for their product without investigating all the possible ways to sell.
4. Started with little or no planning and no production timeline.
5. Didn't market themselves or their products in an effective way.
6. Employed an aquaponics technology that couldn't possibly produce enough to cover its expenses, labor, and overhead.

Right after we cover the solutions to these six failure modes, we will do an aquaponics "Case Study" of a farmer who did everything right; and is making a good living from his aquaponic farm as a result.

## 1. How To Start Small And Generate Cash Flow!

**How To Drive Success: Don't start big with lots of expenses and hardly any cash flow; rather, start small and generate cash flow right away!**

**It's funny** how many people claim to be "commercial aquaponics experts", but have never done it for a living themselves. From a couple of people who **have** done so, and who came up the hard way (we didn't have **our** manuals, **our** CAD drawings, and **our** unlimited support services to draw on when we started!) here's our short list of what's necessary for success in commercial aquaponics:

1. **Research thoroughly and learn everything possible** you can about aquaponics before starting. Doing your **due diligence** first can save you from mistakes costing hundreds of thousands of dollars, or worse, thousands of hours of **your life!** How do you do this?

**Contact people who are doing it**, and confirm that their approach really works. Insist on numbers, contacts to call, and real people that you can confirm are actually operating the farm. Ask for the number of their produce distributor, or three of the markets they sell to; then call these people and confirm. You get the idea.

**Why This Is So Important:** There's one aquaponics farm that recently lost their \$1.4 million investment after only 5 months in actual operation. When we analyzed their failure mode, we realized immediately (from publicly-available photos) that they were planting their lettuce at **one-third** the density we successfully **grow ours** at, and **only using 70%** of the available floor space inside their greenhouse for vegetable troughs. They had also paid three times as much for their infrastructure as it should have cost, because they simply hadn't educated themselves and shopped around first.

**Dry troughs, no fish, no plants, no income. Not where you want to end up!**



**They were only getting** one-third of the production that was possible out of their greenhouse and raft area. The solution would have been so simple: all they needed to do was to drill more holes in their rafts, and use the planting and transfer technology that we teach. The **really sad thing** about this failure is that if they'd simply invested \$1,495 in one of our trainings before investing \$1.4 million in their farm, they wouldn't have made this mistake, and might **still** be in profitable operation.

**Insist on getting information** from people who are actually doing it, not just talking about it. See their operation, don't just listen to "how much they know". If they truly want to help you, why don't you have them send you a copy of the cash flow spreadsheet from their profitable commercial aquaponics operation? And remember: keep a sharp eye on your wallet!

**2. Don't wait until you have lots of money** to invest in your operation: start building and operating an aquaponics system **now!** Build a small backyard system if that's all you can afford; the food you grow with it will save you money. You will gain valuable experience with even a small system that will be critical to your success at a commercial-scale venture.

**There are many reasons to start small**, even if you have several hundred thousand dollars burning a hole in your pocket. Here are four of the most important ones:

**A. Even we have no idea** what will grow best in your location, with your greenhouse, your sunlight exposure and hours, temperature, humidity, etc. After doing two or three "test grows" in a **small**, affordable system (and greenhouse, if necessary in your location), you will **know** what grows best.

**B. Even we have no idea** what will sell best in your location, with your local economy, your local produce distributors and outlets, and your local consumers. After each of the "test grows" mentioned in "A" above, you will have produce to do test marketing with. Take this produce to all the outlets you identify that might be interested, and find out what they're willing to pay, as well as the quantities they need. Yes, need, because commercial aquaponics is not about the "great produce" you have, how cool your aquaponics system is, or what a great farm name you've come up with, but about **your market's needs!** If you don't supply what the market needs, you can forget staying in business.

**C. Even if the aquaponics technology** you are starting with is well-developed and already profitable (as ours is) your situation will be different than ours in ways we can't predict and you can't plan for. You will discover new information while operating your first small system which you can apply to your large commercial-scale system. If you've built your 20,000 square feet of aquaponics and **then** discover something that gives you 20% (or 100%) more production or income, **it's too late:** you've spent your money and have to live with your system the way it is.

**What we can guarantee** is that, in your physical environment, with your market, your temperature regime, and your skill sets; you will learn so many things in your first few growing cycles (in your small test system) that you will be able to build your large commercial system more economically, and also operate it more productively, than if you hadn't done the test grows with the small system.

**D. It's also fun:** it's easy to get started with a small system, but they're just as much fun as a big one to see the little sprouts and fish get big, and finally harvest and eat, or share with your friends.

### **How To Get Started:**

- ❖ **If you owned 50,000 square feet of greenhouse aquaponic systems**, who would **you** hire to run the business? A **confident** and **experienced** person, right? But if you're like most of our clients, you can't **afford** to hire someone, and will probably end up doing this job yourself. **You have to become this confident and experienced person!** Only you don't yet have the experience required, and neither do you have the confidence. You need to develop **both** in order to make your new business venture a success. It is much easier to gain experience and confidence in a new skill when you're not under a lot of pressure to succeed financially. Starting with a small aquaponics system, with its low costs, but the exact same functionality as a big system, offers a big advantage here.
- ❖ In contrast to our 50,000 square foot greenhouse example, although you may **dream** of starting with a BIG system, you don't **want to**. The worst possible situation is starting up a huge aquaponics system with a \$15,000 a month loan payment on top of another \$12,000 a month operating and labor expenses, beginning on the **first month** of operation. If you stumble here, you can hit the asphalt pretty hard.
- ❖ **This is why we suggest that you start at a small scale instead:** if you have limited capital, you can start with a 128 square foot Micro System that only costs around \$2,500 for system and a simple hoop house to provide a controlled environment inside (this is materials cost only, triple this number if you're going to have someone else build it for you). The production of the "128" will be 1-3 pounds per 10 square feet of system area per week; or 12-36 pounds per week of organic vegetables. If you figure your average price for organic vegetables in your area is \$3/pound, then this system will bring in a gross income of \$36-108 per week, or **\$1,872 to \$5,616 per year**.
- ❖ **Not bad** for a business that only cost **\$2,500** to set up! Even after operating expenses (which run from \$200 to \$400 per year, depending on costs in your area), you still have a net income of \$1,500 to \$5,200 per year for wages and profit, and you can use these funds to build your next larger system with. But this isn't the most important or profitable part of starting with a small system, because you also use it to do your test grows and test marketing with. With the data generated from these, you can make projections using a **Friendly Projection Tool**, and predict your bottom line on a large-scale aquaponic operation before you risk your savings (next!).
- ❖ **After you run your Micro System at a profit for awhile, you may be ready to go for the big leagues!** But if you don't have the capital, or are not quite ready yet, a good way to generate the cash flow required to grow is to build the next larger sized system of 256 or 512 square feet; or even the 1,024 square foot system in the plans. Using the cash flow from your Micro System plus the cash flow from your second larger system will give you the capital required to expand. Use the money you made with the first system to finance the second, and so on, is a smart way to grow without needing to borrow money or give someone a big chunk of your company just to get some funding.

## **2. Marketing Your Product: Research, Sell It, Then Grow It!!!**

**How To Drive Success: Don't just "grow something"; make sure you do test grows, market research, financial projections, and develop a marketing strategy first to see if it's a good choice or not.**

## Marketing: What's That?

**Selling a product** can be an intimidating process to people who have little experience selling. The best time for your **"marketing plan"** to begin is **before** construction of your system as you research to determine what you are going to produce during your "test grow" period (see the Test Grow section of this manual). Although you can't get it perfect the first time around, you will do a "preliminary market survey" before you do your first test grow to get a general idea what is most valuable to try out during the test grow.

**After you start to get data from test grows**, and take samples to potential customers to determine pricing, you will have even better information on what to grow and where to sell it. To sell everything at the best prices, you need to determine what your market (your customer) wants and needs, then deliver the perfect product to them. A good marketing plan is simply a plan for finding out what the product is, then reaching your customer and delivering that product. What does a **marketing plan** consist of?

### First Comes The Market Research:

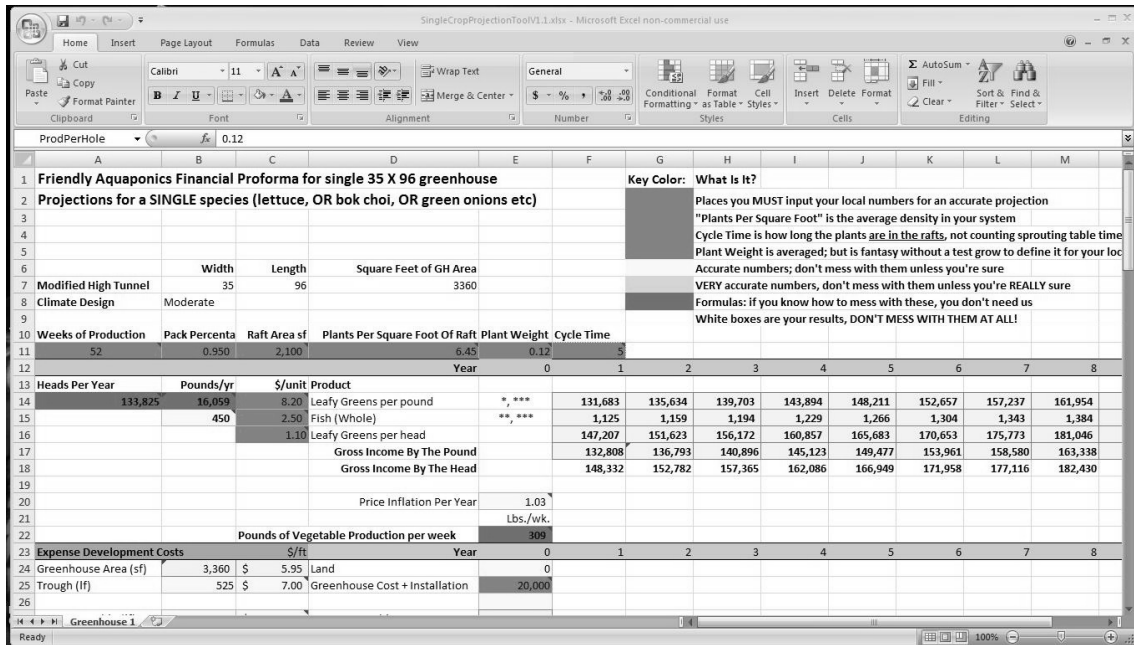
**This is the research phase** that will help you determine the opportunities and challenges for your product. Many good or even great products fail because the market analysis step was either overlooked, incorrect, or not extensive enough. Sometimes, the same product is later successful for other entrepreneurs due to sufficient and correct market research and analysis! This step is where you define the target market at which you will focus your marketing efforts. It is where you find answers to lots of questions, some of which are:

- What is the market potential for your product in the area?
- What competitor's products are on the market, at what prices?
- How fast is your product's market growing?
- What does your typical customer look like?
- What does that typical customer need?
- Where are your customers located?

**Demographic data** (information about the location, age, income level, spending habits and family composition of your potential customers) and psychographic data (information on your customer's hobbies, beliefs and lifestyles) help you identify your target market. Using this type of information helps determine the marketing strategies of price, promotion and placement. How do you find out this information? Talk to people!

**Talk to people at Farmer's Markets**, and the produce managers of grocery stores, and your friends, and the members of your church, and the local produce distributor. Ask them what they want, or have trouble getting, or is really expensive. All of this information will help you decide what is most in demand; and when combined with the information on how easy and fast things grew during your test grow, will determine beyond a shadow of a doubt what is most financially rewarding for you to grow. This information can be potentially confusing, and it can be difficult to figure out which are the most profitable crops; unless you use a "Friendly" tool to organize and compare the information in an easily understandable form

**The "Friendly" Projection Tools are MicroSoft Excel spreadsheets (you need Excel to use them) and are included with this training. They can be found in your DropBox files, under the folder "Financial". There is a spreadsheet called "SingleCropProjectionTool" and one called "Multiple CropProjectionTool". They both come with Word .DOCX files with similar names, that are the instructions for how to use these tools. A screenshot of the "SingleCrop" tool is shown below.**



The tool which will determine which is the best deal for you to grow is the “Friendly Crop Projection Tool”. This is a MicroSoft Excel spreadsheet in two flavors: the “Single Crop” is for those who are just getting used to spreadsheets and want a **simple** tool to use. **The “Multiple Crop” tool** can handle **four** separate growing seasons in a calendar year and **ten crops per season**, and is **specifically** for those growers who understand seasons and scheduling required for multiple crops from the same aquaponic system (or for those growers whose partners understand spreadsheets really well!). Both these spreadsheets and the instructions for them are found in your DropBox folder.

**These are awesome tools**, and will tell you if something is a good idea or not before wasting thousands of dollars and hundreds of hours growing it. You **must** do your homework during your test grow and record cycle times and weights accurately; **the numbers these spreadsheets generate are fantasy if not derived from actual vegetable growth data** from your location. Some of these numbers **must come** from the homework you did during your market research (see the **Market Research** topic in **The Business Of Aquaponics** section of this manual) and found out which of your test grow “winners” sold for the most money as compared to other crops.

**Another important part** of the market analysis is the **competitive analysis**. This is where you identify your competition and determine their strengths and weaknesses, and if the market is already saturated. It helps you identify what it is about what you offer that is better than the competition. The competitive analysis will provide you with information to help you produce a better product so it will have a greater chance for success in the marketplace.

## Develop a marketing strategy

**The marketing strategy** is that part of the planning process where you determine the **action steps** you must take in order to overcome the challenges identified in the market analysis. Here you build on what are known as the “4 P’s of Marketing”: Product, Price, Promotion, and Placement.

**Product** - All the information regarding your product must be extremely familiar to you. Aquaponically-grown produce provides many benefits, features and unique characteristics that set it apart from your competition. It is imperative to **know** these benefits and features inside and out, and to be able to speak about them to anyone without the need for notes! **KNOW YOUR PRODUCT!**

**Price** - Pricing a product is a new concept for most people with previous farming experience. Farmers in the United States have become what is known as “commodity producers”. This means they just get paid what the

buyer is willing to pay for their product; and there's no shopping around, and no negotiation. In aquaponics, with proper market understanding and development, you become the price maker.

**When you market your product**, it is now up to you to determine the asking price. You must price your product at an amount high enough to generate a profit including total production/marketing costs. However, you must also make the price attractive enough to encourage customers and generate sales. Pricing is an art, not a science. You must be constantly alert to changes in the marketplace and changes in your business that could signal a need to adjust the product price.

**Promotion** - Everything you do with your customer to encourage them to purchase your product is promotion. It is not merely advertising but includes public relations and networking. One way of encouraging consumers to purchase your produce is to provide easy to make, appetizing recipes. You can network with your customers at point of purchase locations by offering samples of your food product (samples are hugely effective in selling your produce!)

**The whole concept of promotion** is to catch and hold the public's attention and get them to buy your product. The Internet has created another avenue for promotion and more questions to answer like: Are you going to develop a web site? What search engines are you going to register with? Are you going to cross link with other related web pages? Will you be available to answer email questions about your product?

**Placement** - Getting your product to the customer when and where they want it is called "placement". This is also often referred to as distribution. Distribution typically represents 15% to 50% of the final price of the product to the customer. Often farmers do not have the resources to individually deliver the product to the customer. They must therefore rely on established distribution channels made up of retailers, wholesalers, distributors, agents, brokers, or cooperatives.

**You** must determine the distribution partner that best fills your needs and your customer's needs. Some non-traditional distribution channels are: u-pick operations, farmers markets, classified ads, consignment selling, and community supported agriculture (CSA's). Many books have been written on marketing strategy. The information here just touches on a few of the basics to give you a flavor of the way you need to be able to think when moving from "selling a commodity" to "marketing your product".

## **Sell What You Grow Before You Grow It!**

- ❖ **What does this mean?** Most farmers plant some seeds, grow them out, harvest, and then try to figure out how to get rid of what they have grown and get paid for it. This is where the rubber meets the road in the farming business; you may have wasted your time because you grew something the market was saturated with, or something that no one wanted to buy. We refer to it as "The Market" because it acts a lot like it's alive: it responds to stimuli, makes decisions, and creates results.

**Two places** to get accurate information about what produce is selling, and what it's selling for, are these web addresses: [www.usdareports.com/](http://www.usdareports.com/) and [www.terminalmarkets.com/](http://www.terminalmarkets.com/) where you can also get historical data as well as information for the current date. These are the official USDA report sites.

**It is up to you** to intelligently assess what The Market wants, and plan accordingly. For example, we had 300-400 pounds per week of production long before we actually started selling vegetables. We found out the local farmer's market was **full** and **not** accepting new vendors of leafy greens. We would have to travel 45 to 60 miles each way to get to the other ones on the island, and leave home at 3am. We checked the grocery stores and found out they **already had** three to four small local brand names that were providing them with the same product we had grown. Recognizing that our aquaponic produce was higher quality, we did **not** want to displace any local farmers that were already established in the market.

**We had good responses** to our queries from the fancy hotels and restaurants on the island; apparently they are not getting enough local produce, or enough varieties. We thought about doing a CSA (Consumer-Supported Agriculture). We thought about selling off the back of the truck on the side of the road, something still legal to do on the Big Island. We realized if we sold into a market that was already well-supplied, we would just start a price war and eventually knock smaller producers out of the market, as aquaponic produce is very sweet and has an incredible shelf life. Aquaponics simply supplies a superior product.

- ❖ **What decided our initial course** was the fact that we were building new systems all the time and increasing the size of our farm. The 300 pounds of vegetables per week would soon turn into 600-800 pounds per week, as our goal was always to expand. If we started delivering to a bunch of small accounts, we would soon be running all over the island to deliver them to hotels, restaurants, CSAs, and what-all else. We decided we didn't want to deliver, go to farmer's markets, deal with restaurants and hotels, or sell by the roadside.
- ❖ **Deciding what to sell and how to sell it was to a great extent a personal decision**; we had small children, and did not want to drag them all over the island. We really liked just working on the farm. We contacted three different wholesale buyers, only one of whom would pick up on the farm (otherwise, we'd have needed to purchase a \$40,000 refrigerated van). We started selling to them at \$5.00/pound for our lettuce mix, until they went out of business, during the "global economic downturn" that began in 2008.

**What happened?** The economy crashed: the bailout, GM, the second bailout, and so on. Everybody got scared. What did we do? We saw the importance of diversification, but then pursued an account with Costco (because it wouldn't affect all the small local producers) and found ourselves still growing just one product – lettuce. So we sold that to Costco for two years, before finally beginning to diversify into a wide variety of food crops. Expanding out of cash flow has been quite a challenge!

- ❖ Since then, we've planted taro, many new vegetable varieties, and are planning a poi kitchen (a taro product like pudding) to make value-added taro products, as well as planning an "Organic Farm Stand" that is built on a trailer and can be hauled anywhere and set up to sell by the side of the road, or at a Farmer's Market.

**Before you invest one penny** in an aquaponics venture, you should make a well-researched decision that takes into account **how you want to run your farm as well as what you want to grow, and how you want to sell your produce**. Your style and your interests may be different than other farmers, and you will want to grow different things and market them in a different manner to get the most satisfaction from your farming endeavor. You should also do a Test Grow (have we emphasized that one enough yet?) to determine if you even **want** to do this for a living!

### **3. Pros And Cons Of The Different Ways To Sell:**

**How To Drive Success: Investigate all the possible ways to sell, then make an objective choice that takes into account the money you'll get as well as your "style" of doing business.**

#### **Selling Through Farmer's Markets**

- ❖ There are always farmer's markets around, and they are becoming more and more popular. You apply, pay a fee, meet requirements, and for some markets, show up at an exact specific time and be broken down and out of there by another exact specific time. We were discouraged from joining one farmer's market because we grew the same produce the originators of the market did, and they didn't want competition with more sellers of leafy greens. Farmer's markets are great if you love talking to people, spending time driving to and from, etc. The prices you get can be slightly lower than retail (or else why would people come there instead of the store?), and in some farmer's markets the prices are mandated to be less than retail. If you don't want to go yourself, you can meet some sellers who are already there, and arrange for them to sell your produce.

#### **Selling Through CSA's**

- ❖ **CSAs (Consumer Supported Agriculture)** are like a subscription book club, only for vegetables and produce. We know of one successful CSA whose proprietress doesn't even grow any of her own produce; she just buys from farmers and resells it. How a CSA works is that you usually sign up your subscribers **before** you deliver any vegetables. Often you get full payment for a delivery period (usually eight to twelve weeks, sometimes longer). You can use newspaper ads, word of mouth, press releases, and flyers, and so on to get your subscription list filled.

**Then, you deliver vegetables in a predefined amount** to your subscribers. You can make it **extremely** convenient for them by dropping their boxes of produce off at their homes or places of business, and charge more to make up for your cost of doing this. Or you can make it **less** convenient by having all your

subscribers come to your farm on Saturdays to pick up their boxes. The level of convenience is one of the big reasons a subscriber will pick your farm over another; so make it as convenient for your subscribers as you can within reason and within your cost parameters.

**You deliver a different selection** of produce each time depending on what you're planting and harvesting at the time. The variety is one of the appeals of CSAs to the consumer; it is kind of like Christmas when you open the box. Good CSAs include recipes with the produce to get the consumer interested in trying new kinds of produce. Because it is convenient and saves the consumer shopping for all those things at the store, especially when you deliver, you can charge the same as retail, or even a little bit more and the consumer is still satisfied with the deal.

**Really good CSA's offer a wide variety** of things besides the ones they grow, that they have purchased from other local farmers or processors. They are more like "mini-produce distributors" than CSA's who only sell their own products. Think of what your customer wants, and try to procure it locally; as locally-sourced produce has a greater sales value than any brought in from a great distance. Get organic cheese and yogurt from a local dairy, honey from a local beekeeper, coffee from a local coffee plantation (Hawaii, right?), hams and bacon from a local slaughterhouse, and so on. The only real limitation here is needing refrigeration and perhaps a Health Department license to sell some of these items.

## Farmigo Is Here!

- ❖ **Farmigo is an "online Farmer's Market", or cloud-based CSA**, which has some really interesting and powerful software for member farmers to use. It keeps inventory of items you enter into it, automatically removing items from inventory when your CSA members buy them. It creates "pick lists" of all the items a member has ordered for that week's pickup by them, so your employee has an easy-to-follow list to make up the members box from. It acts as an online store with a "shopping cart" that your customers fill. It can create reports for you of sales, inventory, and many other things it is critical for a business owner to know.
- ❖ **Farmigo will work with your existing PayPal account** to accept PayPal payments as well as credit and debit cards. Farmigo charges a fee of 2% of the produce you sell, added to the PayPal processing fee of 2.2% to 2.9%, for a total fee of 4.2% to 4.9% of total sales. The payment goes into your PayPal account, and then you need to transfer any funds you require into your business bank account with a manual transfer.
- ❖ **To configure Farmigo to accept credit and debit cards directly** (meaning the payment goes **directly** into your bank account without requiring a manual transfer, as PayPal requires), you need some "web savvy", or need to hire someone who does. This is because you need a "payment gateway" (Authorize.net is one), and a "merchant account", which is an "in-between" bank in the cloud that actually accepts the funds and then automatically transfers them to your local bank account. One benefit is that you **may** get lower rates than with PayPal; you are still charged the 2% by Farmigo, plus whatever your merchant account provider charges. This is not simple stuff, but once it's set up and your web person shows you how to use it, it's a breeze, and much easier than trying to do this stuff over the phone!
- ❖ **Either of these options** allow your customers the convenience of ordering from their web-based smart devices, so now it's easier for anyone with an Ipad or a smart phone to be a customer. This is how smart businesses set up their CSA's.

## Farm Stands

- ❖ **Roadside stands** (either your own or another grower's) and pick-your-own operations provide opportunities to receive what are essentially retail prices for your produce. However, to offset those higher prices received, you will also have additional expenses for advertising, building (or leasing) and maintaining a facility, and paying employees to service your customers. With the right location and low enough operating costs, a farm store can be a really profitable way to sell your produce.
- ❖ With pick-your-own operations, you may save on harvest costs, but you must be willing to accept waste and possible damage and contamination from untrained people in your growing area. You also need to be able to handle the occasional lawsuit from someone who stubbed their toe on a lettuce.



## Selling To Wholesalers Or Distributors

- ❖ **In wholesale marketing**, farmers often contract with shippers to market and ship the produce for a predetermined price. If you do not use a contractor and ship your own crops to a wholesale market yourself, your product will be subject to the greatest price fluctuations. Marketing cooperatives generally use a pooled cost and price compiled daily, which spreads price fluctuations over all participating producers.
- ❖ **The good thing** about selling to wholesalers and distributors is that they will take **large** quantities in single deliveries, and often will pick up produce at your farm, which saves you delivery time and expense. **Another good thing** about selling to wholesalers and distributors is that they consolidate produce they purchase into large shipments, then resell to areas that can be quite distant, that you couldn't afford to ship your small amount of produce to yourself. This opens up potential markets to you for produce you couldn't get rid of locally.
- ❖ **Example: In Hawaii**, we are blessed with a 365-day growing season and can grow basil year-round. The average price in the Seattle produce market for organic basil is \$13/pound, year-round. You might not be able to get rid of 800 pounds of basil a week here in Hawaii, but you sure as heck can in Seattle! If you sell to a local distributor who ships a plane's-worth a week, you may get better prices than shipping that small amount yourself. Ask wholesalers and distributors what they can't get, or what's expensive and scarce at certain times of the year, and then grow that. This is the successful strategy of "**sell it first then grow it**".
- ❖ **The bad thing** about selling to wholesalers and distributors is that they pay **half of retail or less** for the produce. You figure it out; what's more appealing to you? More money for more work or less money for less work?

## Selling To Retailers

- ❖ **Local retailers** are another possible market, but they will pay about the same as wholesalers and distributors, ie **half of retail or less**. Selling to retailers is like selling to wholesalers and distributors except they usually will only take smaller amounts, which means you have more delivery costs to get rid of the same amount of produce. If you have a local retailer near you it may be a great relationship to have because your delivery costs will be low. Ask retailers what they can't get, or what's expensive and scarce, and then grow that if it makes economic sense. Remember, **sell it first, and then grow it**.

## Selling To Restaurants And Hotels

- ❖ **Restaurants and hotels buy** from retailers, wholesalers like Costco, and from distributors, at prices that range from full retail down to wholesale plus a bit. If you sell into this market, you will get **at least** this price range for your product, plus a little more if you deliver directly. This is much better than wholesale. Some really smart farmers establish direct relationships with this market where they custom grow **what the restaurant or hotel chef wants**. If the chefs get specialty items, delivered fresh, with a varied selection that changes frequently throughout the year, they are often willing to pay slightly **more** than retail. This is a great situation to be in and can really justify the extra delivery expense for the farmer.

## How Big? Size Your Operation Correctly For Your Market

- ❖ While you're researching what market you want to sell into, you also research the quantities required to compete in that market. Wholesalers won't pick up 40 pounds of something each week, but they can get excited about 400 pounds. Retailers usually take deliveries in the 10-50 pounds per week range. They won't take 500 pounds a week of anything; but you may be able to sell 500 pounds a week of a single item between six or eight retailers.
- ❖ When you have an idea how much of what you're going to be able to move, add 10-15% for wastage, then you'll have an idea how much your system needs to produce. You can size the system accordingly, **after** you do your Micro System test grow **right away** when you get home from this course and operate it for a few months to see what grows well in your area and climate and how much is produced per week. After a few months of test growing, you will have good thumbnail estimates of yields for the different stuff you've grown, and can project how much you'll be able to deliver from a larger aquaponics system.

## How To Tap Into The Big Box Stores and Supermarkets

- ❖ **PLEASE READ THIS FIRST, Before Getting All Excited: To supply even a single produce item** in the quantities that a **single** Costco, Walmart, or Sam's Club requires will take a facility of a minimum of 15,000 square feet of trough area. This means you'll need around 24,000 square feet of greenhouse space. This greenhouse and aquaponics system will cost you roughly \$275,000 for materials only (you build it all yourself), or \$825,000 to \$1,200,000 to have someone else build it, depending on location and how serious a greenhouse you need. Don't waste your time if you're not funded for this kind of venture.
- ❖ We loved being Costco vendors. We love Costco as members, and we were deeply honored to be Costco vendors. In a typical Safeway or Wal-Mart, there are over 125,000-150,000 different products on the shelves at any given time. In Costco, there are only about 4000. So being one of those 4000 is a huge honor. And it does not happen by accident. The application for becoming a Costco vendor is not available anywhere, until their buyer has visited your farm and decided that your product is what their members are looking for.
- ❖ What sets Costco apart is their sales model: Costco focuses on selling products at low prices at very high volume. These goods are bulk-packaged and marketed primarily to large families and businesses. Costco does not carry multiple brands or varieties where the item is essentially the same except when it has a house brand to sell (the Kirkland Signature label). This results in a high volume of sales from a single vendor, allowing further reductions in price, and reducing marketing costs. If Costco management feels the wholesale price of a product is too high, they will refuse to stock the product. (For example, in November of 2009, Costco announced that it would stop selling Coca-Cola products due to the soft drink maker refusing to lower its wholesale prices. Costco resumed selling Coca-Cola products a month later, after Coca-Cola agreed to lower their prices.)
- ❖ Costco also saves money by not stocking extra bags or packing materials; to carry out their goods, members must bring their own bags or use the merchandise shipping boxes from the company's outside vendors (our boxes got reused!). Costco also saves money on electricity: lighting costs are reduced on sunny days, as almost all Costco locations have multiple skylights. During the day, electronic light meters measure how much light is coming in the skylights and turn off an appropriate percentage of the interior lights. During a typical sunny day, it is very common for the center section of the warehouse to have no interior lights powered on. They also use minimal air-conditioning. Most products are delivered to the warehouse on shipping pallets and these pallets are used to display products for sale on the warehouse floor. This contrasts with retail stores that break down pallets and stock individual products on shelves. Costco limits its price markup on items to 14% on durable goods and 18% on products that spoil.
- ❖ All these cost saving methods allow Costco members to save money on each item they purchase, while still allowing Costco vendors to earn a good living. It's a win/win. We do not have direct experience with selling to Sam's Club, Wal-Mart, Whole Foods, or other large outlets. One of our students, Vinny Mendoza, in Louisiana, is certified organic and sells to Whole Foods, but unfortunately does not share our "open source" philosophy, and is not currently opening his farm or sharing the details of his success with others.
- ❖ We interviewed the Costco produce manager and the managers of two large produce brokers, and have identified several produce items that the aquaponics systems grow REALLY WELL that these buyers need approximately 40,000 lbs./week of, just to supply the Hawaiian markets. There is tremendous expense setting up a processing facility, which must meet strict food safety certification standards, but with adequate funding, and dedicated action, selling to Costco would be attainable.
- ❖ The challenge for aquaponics producers is that this is the big leagues. Big box stores won't take small deliveries; you need to be able to supply from 1,200-2,000 pounds per week of a **single item**. If you mess up a couple of deliveries or your quality control, you're history.

## **4. Advertising, Marketing, And Promotion**

**How To Drive Success: Advertise, market, and promote yourself and your products in an effective way.**

### **The Importance of A Website**

- ❖ **Many people will tell you that a website** is of utmost importance to your new aquaponics business. That might be true if you're selling books or software; but most aquaponics farmers sell vegetables, and vegetables aren't usually sold through websites ( the Farmigo website for CSA's is the exception we're aware of; see the Farmigo information in the previous section "**All The Different Ways To Sell**").
- ❖ **There are people who sell CSA baskets of vegetables** through their own websites (instead of Farmigo; see previously), but they can end up with an incredible amount of "overhead" managing customer's special requests, cancelled orders, and so on; this is in addition to running the aquaponics. The website maintenance and modification alone can cost you thousands of dollars if you aren't technically savvy enough to write all your website code yourself. We suggest leaving a website until you are making a profit and wondering what to do with the extra money.

### **The Importance of Paid Advertising**

- ❖ **Paid advertising is a lot like a website**; something to leave until you are making a profit, and can spend some of that extra money on having someone promote you and your products to get **more** sales. It is not necessarily the best way to create sales in the first place. If you sell your product to a restaurant, retailer, wholesaler, or distributor, there's little to no benefit in using paid advertising (see the previous section). Advertising **must** result in increased sales that pay for the advertising, **and** increase your profit, or there's no point in doing it at all. And even the "experts" can't agree on what makes advertising successful: remember "New Coke"? No? That's how successful the Coca-Cola company advertising was for its new product in 1985; New Coke only lasted three months!

### **The Importance of Free Samples And Spreading Your Produce Around**

- ❖ **Every person you give a free produce item to becomes a fan!** Aquaponic produce tastes so great and has such incredible shelf life that people just have to try it once to be sold on the idea! So give away as much as you can afford to; it is the best and cheapest "advertising dollar" you can spend. Make sure to take free samples to any restaurants, hotels, produce brokers, retail stores, or anyone else you plan on selling large amounts of produce to; this is what clinches the sale. It doesn't matter if you have a great business card if you don't have samples of produce to give to your prospective client.

### **The Importance of Farm Tours**

- ❖ **Most of our first year** we spent doing construction and experimentation. Tim had attended the UVI training, and had seen a large system in operation, and hence was convinced long before I was. I am very much a "show me" kind of person, and am very reluctant to just "believe" in anything, without adequate evidence and proof. So, for the first year, we did not even talk about this to people, as there have been so many people here in Hawaii who have had **huge** plans and ideas, but turned out to be "all hat and no cattle" (as they say in Texas). We never wanted to be perceived as mere talkers, so we kept our mouths shut, and kept to our construction. But as time passed, more and more people heard about what we were doing, and began just showing up on the farm, asking to be shown around. During this time, we were working 12-14 hours per day, seven days a week, and showing people around became somewhat of a burden, but since the people showing up were so interested, we did not want to turn them away.
- ❖ **One day**, two men showed up in succession, and Tim spent about 45 minutes with each of them, or about an hour and a half total – away from his workday. I went up and took him aside when he was still talking to the second man, and said quietly, "Do you realize you just spent more time with two total strangers than you will spend with your children today?". He said, "We need to set a time and do a formal farm tour, don't we?"

- ❖ **That is what began** what up until recently was a weekly event. 10 am Saturday mornings, every week for two and a half years had us (usually me) up at the aquaponics, telling whoever showed up for the Farm Tour all about aquaponics, and all about us, and our vision. I chafed under this obligation, and even though we had tours of over 120 people at times (!), with an average of 20-30, I felt like I was not getting any work done for the two or so hours that I talked to people about what we were doing.
- ❖ In retrospect, I realize that probably the **most important thing I did** in my week was the Farm Tour. It accomplished a tremendous amount for us, most importantly, it offered me a two hour time frame to refine and hone our vision. This kept me connected with the "big picture", the **why** of what we were doing, whereas I would have probably otherwise gotten lost in the details of day-to-day construction. I most certainly never would have been able to get how important this work is, and how the future of our species might arguably hang in the balance of how well we figure aquaponics out; the most sustainable, most energy-efficient, and the most labor-efficient ways to grow food. Speaking our vision once a week to a group of interested people gave me a very powerful listening, which allowed my speaking to be more full, more effective, and more powerful. As a result, our entire experience of our project has changed for the better.
- ❖ **Also, the weekly Farm Tour taught people about us**, and about aquaponics, effectively "softening" our market, so that when we began selling produce at Costco, more people were familiar with us and with aquaponically-grown produce, and therefore were more likely to buy our produce. As a corollary to this, now we do not even have business cards printed! Everyone in our local market knows who we are, and knows about aquaponics.
- ❖ After the first two and a half years of doing weekly farm tours every Saturday, we decreased their frequency to once a month, on the first Saturday. We did this after tour attendance dropped to only four or five people each week. With the monthly tours, attendance is back to between 20-30 people each tour. Keep in mind, the total population of our island is only 184,000, according to the 2010 Census. We have presented aquaponics and our vision for it to around 4,600 people! (Calculated as an average of 25 people per tour, for seven years, or ~130 tours total.)
- ❖ So, if you are in or near a major population center, and you are not doing Farm Tours, in our opinion, you are missing out on a great opportunity for nearly free advertising and promotion. Please consider the time you take to share with others a profound and powerful contribution, to them, to this fledgling field, and to yourself. If you give more than you think you have to give, your return will be ten-fold.



## **5. The Production Timeline And Getting Off The Ground**

**How To Drive Success: Plan carefully, set up a reasonable production timeline (and stick to it!) and "ramp-up" slowly.**

- ❖ If you are planning a commercial aquaponics operation, one of the most important things to plan is your production timeline. You don't just plant out a 6,000 square foot aquaponics system one week and start harvesting and getting paid for 600 pounds of vegetables per week four weeks later. There are many things you need to do to prepare for this; here are some examples for this approximately 6,000 sq. ft. aquaponics system:
- A. Build a 64 or 128-square-foot Micro System first thing when you get home from the course, EVEN IF you have the funds and are ready to begin construction on a full-sized commercial system right away. The reasons are that it will be done and operational FAST; and will give you valuable experience QUICKLY in building these systems and operating them. We've had students build these inside their garage in the wintertime, and light them with fluorescents; it works just fine!

Having one also lets you discover what grows best in your area QUICKLY, as this varies widely in sites as little as a few miles apart due to variations in microclimate. You can do a test planting in a MicroSystem's 408 or 816 pot spaces of tens of different varieties of vegetables, then you'll KNOW what grows best without having to wait for when you first plant out your \$100,000 commercial system. The MicroSystem will also give you produce to do test marketing with; I'd hate to grow a lot of something in my big commercial system only to find the market was already oversupplied with it, or that it brought such a low price I couldn't make money on it. Test marketing is one of the most important things you can do on your way up the mountain; it is just as important as getting your big aquaponic system built and operating, remember to do both!

- B. Build your main commercial system(s) while becoming experienced and confident with aquaponics by operating your MicroSystem and test marketing the vegetables from it. This way, you won't be a complete newbie when you start growing things in the system that has a mortgage on it! Finish your big system and inoculate it with water from your MicroSystem, then start planting the species in it that grew well in your test plantings and did well in your test marketing from your MicroSystem.
- C. Ramp up slowly to full production, don't plant the entire system out at once in one crop. We ran on lettuce only for two years, then had a devastating lettuce blight hit us (and many other lettuce farmers on the island) that destroyed all the lettuce plants in our systems in a few weeks. This was a good lesson about the dangers of mono-cropping (growing only one thing, over and over); it lets you in for massive plant disease episodes that can be catastrophic to your operation. Increasing production slowly will allow you to gain experience with seeding, transferring pots, feeding fish, harvesting and packaging vegetables, and all the other details that are needed to operate smoothly and with minimum labor requirements in order to be a profitable business.
- D. If you don't ramp up slowly, you run the risk of implementing a process or procedure that is inefficient; and at full production, this can cost you badly as you are forced to do it over and over again. You have far less flexibility about changing direction when you are in full production; you won't have the time or energy to try out new things. If you do find a successful one you want to implement, it will be more difficult to change direction when your operation is going under full momentum because of the "mass" involved. You also run the risk of missing a discovery that could have made all the difference to you and your business, e.g.: discovering that growing "this" instead of "that" requires less labor and "this" sells for more; or "this", combined with something else makes a killer value-added product that makes a ton of money for you (such as a basil pesto made from your aquaponic basil plus some organic olive oil and mac nuts).
- E. You may need to use temporary measures and markets to move produce at less than full value before you are at full operating capacity. For example, you might have 40 to 80 pounds a week coming from your first planting; give this away to your potential customers for additional market testing and to develop a good customer relationship. Next you'll have 120 to 150 pounds per

week; give this away, and/or take to farmer's market to sell it yourself, and/or find someone already selling at the farmer's market to sell this for you, and/or sell to a restaurant(s) or hotel(s). If these are good accounts you enjoy selling to, you may decide to keep them rather than use them as a stepping-stone.

Next, you'll have a couple of hundred pounds a week coming out; at this point you may be able to get a produce distributor, wholesaler, or large grocery store willing to buy this from you. If this is a good account you enjoy selling to, you may decide to continue this rather than use it as a stepping-stone. If you've already got some good accounts from step "E" previously, you may now have a significant percentage of your ultimate production spoken for. We've seen people do this several times: plan to sell to an "ultimate" market, and instead find other quite acceptable outlets for their produce on the way. These other outlets ended up taking all the farm's production, and the "ultimate" outlet wasn't even necessary.

At your final production level, depending on species and varieties grown, you may have from 500-1,000 pounds per week production from this 6,000-square-foot example system. This can be all one species, as in our lettuce production heyday, but then you are risking a massively devastating disease incident that can occur due to this kind of mono-cropping. If you have this production split up between three or four vegetable varieties (or even better, ten, twelve, or twenty), you have less chance of such a disease incident. You also have a much more flexible mix of product, and a more guaranteed income due to your system's diversification. If you have a disease, a problem, or a change in the market conditions or buyer that apply to one vegetable, you still have three (or ten) others that continue creating income for you.

- F. We have only talked about the vegetables so far; you will also have fish to sell. Because we lose \$2/pound on fish on our farm due to high fish food and electricity costs, we just raise the fish necessary to provide fertilizer for the vegetables. A common problem when an aquaponics operation starts up is procuring enough (by weight) fish (or ANY!). You ultimately need 1,800 pounds of fish to run this 6,000 square foot system; you probably WON'T be able to just go out and buy them. Based on our experience, you will be able to procure 1-2,000 little fish (+/- 3 oz. or so), which will just barely fertilize your system if you stuff them full of food three times a day. However, they will eventually grow to weigh a pound, then a pound and a half, and you will have 3,000 pounds of fish instead of the 1,800 you actually need. You'll have fish to sell. But they will grow slowly, and you will have plenty of warning to start telling people you have LIVE tilapia to sell from your farm. Advertise to the right ethnic groups, and you will have people calling YOU and asking if you have live fish to sell.

## **6. Selecting The Right Aquaponics Technology To Use**

**How To Drive Success: Employ an aquaponics technology that is proven to be economically successful, and will easily produce enough to cover its expenses, labor, and overhead; plus give you a profit.**

- ❖ **If you use our** proven, well-documented, and economical aquaponics system designs; then build and operate them exactly "according to the book", we can **guarantee** your success **growing produce**. If you are reading this, you bought information on the most commercially successful aquaponic technology in the world. If you choose to ignore it, change things without understanding how they work, or "combine" our system technology with other system technologies, all bets are off and there is **no guarantee**. C'mon, everybody: Ford doesn't guarantee Chevrolets!
- ❖ **If you find an aquaponics** and greenhouse technology that produces **as much** as ours does, **for the same cost** for construction, operating expenses, and labor, and is **profitable**, then everything else in this section applies to you; you're just using a different technology. However, commercial aquaponics is a very small field, and we're not aware of even one such.

## **7. Zac Hosler's Successful Example**

**How To Drive Success: Do everything based on previously proven and successful aquaponics technology, advertising, and marketing methods. "Invent" new methods only when you fully understand the system as it is, and try them out on a small scale first!**

**Zac was profiled in Commercial Newsletter #3 and 4, in April, 2011, included below, verbatim:**

We're honored to introduce Zac Hosler, of Living Aquaponics in Hounaunau, Hawaii, who is willing to share his experience in the first year and four months of commercial operation. The numbers we present in this column are verifiable by [emailing Zac directly at zhosler@gmail.com](mailto:zhosler@gmail.com). He'll tell you that the four-trough system we built for him and that he has expanded out of cash flow to 12 troughs, **really works!**

Zac had a strong background in business before he even began in Aquaponics. We suggest that all newcomers to Aquaponics develop some business experience (or **hire** some) before they "quit their day job". There's no paycheck at the end of the week unless **you** bring it in through your actions and hard work. Aquaponics, while a very powerful vehicle, is not a magic potion to get rich! For goodness sakes, this is **farming!**

To become successful in commercial aquaponics you need to know what you are doing, start small, and build from your knowledge base. This is what Zac did on our recommendation, but is exactly the **opposite** of what we did, which was to build a large system using all our cash. Because we'd spent all our money, we could only improve our system out of cash flow as we learned better ways to do things. It would have been better for us to start with something the size of our [Micro System Plans \(\\$99.95\)](#), if such simple and affordable instructions and plans had been available back in 2007 when we began.

In mid-2010, Zac hired us to build his fish tank, sump tank, sprouting tables, and first four 75-foot long troughs while he stayed in California, wrapping up his rapidly-dying construction business. In November, 2010, he took over a fully-functional system and began growing food, using everything that we knew worked, and what did not, and his own exquisite business sense.

He has not felt the need to experiment or "recreate the wheel", as he says. He was happy to learn from us what had worked best, on a large commercial scale. (Please understand we are not adverse to experimentation, it's just that when our students do so, we can no longer predict their results, and sometimes can't even help them unravel the resulting mess!).

### **New, money-saving grading technology:**

Tim designed Zac's farm so that as demand increased, all Zac needed to do was add more troughs (but no more fish tanks), going straight down the hill, **without needing to level the ground completely** or disturb production in the existing system. This was a new innovation of trough design, which came directly from Tim's brilliant, boat-building mind. Grading Zac's farm in the traditional flat and level pads would have cost Zac an additional \$75,000 up front for the entire trough area that he has available to build now.

After one year, Zac has expanded **out of cash flow** from four troughs to 12 troughs, all 75 feet long, powered by the same fish tank and the same number of fish (though they are much larger, now, of course). He sells almost exclusively to local wholesalers, and has a business model that projects a very conservative 75 cents per hole, per crop rotation (how long each plant is in the system).

Zac has 33 holes per 2-foot by 4-foot raft, with a 6-inch on center spacing, for a total of 1,155 holes per trough. (We now demonstrate how to double this number of holes per square foot of raft area in our trainings and our DIY manuals, with only slightly more labor, without building any more troughs.)



Zac's farm is doing so well because he's such a hard worker: he is not sitting back and trying to "manage" other people doing this while he "studies" aquaponics. He's dug ditches, installed troughs, built sprouting tables and protective hoop houses; he's developed better ways of growing and marketing aquaponic vegetables for **his** location.

Zac makes projections based on a very conservative rotation of five weeks, though his actual rotation (how long each plant is in the system) is closer to three weeks. This means that for every 75-foot long trough he has, he harvests 231 holes from it per week (1,155 holes divided by 5 weeks = 231 holes harvested per week per trough).

So, using the above numbers, each trough is worth \$173.25 per week, at \$.75/hole. With 12 troughs in full production, at \$.75/hole, his average earnings are around \$2,000 per week, gross ( $231 \times .75 \times 12 = \$2,079$ ). Due to fluctuations in weather and his market, he's found that his income moves up and down, going as low some weeks as \$1,500. He's expanding to 20 troughs soon, and then his gross income will increase to \$3,465 per week ( $231 \times .75 \times 20 = \$3,465$ ). Taking into account these fluctuations, he'll move between \$3,000 and \$3,500 of produce per week.

Now, let's talk about expenses. Although it has been built in phases, he designed his entire 20-trough system at one time, and as a result, Zac's electrical bill is only a fraction of ours (only \$250 per month), even though he has 70% of the trough area we do. This will increase when he has 20 troughs, to about \$275/month.

**Here are Zac's monthly consumables expenses:**

Electricity	\$250.00
Water	\$100.00
Fish Food	\$240.00
Boxes	\$452.40
Misc. Packaging	\$ 50.00
Farmer's Market Dues	\$125.00
Planting Mix - Coir/Vermiculite	\$151.67
Seeds	\$75.00
Additives/Sprays	\$150.00
Fuel	\$150.00
Misc.	\$250.00
<b>Total Costs</b>	<b>\$1993.67</b>

His expenses will increase to about \$2750 per month (totaling \$33,000 per year), when he expands to 20 troughs. To put this in plain English, with 12 75-foot troughs, Zac's current operation projects a potential gross income of around \$108,108 per year. The projected consumables expenses are \$23,924.04, which leaves a gross net of around \$84,183.96.

When he expands to 20 troughs, his gross will be around \$180,180 per year, with \$33,000 in consumables expenses, for a gross profit of \$147,180 per year.

Now, let's talk about labor costs, and the time Zac spends working each week. In his words:

*"I added up my hours and I am working about 48 hours a week. I work Monday through Saturday; some days are 8 hours, some are 10 hours, but some are less than 8 (Saturday is a 6 hour day, and Tuesdays are usually less as well). The average is around 48 hours.*

*"In the near future my hours will actually drop because I am getting more help. I will then use the "extra" time to continue to expand. Within 2 weeks I will have two people living on the farm for 20 hours/week each, who are trading for their rent. They will be able to handle a lot of the day to day including planting, moving plants to the system, spraying, cleaning etc.*

*"I will plan out plantings, help them harvest, will deliver and will oversee to make sure that things are*

*running the way they should. They will also be doing the Saturday farmers market for me so I will be able to take Saturdays off and spend them with my family. Basically the number of hours I spend running the system should be less than 25 to 30 hours/week (with a total of 40 hours help from two live in people and a few hours from others on food trade).*

*"I will use the extra time to expand and still hopefully work no more than a total of 40 hours a week.... So what I am getting at here is that the gross income is scheduled to go up very shortly while at the same time my hours will go down. The two 1/2 time people for live/work trade will basically take the place of one full time person I would have had to hire in their absence. So using the work/live trade will actually increase my bottom line at the end of the day and will allow me to be tied to the property less as time goes on. Someone will always be here to watch the system even if I want to go to Maui for the weekend.*

*"A note worth mentioning is that at 16 troughs and as I expand to 20 and beyond that, I would be able to hire the help needed (at market wages for this area) to help me run the farm. I am choosing to use the live/work trade model because I have the space on the farm and it makes sense to do, but if I was unable to I would be able to hire the people needed and pay them market wages and still have the income I need to support the farm, my family and expand the business."*

Zac is saying that when his income increases to \$147,000 gross profit per year, he will be actually be working **fewer hours** than he is now; when he finishes his expansion, his hours will drop to 25-30 hours per week!

For those of you who do not have a strong business background, "gross net" simply means the gross, or all the money that comes in, minus the expenses for things that are consumed or used in the course of business; this equals what's called "gross profit", which is **not** what you get to take home.

This is because there are other expenses involved in running a farm. These are known as "overhead", and would include things like depreciation, new tires for his farm truck, repairs and replacement of system components as they age, insurance, costs for licenses and permits, fees for bookkeeping and tax preparation, and similar items. Based on our experience, these should average \$12,400-25,500 a year for a farm of his size, leaving him with a \$121,500-134,500 net profit.

Because Zac has living space available on his farm, he has other options than just paying for labor. Zac is able to reduce cash costs for labor considerably, much like our Internship Program (which includes all expenses paid, exclusive of personal cell phones and flight costs to and from Hawaii). It is not "free" labor, as our detractors like to claim, it is actually **value given for value received**. In Zac's case, rental units that could be bringing him income are instead offered as trade for work, which is a big part of our economy on the Big Island, and his workers get an aquaponics education into the bargain.

Thank you Zac, for sharing so freely what you have found to be true in your first 15 months of being a Primary Food Producer. We are impressed by you, and honored to know you. Thank you for your hard work.

**In the following week's Newsletter, we followed up with "What Zac Did Right", included below:**

Here are the reasons Zac is successful with commercial aquaponics:

1. He uses standard aquaponics systems of ours. He didn't add any extras, he simply built systems that were straight out of our plans book, and operated them according to the procedures we'd developed over four years of aquaponic farming.
2. Zac had a strong background in business before he even began in Aquaponics. We suggest all newcomers to Aquaponics develop business experience (or **hire** some) before they "quit their day job". There's no paycheck at the end of the week unless **you** bring it in through your intelligent decision-making and hard work. Aquaponics, while a powerful vehicle, is not a magic potion! For

goodness sakes, this is **farming!**

3. Zac is a hard worker, and he's done everything possible himself, from mixing concrete to digging ditches, planting seeds and harvesting, and marketing his produce. He hired some labor for grading, concrete work, and construction for his expansions, but has done the lion's share of the work himself, in addition to keeping up with a young growing family.

4. Zac started small with what he could afford and expanded out of cash flow. Rather than borrow a huge chunk of money up front, then take a long time building a big farm, and then having the pressure of a loan payment over his head from day one; Zac began operation with a system of 1,200 square feet; one-third the size of the one he has now, and had cash flow almost immediately.

As he got cash flow, he built additional sets of troughs so he could expand his production. When he had twice the amount of troughs he began with, he had twice the cash flow as when he started, and was able to afford to build even more troughs. He currently has 3,600 square feet of trough, and is expanding to 6,000 square feet soon. At 6,000 square feet, he will have about five times the cash flow of the system he began with.

5. Zac didn't feel any need to experiment. He used proven systems and operating procedures, and didn't change a thing. Because Zac built from our existing knowledge base, he was able to avoid dead ends, failed experiments, and problems with his system. He concentrated on learning what grows best in his location, which no one can teach you.

### **What Zac Could Have Done Wrong:**

We have seen many people start out in commercial aquaponics and come to a screeching halt because of some problem or other. Unfortunately, we usually hear of these after the systems have been built, all the money has been spent, and there are no resources to fix the problems. We still try and help out however we can.

All the dead ends we document here came from people who corresponded with us and failed at commercial aquaponics, because of the problem noted. So here are the reasons Zac's farm could have been a disaster instead of a success. Fortunately he didn't go down any of these paths:

1. Zac could have decided he didn't need to operate his farm according to generally recognized good business practices. He could have expected the farm to give him a paycheck just because he showed up every morning. He could have hired a manager, then had the manager hire employees, and think he would make a profit because of all these people working for him.

2. Zac has good credit; he could have borrowed a huge amount of money, built a huge farm, and then expected that the big farm would make him big money. It's often the opposite: a big farm built on debt like this has a huge payment due the very first month after the money is borrowed, **but** there's often no profit from the farming operation until after the first, or even sometime during the second year of operation.

It takes time to build the farm and farm infrastructure, then time to get everything planted out and work out all the bugs in planting, tending, and harvesting crops, let alone processing and marketing of the produce; during which the payments still need to be made. This is a huge financial handicap that can kill an otherwise viable business model if it had started out with less debt (or none!).

3. He could have used unproven or poorly-designed aquaponics systems, which didn't produce either vegetables or fish well, and spent all his time (and money!) either trying to make them work, or trying to figure out why they weren't! We know of four or five farmers like this.

4. He could have purchased expensive "kit" systems that don't hold many plants per square foot, and have no real information on how to make an aquaponics farm commercially viable (because the sellers have never run such a farm, they just sell kits!). The prohibitive cost of these systems combined with their lower productivity and higher labor costs might have been too difficult a financial burden to overcome.

Even if these systems were efficient at producing plants, some of them cost nearly five times as much as it is necessary to spend. Why would anyone want to begin a business with an unneeded financial burden such as that?

5. He could have tried to figure it out himself. He's a smart guy; he eventually would have. The question is: how long would it have taken him to get it operating at a profit? And where would he get the funding that would allow him to do the years of development required?

Friendly Aquaponics started with the best aquaponics information available in 2007: the UVI course, which was the result of 20 years of university research into aquaponics. We developed new systems and techniques from this basic information over the last seven years. Now our systems are profitable, if built and run according to specifications. The technology available now from Friendly Aquaponics is the result of 24 years of continuing investigation into aquaponics, yet many people are still trying to reinvent the wheel, unaware that the wheel in question is now mounted on the aquaponic equivalent of an electric hybrid car.

6. Zac could have ignored the economics of produce marketing altogether, and set up his system so that it could not possibly grow the most valuable crops. There are people who use sex-reversed tilapia fingerlings, and/or caustic chemicals in their systems, both of which deny them any possibility of organic certification.

Depending on the market, organically certified produce is worth from 40% to 100% more than conventional, and these people have just left that money on the table, while doing exactly the same amount of work on their aquaponics farm.

Even if you "switch the system over" to organic (which **can** be done, using our techniques and information), the organic certification agencies require **two years** of transition time, during which you cannot market your crops as organic, even though you are now doing everything right. Why not do it right from the beginning?

Although Zac's got a good local market that does not require organic certification, his systems are organically certifiable **right now**, without changing anything or doing anything differently, and most important, without waiting 2 years. Zac could get certified within a couple of months if he wanted to.

Thank you Zac, for sharing so freely what you have found to be true in your first 15 months of being a Primary Food Producer. We are impressed by you, and honored to know you. Thank you for your hard work.

**Then, in June of 2013, we asked for and update from Zac. I include his entire response, below. This is Zac's story, and deserves to be told in his own words:**

On Jun 20, 2013, at 7:22 PM, Zac Hosler <zhosler@gmail.com> wrote:

*Aloha Tim and Susanne,*

*I wanted to give you an update on what's happened with my farm since 2011. In the newsletter you guys did on my farm, you stated that I was averaging around \$2,000 per week with some weeks being as low as \$1,500 and some weeks being higher. These were current numbers at the time. You also gave numbers for expansion as I had planned to get to 20 troughs quickly, however, I am still at 12 troughs at this point. I have expansion planned but some times life gets in the way. I will explain more below.*

*I have answered lots of emails over the last several months with people emailing me to ask if these numbers are true. I have answered them honestly and with great detail in most. I have things going on in my life that effect the farm and I will explain them here.*

*I've been averaging around \$1500.00 per week over the course of the year with of \$2400.00/week week and lows of 1,000/week with the fluctuation being do to peak/low growing seasons and peak/low*

demand (sales) seasons. For the products that I grow in the summer months produce fewer pounds due to each plant weighing less (I have to harvest early due to heat/bolting issues). Also, summer is the slow season, as there are not as many tourists on the island. Demand in the winter is much higher, as it is the height of the tourism season. So, I produce fewer pounds because of the heat AND sell less in the summer. In the winter, I produce more pounds AND sell more.

My numbers are a little lower than the \$2,000 weekly that you guys put in your newsletter, due to losses from pest, weather, and other factors which have kept me away from the farm a lot over the past year. I am gone from my farm a lot due to taking my 5 year old son Noah from our island to Oahu regularly for chemotherapy treatments.

As you know, Noah was diagnosed with leukemia in 2012, and I've been gone a lot. My losses due to pest and weather etc. went from 5 or 6% to upwards of 15 to 20%, mostly because I was not on the farm, providing the "farmer's shadow" as you guys say. For example, I was gone on Oahu for an entire month a while back. While gone my guy kept things afloat but let bug infestation happen with several crops. By the time I got home all of my Bok Choi (one of the 4 or 5 crops I normally grow) was trashed. Not only that week's harvest, but all of the weeks to be harvested to follow. I literally had 95% loss on that crop for several weeks in a row. That alone translates to 20 to 25% loss of income overall. I quickly got it under control by trying a new organic spray (a garlic based spray!!). With in several weeks we are now back to almost 100% on Bok Choi.

Another example is that my guy kept having large losses in the top trough, losing large amounts of the baby plants being put into the system. He'd put in new ones and come out the next day and lots would be gone. Instead of calling me, he ignored it. As soon as I got home and heard about it, I waited until dark and went out with a flash light. Slugs from the grass above the top trough were doing night evasions and eating all the seedlings that were newly put into the system. I killed the 4 or 5 slugs and went out every night for the next few nights and killed some more, also put Sluggo out along the outside of the trough. This fixed the situation, but a lot of damage was done.

What I am saying is that my not always being here to manage the farm has cost me and affected my weekly averages a lot. Normally my \$2000 potential gross would average to around 1\$750 weekly with normal loss, but right now and for the last 9 months things have been a lot worse. This is not the system's fault, of course, as all the potential is still there. I just can't be there - I have to be with Noah as we fight for his life.

With all of that said, I also have to update on something else: We are in the middle of the slow season right now. This year's slow season, even with my issues of not being around as much and larger loss issues, is looking better than last year. I am doing \$1500 a week right now in the middle of the slow season. Some weeks are better and some weeks are a little less. If we have a good busy season this winter my yearly average should be more like \$1750 to \$1850 per week average.

So in closing, my numbers are down due to personal reasons. The potential is there to meet the numbers given by you guys and I have before. Always assume a little bit of loss to be safe though. Also, things are getting better despite my situation. This slow season is looking to be the best so far and I think the overall annual weekly average is going up again. My best guess looking over my last three years is that my current system could sustain between \$1750 and \$2000 per week average throughout the year.

Please feel free to share this email up with your students. Hopefully this is all clear.

Much love to you and your family,

Zac