

This farm raises sea bass on land

Its use of recirculated seawater to cultivate fish in tanks may be the solution to algal-bloom losses

By GRACE CHUA

FISH stocks of Pasir Ris and Pulau Ubin farms were decimated late last year when they were hit by a sudden and deadly plankton bloom. But one farm here has a solution to avoid future aquatic losses.

SIF Agrotechnology Asia in Lim Chu Kang is using recirculated seawater to cultivate sea bass in tanks, from eggs to full-grown fish.

The experimental set-up, with its eight cylindrical tanks with each holding half a tonne of water, is a venture by local water-treatment company SIF Technologies.

Its chief executive Matthew Tan, 45, said: "Sea-cage farming is a sunset industry; farming fish on land would be a quantum leap."

The farm is the first of its kind here to raise marine fish in land-based tanks.

It uses a process called hydrocavitation, which uses water-pressure changes to create vapour bubbles.

When the bubbles collapse, they break down waste in the water.

This waste collects as sludge, broken down naturally by bacteria and then used as fertiliser.

To ensure the fish are healthy, factors like the pH (a measure of the acidity or alkalinity of a solution), temperature and amount of dissolved oxygen and nitrites in the water are measured daily.

According to Mr Tan, the fish grow to table size – 30cm – in 4 1/2 months, compared to six months at a traditional fish farm.

The tank farm, which is set to harvest its first batch of about 280 sea bass this week, has several advantages over traditional sea-cage farming.

Where traditional fish farms must get their eggs or fry from countries such as Malaysia and Indonesia, tank farms do not, providing a measure of food security and controlled supply.

And because the tanks are enclosed, the fish are not vulnerable to algal-bloom outbreaks.

Such farms are also environmentally friendly, producing less waste. Stanford researchers last year found that waste from floating fish farms may stay concentrated around the farms and be carried close to shore, rather than being diluted and carried away with the current.

Land-based aquatic farms can also be run by a single person and require less manpower than traditional fish farms.



SIF Technologies CEO Matthew Tan with a sea bass from SIF Agrotechnology Asia, which uses recirculated seawater to raise fish in tanks. Its fish grow to table size in a shorter time than those in traditional fish farms. ST PHOTO: SAMUEL HE

But start-up costs are high, noted Mr Tan. A larger SIF hatchery, planned to open by June in Pasir Ris and raise about a million fingerlings, will cost about \$1 million in start-up and operating costs.

He suggested that support could come from a \$5 million Agri-Food and Veterinary Authority (AVA) fund for local agricultural research. The AVA fund was set up to help farmers produce 30 per cent of eggs, 15 per cent of fish and a tenth of leafy vegetables consumed here.

Currently, Singapore produces about 5 per cent of the fish it consumes.

Former AVA chief executive Ngiam Tong Tau said SIF Technologies' recirculation system was an additional aquaculture technology that could take root here. "If the farm is scaled up, it will help Singapore to produce fish significantly and will help sustain the local aquaculture industry."

Instead of viewing the farm as competition, other local fish farmers are looking to follow suit.

Mr Lee Van Voon, a Pasir Ris fish farm owner whose stocks were affected by the fish die-offs, said he had been looking into recirculation technology since last year. "Open-sea farming here is totally uncontrollable – it's exposed to farm runoffs and oil spills from passing ships," he said. "(Recirculation) would make farming more predictable, so we can go for different, higher-value species."

The technological solution would boost dissolved oxygen and help ward off further plankton-bloom die-offs, said Singapore Polytechnic lecturer Kwok Chen Ko, who specialises in water-quality monitoring. But he added that naturally occurring ecological processes would be more sustainable for providing dissolved oxygen in the long term.

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An advertisement for Star Cruises. It features a black and white photograph of a woman with her hair styled up, smiling, and a man's head visible in the bottom left corner. The text is written in a cursive, handwritten style. The main text reads: "We want to steal away to a world for two. We choose Star Cruises."