

Village Aquaponics

by John S. Pade

My name is John Pade and I am hooked on aquaponics. While most of my days are spent working on disseminating information on hydroponics and working with clients on hydroponic projects, what I really want to do is work 100 percent on aquaponic projects. Over the years my partner, Rebecca Nelson, and I have gathered information about from researchers, hands-on growing, hobbyists, aquaculturalists, commercial hydroponic growers and manufacturers of greenhouses. We put that knowledge together with properly manufactured components and come up with practical, commercial viable, food producing machines. When that food producing machine uses fish to provide the nutrients, it is generally called aquaponics. When an aquaponic system is used to provide nutrition, in the form of fish and vegetables, to people who live nearby, I call it *Village Aquaponics*.

What is Village Aquaponics?

You probably know that aquaponics is the combination of hydroponics and recirculating aquaculture. The reference *Village Aquaponics* refers to an aquaponic system specifically set up for the purpose of providing a protein crop (the fish) and a vegetable, herb or fruit crop (the plants) to a specific region surrounding the operation. Commercial transportation of the food produced in a *village aquaponic* system should not be necessary. Those living near the system should be close enough to pick up the fish and produce themselves. The accessible radius could vary depending on where the system is located. In a remote village the access may be by foot trails limiting the area the system can serve. In downtown Singapore, a rooftop system may service a population located very nearby. This could be the case in many of the world's larger cities where hundreds of these systems can collectively provide a great deal of food that doesn't have to be commercially transported into the city from great distances. In the United States and many other nations where public and private transportation is available on an established network of roads, small commercial aquaponics systems of a ½ acre or less can be very profitable. The term *village* can refer to a small remote community in Panama or Honduras, but it can also refer to an aquaponic system that is providing fresh fish and produce for the guests of a 5 star beach resort on an island that has limited agricultural resources.

Can Aquaponics Replace Hydroponics?

I believe it can, I believe it must and I believe it will. Yes, of course, many will ask, why? Hydroponics can produce so much in a very small space using a fraction of the water, machinery and labor that field produce needs. Also, hydroponics, when done in a screened clear poly roofed greenhouse frame, can be herbicide and pesticide free and not pollute the soil and ground water. In a hot climate, screened walls and a clear rain cover work well and in a cold climate clear walls, heaters and clear poly roofs on a greenhouse frame make production possible year-round. Well, all

these advantages of hydroponics that make it an option for feeding tomorrow's world also apply to *village aquaponics*.

There are two clear advantages that aquaponics has over hydroponics: 1. the nutrient source comes from fish waste and is, therefore, organic and 2. aquaponics provides something that hydroponics does not, a protein crop. Now, it is true that they both need an input, fish food in aquaponics and fertilizer in hydroponics. It is easier to provide fish food than to provide the myriad of chemical fertilizers that hydroponics needs. I do recognize the contribution hydroponics has made to the world's food supply and I think it will continue to be an important source of food in the future. I also think improvements will be made in nutrient sources for hydroponics in the near future, making it less dependent on the manufacture of chemical fertilizers. Improvements in the manufacture of fish food have resulted in the availability of fish food that is plant-based and has no fish meal or animal by-products in it. Also, I see that many countries throughout the world have a well developed aquaculture industry already in place. This well established industry provides the perfect skilled labor force to manage the aquaculture portion of an aquaponic greenhouse operation. A network to distribute fish food is already in place so the start up of an aquaponic system can be easier in many cases than starting a hydroponic operation.

Is Aquaponics Commercially Viable?

There are very few commercial aquaponic operations compared to the number of commercial hydroponic operations. This is true. But I believe the research that has been extensively done is making aquaponics a viable method of agriculture and research will continue which will refine it even more. We are not starting from ground zero either. Aquaponics is so similar to hydroponics that much of the knowledge gained over the past decades is transferable to aquaponics. Another revenue stream that aquaponics can generate is from giving tours of this unique food growing system. While the clickity-clack of dosing devices used in hydroponics can put you to sleep, the active vibrancy of the fish in an aquaponics system seems to really draw a crowd.

I have been involved with agri-tourism in both hydroponic and aquaponic greenhouses and I can assure you that an aquaponic growing system fascinates people far more than a hydroponic greenhouse tour. The aquaponic system lends itself well to educational groups as it is a complete living system that demonstrates many science related subjects. Educators can develop an entire semester's curriculum around a visit to an aquaponic greenhouse.

The work that Dr. James Rakocy and associates has done at the Agricultural Experiment Station located at the University of the Virgin Islands, St. Croix, USVI, over the past 25 years or so has proven aquaponics works well. The application of this knowledge at the Crop Diversification Center in Alberta, Canada has had impressive results. Not only are leafy vegetable crops being grown

but high nutrient demanding vegetables and fruit crops are doing as well as they do in hydroponics, sometimes better. Valuable information also comes from the many aquaponic growers who contribute to the process by trial and error. These days the errors are fewer and the trials more successful as innovative new growers take advantage of the knowledge developed by others. The Aquaponics Journal has become the *voice of aquaponics* and is a major contributor of information to the aquaponics industry.

The Future?

The aquaponics industry will develop rapidly for both salt and fresh water fish and crops. Many different organizations, both private and public, will take up this technological quest with a passion dictated by their own particular needs. The resulting improvements will have a far reaching world-wide effect on the aquaponics industry. It has been said that visionary thinking is the dreams of fools. To that I say let the fools sleep soundly, for we are going to need the results of their dreams if we are to meet tomorrow's demand for food world-wide.

About the Author: John Pade is a consultant in the hydroponic and aquaponic industry and is co-publisher of *Aquaponics Journal*. He can be reached by email at pade@aquaponics.com or by phone at 209-742-6869