

### Fred Lau, Mari's Gardens



The following questions were posed to Fred Lau, an expert in Aquaponics, following a workshop he hosted in the summer of 2012. Questions are specific to Fred's operation, and responses offer insight into his success. Additional insights from Fred Lau, and all of our 2012 Master Farmers, can be found on Oahu RC&D's website.

**Q: How do you manage weeds and insects on your farm?**

**A:** We are organically certified in our aquaponic production areas, so no synthetic pesticides are used in our systems. All weeds are pulled out by hand. Crop rotation is becoming part of our pest control as well as using organically produced disease resistant varieties.

**Q. Where do you get seeds for your lettuce, heirloom tomatoes, and other crops?**

**A.** Johnny's Seeds, Osborn Seed, High Mowing Seeds are mainland suppliers. Fukuda Seed is our local supplier.

**Q. Do you rear your own fish or purchase from a supplier? Where can someone just starting purchase fish?**

**A.** We produce our own fry for both tilapia and Chinese catfish. Although it is not a real part of our operation, we will sell fingerlings if people ask for them.



*Beets are grown in cinder beds on Fred Lau's aquaponic farm.*

**Q. At the workshop you showed us algae that you are raising as food for the fish. What other food do you use? Where do you get it? Are you concerned about the algae spreading? How do you minimize risk of the algae becoming a weed?**

**A.** Actually it is not an algae, we grow three invasive water weeds to supplement 20% of our fish food for the tilapia. Eighty percent of our feed is imported trout food. Salvinia and Azolla are both floating ferns and highly invasive, the common duck weed is a floating plant. It is very important to control and not release these plants into our waterways. Prior to raising tilapia, we had our Department of Plant Quarantine inspect the property to insure that we are not near a stream or waterway and would be able to produce tilapia on our property because it is also an invasive species and we don't want to be responsible for further introduction of the species entering our streams or water ways. We were given a permit to import tilapia. The same would hold true for these water weeds, if your farm is near a stream or lake and there is a chance of water discharge during a heavy rain or tanks overflowing, you should not bring these plants onto your farm.

**Q. What impacts do changes in production (due to season, disease, etc.) have on marketing your product? Cash flow? Labor needs? How do you plan for and manage these variables?**

**A.** One of the problems with aquaponic production in open fields is the lack of disease and nutrient controls that are available. Seasonal variation is the same for conventional farming as with aquaponic farming. We are looking at greenhouse production for some of our crops to eliminate some of the pest and weather related problems. Controlled environment growing is expensive, but may turn out to be economically feasible when growing in the tropics.



*Lettuce is successfully grown and managed through organic practices.*

**Q. You are using a lot of photovoltaic panels to generate electricity. What percent of your energy is produced using photovoltaic? Will photovoltaic panels work for all parts of the operation, or are some components better suited to photovoltaic than others?**

**A.** Start up costs for PV systems are extremely expensive up front, this will be very prohibitive for farming where returns on investments are slow to realize. The PV production also is limited by the amount of sunlight and day length so may not be the most efficient method of generating electricity: during the summer months it may be producing a third of our electricity, while in the winter months it has been as low as 5% of our electricity when weather is bad and days are short. PV still stands out as the solution to providing some of our power and tax incentives have made it possible to utilize the systems on our farm.

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