

Little Shrimp Offer Big Opportunities



Shrimp farms can be very important sources of income for poor people Djames Lim tells Susan Gallagher.

Photos courtesy of LIM SHRIMP ORGANISATION



Dipasea Prawn Farm in Indonesia provides a livelihood for thousands of people

“Our family was never in the aquaculture business,” says Djames Lim, Executive Director of Lim Shrimp Organisation. “Our main lines were in properties, commodities and manufacturing.” How did the Lims get involved in running the biggest, most high-tech prawn farm in the world? “We chanced upon it, in the 1980s,” explains Djames.

It Started in the Gents

“My father had read a lot of books about aquaculture. Our family-owned building was in Singapore — Tuan Sing Towers’ Penthouse (today it is Robinson Towers) — and he decided to try it out in his personal gents room. Every day, the chauffeur would get pails of seawater from Clifford Pier and bring them to the office.” These experiments eventually led to setting up aquafarms in China, Singapore, Malaysia and eventually Indonesia.

In the mid ’80s, Djames’ father was approached by the Indonesian government, which was introducing a programme to move people from over-populated Java, where Jakarta is, to less populated parts of the country. This ‘transmigration’ initiative had the backing of the World Bank and the Asian Development Bank. “Some government people asked my father for suggestions on how to employ these migrants,” Djames relates. “They said, ‘You guys are big businessmen — what do you suggest?’ My dad said, ‘Shrimp’.”

“His rationale was simple. If you transmigrate people and they don’t have jobs, they are going to get into trouble. They are going to start robbing. They will also have social problems. So you have to teach them a way to make a living. This is what my father explained, and the government agreed.”

A Vast Operation

Dipasea, in southern Sumatra, was once an uninhabited swamp. Today, the Lims’ Dipasea Prawn Farm is the largest of its kind in the world — measuring 30km by 140km and spanning two states. This vast operation employs 90,000 workers and prawn farmers plus 200,000 family members.

“Each family has one house and two ponds measuring from 0.25 hectares to 1.8 hectares, laid out in grids and set up so they don’t cross each other,” Djames explains, “so pollution is down to the very minimum. We teach these people how to grow prawns: we guide them and buy from them, process the prawns and export them. It is a totally integrated system. We give them the ‘fry’ (baby prawns), the feed and provide disease management. Their training isn’t only in a classroom — they have to go out into the field. The senior technicians, scientists, researchers and managers, who stay in a different area, go down to the pond sites every day.”

Thirty-two schools and one college provide free education for some 6,000 students. The farm’s hospital is staffed by volunteer doctors from all over the world and all medicine is provided free. “Besides temples, mosques, churches and a cathedral, we have security, transportation, sports facilities, everything self-contained,” says Djames. “We dug 6,000 km of canals for irrigation and transport — I don’t know how many more than in Venice! There are no cars here, only boats, 12,000 of them: water taxis, water ferries, water buses and water trucks running through 6,000 km of canals!”

Environmentally Sound

Environmentally, the farms are intelligently planned. Inlet canals and outlet canals do not intersect, and when the outlets reach the sea, they have already passed through hundreds of kilometres of eco-treatment. Inlets and outlets are never near each other — and the inlet is never where a house is. “When you see a house, that’s where the outlet is,” Djames says. “The outlets run for hundreds of kilometres before ending up in the sea. We also maintain 150m of ‘greenbelt’, of mangroves along the entire 140km of shoreline — and we replant the mangroves wherever new canals are created.”

“We are always in contact with Greenpeace and other NGOs: we have been friends with them for the past 20 years. We have journalists and lawyers working for us, too, just to handle all queries from NGO groups. So far they’ve given only good reports about us, never any bad ones.”



**Executive Director,
James Lim**

Many other prawn farms in the world have failed because they destroyed their own environment within three or four years. In setting up Dipasena Farm, the Lim family were aware of the risk, and the need to figure out how to deal with it. For example, in the 1980s, Taiwan was one of the biggest producers of shrimp; but according to DJames, they made the fatal mistake of not treating their water properly.

Precautions are Needed

“When you grow shrimp, you provide the water with a lot of nutrients and the water becomes very fertile. Then it goes into a canal or the open sea — but this is no good. In over-fertile water, the oxygen count goes down. The ammonia goes up. So does the nitrite: there’s too much protein in the water.

“That’s bad!” he declares. “There’s nothing in the water that can consume all these nutrients. The water will lack oxygen, and without oxygen nothing survives. So that’s why I have fishes and oysters to eat up all the excess nutrients in the water. My fish become enormous! The oysters grow as big as a mini-laptop computer! But they are there for ‘eco’, not for harvesting. So by the time the water has travelled the hundreds of kilometres to the sea, it is clean — and when I draw in new, clean sea water, it is really clean.”

Because Dipasena is the world’s largest integrated shrimp farm, scientists and aquaculturists from many countries come here to study its methodology. “They do all kinds of research. To accommodate them, we have 200 research ponds — round, square, rectangular, triangular, we try everything!” DJames explains. Lining the ponds with high-density polyetherene (HDPE) keeps the bottoms clean, more or less like a swimming pool.

“To improve our research and development,” he continues, “if we find some parasites, we bring them down to our research labs, freeze them down to minus 40 °C, and then send them to the best disease centre for aquaculture in the world, Arizona State University. There the famous Dr Donald Lightner will identify what the problem is and give us vital information.”

PRAWN FARMING FACTS

- Every country presents a different scenario. In Indonesia, plenty of inexpensive land is available, so natural sources supply the necessary water and 30 to 50 shrimp can be farmed per square metre.
- In areas where land is more expensive or scarce, the high-tech system employs recycled water, 100% treated after each cycle. High-tech farms produce 5x to 7x more shrimp per square metre.
- The conventional prawn farm produces 1 kilo of shrimp per square metre. A high-tech farm yields 3 kilos per square metre.
- High-tech prawn farming can be carried out indoors in temperate or cold climates. The prawns are raised ‘swimming-pool style’ in HDPE-lined ponds: these are filled with temperature-controlled, scrupulously-recycled reverse osmosis water that’s actually clean enough to drink.
- If shrimp are frozen at a core temperature of – 20°C, a year-old shrimp and a day-old shrimp will taste exactly the same. (Normal refrigeration cannot do this; it must be commercially done.)

**HI-TECH SHRIMP FARMS:
AN ENVIRONMENTALLY-SOUND
OPPORTUNITY**

The worldwide appetite for delicious prawns has sparked considerable interest among entrepreneurs who have seen the huge success of the Lim family’s profitable business. Environmentally-friendly prawn farming is not only lucrative — it has the added attraction of providing low-income rural populations with a long-term sustainable income and a positive lifestyle.

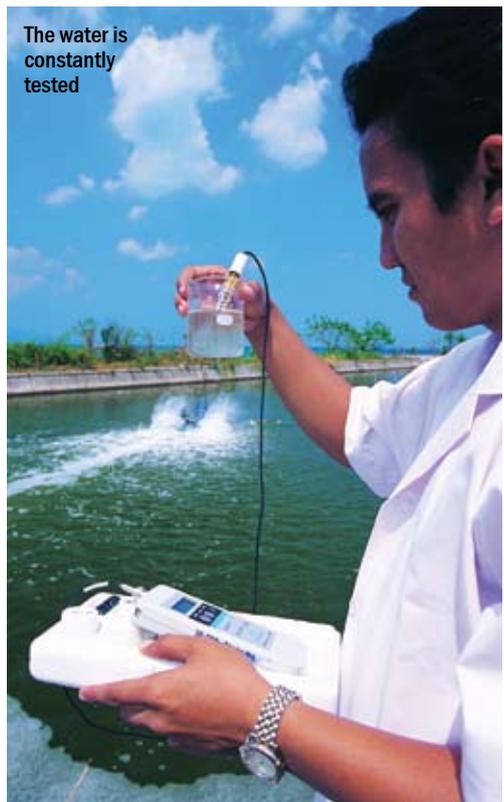
Shrimp farming can potentially support thousands of new businesses and provide tens of thousands of jobs in developing countries. Smaller-scale enterprises and profitable franchises are available in colder, more developed countries. Lim Shrimp Organization (www.limshrimp.org) is presenting this module to interested parties worldwide and will show them how to run this type of business.

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**More Fries than
McDonalds**

The shrimp hatchery that provides the fry for Dipasena Farm is located away from the farm, where the water is crystal-clear. “We have quality control, water treatment, and we produce more than 4.8 billion fry per year. We have our own feed mill, too. The feed combines wheat, soya bean meal and fish meal from Chile and Peru, plus vitamins and minerals. These days everything must be traceable. If you buy my shrimp, I can tell you everything, right down to where my fish meal comes from. I can trace which farmer provided food for my shrimp! Biosecurity means we can trace everything — we actually use a metal detector on each shrimp! This is where we are successful — we’ve been doing this for the last 23 years.”

When the shrimp are ready for harvesting, the processing plant can handle 200 tons a day. They are frozen to – 20 °C core temperature, packed and sent in the company’s own vessel to Singapore, then transhipped all over the world. Lims’ biggest markets are in the USA, Japan and the EU, followed by China, Australia and Taiwan. 



NOTE: Subsequent to this interview, the Lim family sold their stake in the Dipasena shrimp farm to another international consortium and moved on to develop more high-technology shrimp farms in China, Puerto Rico, the Philippines, the USA and Malaysia, to be more efficient and cost-effective.