

How Many Prawns Can I Squeeze Into My Aquaponics System?

Prawns are sexy (oooooh). Prawns are expensive! Everyone loves prawns! Everyone immediately jumps to the conclusion that raising prawns will make them the most money of any aquacultured species. The only problem with this conclusion is that it ignores all the natural behavior, breeding habits, and other facts about prawns that one MUST know about to be able to raise them successfully. If you read on, you will at least know about the major issues involved in raising prawns, and have some idea of where to go next if you insist on doing so. I know a prawn farmer in Honduras, and she makes money raising prawns. But she has 600 acres of ponds, expert labor that costs her \$6/day, an \$8/pound price for her prawns (she ships them to Europe), and says if her operation was any smaller, she couldn't make a go of it.

There are several things you need to know to successfully raise prawns in an aquaponic system. Tilapia (or any other fish you try to keep them with) will eat the prawns, so you need to keep the prawns separated from the fish in different tanks or troughs. Everyone likes to eat prawns, even other prawns. To raise prawns commercially, breeders stock PL's (post larvae, or juvenile prawns) at 3 to 4 PER SQUARE YARD of pond space, and harvest at 1 to 2 per square yard of pond space.

The reason they only harvest half of the prawns they stock is that the prawns are territorial and fight with and eat each other. Apparently a lot of the mortalities come from large prawns being eaten by smaller prawns when the larger ones are molting and unable to protect themselves because their shells are quite soft for a long time during the molting process. The only way to successfully raise prawns commercially is to have tens or even hundreds of ACRES of pond space, and even then success is in question because the prawns are VERY susceptible to disease, and predation by fence-hoppers (human thieves).

The reason prawns work in an aquaponics system is that they are detritivores. This means they eat organic garbage: anything that falls to the bottom of the troughs; a dead mosquito fish, some roots that fell off a plant, another prawn that just died or was drygulched by a group of prawns while molting. As a result of this feeding behavior, we don't need to feed them anything, and having prawns in the system does not increase the amount of feed we need to purchase. Our opinion is that that in the process of eating the detritus of dead roots and other organic refuse that falls to the bottom of the troughs, they further break up this stuff and liberate nutrients that the plants thrive on, as well as add their own excreta to the system, which then turns into nutrients for the plants in the system.

As mentioned, the prawns are raised in the hydroponic troughs under the vegetables to keep the tilapia from eating them. We have never seen any damage to vegetable roots caused by prawns, or any decrease in system vegetable production after we introduced prawns to one of our systems. We have noticed that the smaller ones will shelter in particularly large root groups, and come zooming out when you lift a raft to inspect the roots.

We stocked 300 +- PL's into a total of 864 square feet of hydroponics troughs in a commercial system (a stocking density of 3 per square yard), and 4 months later harvested 50-70 lbs of prawns from that system. These prawns can be sold off the back of the truck for \$10/lb in Hawaii. So this would total 150 to 210 lbs of prawns a year from a system that produces 8,700 lbs of organic lettuce and 600 lbs of tilapia a year. You can see it is not the largest or even the second largest system output.

We are experimenting with higher stocking densities and with using substrate inside the troughs to increase the survival rate of the prawns. Substrate is basically wadded-up plastic with a lot of holes in it that the prawns can hide from each other in, and there is prawn literature that indicates almost double stocking and harvesting densities achieved when using it. An example of substrate is that orange plastic mesh barrier you see on construction sites, wadded-up and spread around the bottom of the trough. The problem with this is when it comes to harvest time, you have huge wads of the plastic stuff full of prawns inside the trough, and you have to get it out and them out of the plastic without damaging them too much in the process. This may make labor costs soar so much that it wipes out any additional production realized by using the substrate.

Freshwater prawns have a brackish water phase in their breeding cycle, and because of this, a prawn hatchery is somewhat involved. We figure we can build a basic small capacity prawn hatchery for about \$1,000 or so, and learn how to run it successfully in two to three months of trial-and-error (but we have a head start on this: we're successful aquaculturists already). Because we don't have a prawn hatchery yet, the only way we can obtain baby prawns to stock our troughs with now is to buy PL's from a local breeder.

Most of the commercial breeders have minimum orders of 10,000 or so and high shipping costs, so unless you can find a local prawn breeder that will sell you small amounts, you can't raise prawns easily or affordably. Don't expect to make a lot of money on prawns or grow a lot of them unless you can figure ways around all these problems that no one else has figured out in 50+ years of commercial prawn farming.

A GREAT source of information on breeding, hatching, and growing prawns can be found at the following downloadable link; this is a reference work on breeding and rearing freshwater prawns at the United Nations Food and Agriculture Organization's website at <http://www.fao.org/docrep/005/y4100e/y4100e00.htm#TOC>. Look for, then click on "PDF Version" in little blue print at the top right of this document to get the downloadable version in PDF format, then save it into a folder on your computer.