

DEVELOPMENT OF SHRIMP AQUACULTURE IN NEW CALEDONIA

World demand for sea shrimps, from both natural fisheries and farms, is very high (2,600 mt in 1990) and is constantly growing, while shrimp fisheries can no longer increase catches. The additional quantities needed can only come from controlled shrimp farming, which accounted for 5 per cent and 28 per cent of the shrimp market in 1982 and 1991 respectively.

New Caledonia is suitable for shrimp farming, because of a number of favourable features:

- suitable seawater temperature range, enabling year-round production;
- availability of land areas behind the mangrove belt,

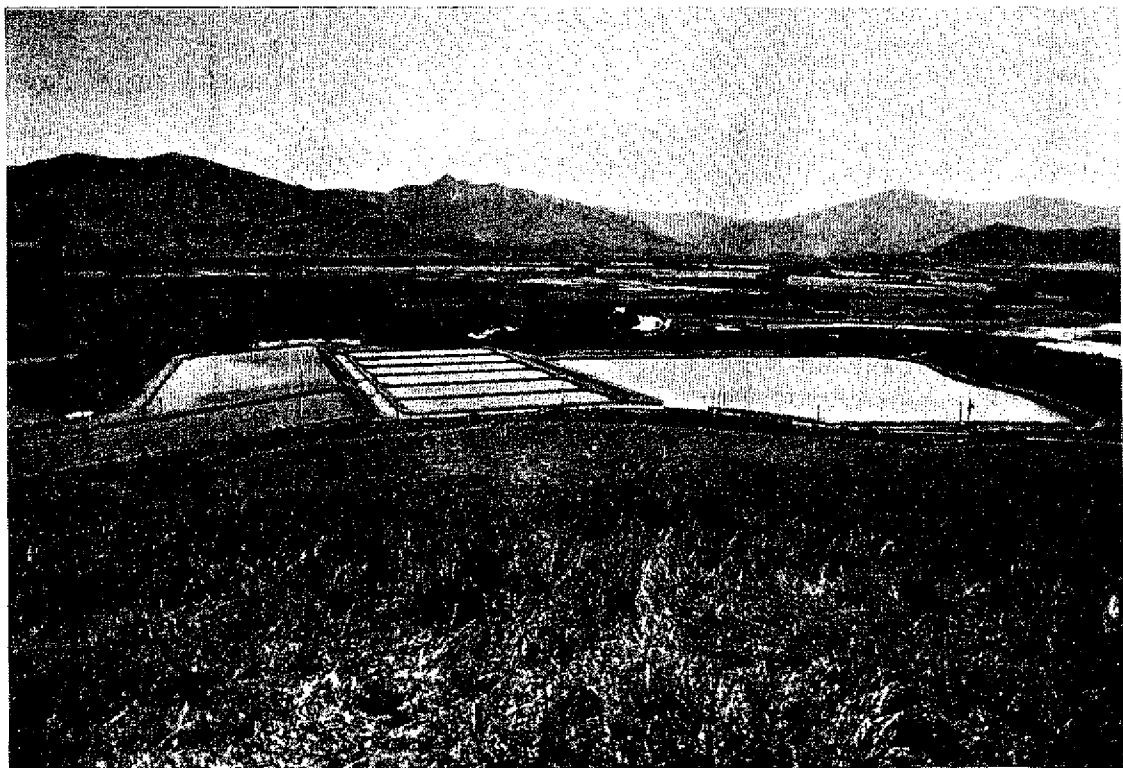
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which, being flooded at high tide, cannot be used for agriculture and which are, for the most part, Territory-owned. A comprehensive survey of sites suitable for aquaculture, about 6000 ha in all, and a detailed study of the 18 sites earmarked for early development, were completed in 1989 under the ALIAS (IFREMER) programme using SPOT satellite imagery;

- a technology base built up by IFREMER and the Territory

in 20 years of joint research. This technology was developed with a selected and imported shrimp species which has now been reproduced locally in captivity for nearly 20 generations, and is being supplied free of charge to private shrimp farms;

- the Station d'Aquaculture de Saint-Vincent (SASV), run jointly by the Northern Province, the Southern Province and IFREMER, which, besides its technology transfer, training and technical assistance activities, maintains a strong research component for improvement of productivity and achievement of balanced development;
- the professed determination of the New Caledonian government to encourage the development of new rural-based activities in which



View of the Station d'Aquaculture de Saint-Vincent

all the Territory's population groups can be involved;

— the positive response of the population as a whole to this type of activity;

— good availability of supplies, services and basic infrastructure;

— feasibility of producing shrimp food locally.

SODACAL, a private shrimp farm set up in 1981 to demonstrate the viability of an integrated aquaculture farm geared to export, and which has since been the driving force behind this activity, can be regarded as a demonstrated success.

Over the past nine years, New Caledonian aquaculture has produced over 2,000 metric tonnes of shrimps:

1983	19 tonnes
1984	54 tonnes
1985	95 tonnes
1986	65 tonnes
1987	87 tonnes
1988	217 tonnes
1989	296 tonnes
1990	539 tonnes
1991	649 tonnes

Of the 1991 total output, 267 tonnes were marketed locally and 373 tonnes exported, making shrimps the Territory's second export commodity (after nickel ore). Ninety-two people were employed at the end of 1991 in shrimp aquaculture and processing for sale (not including research and indirect employment).



Hatcheries

There are three hatcheries in New Caledonia: the SASV hatchery, which is no longer involved in the production process, and two private hatcheries, namely:

— the SODACAL hatchery, which was set up in 1986 and produced over 66 million post-larvae in 1991 (or 47 million juveniles after nursery rearing). With 120 m³ of rearing tanks, its theoretical capability is 70 million juveniles after the nursery stage.

— the Montagnès hatchery, which has 80 m³ of rearing tanks and an annual theoretical output of 47 million juveniles. It was set up in 1991 by two private shrimp farms (AQUAMON and SEAFARM) and already produced nearly 14 million post-larvae in 1991 (i.e. 11.3 million juveniles after the nursery stage).

Grow-out

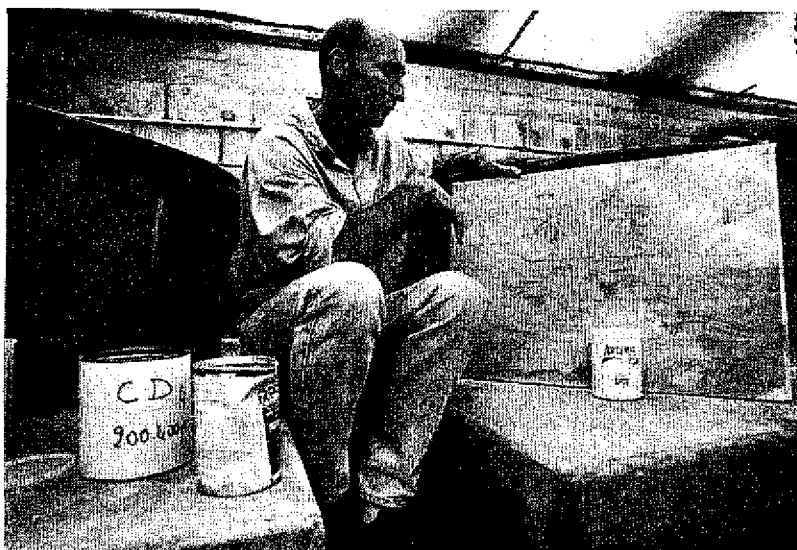
Six shrimp farms in New Caledonia practise grow-out to the marketable stage:

— AQUAFARM: has a grow-out pond 7.5 ha in area and 3 small juvenile rearing ponds, constructed in 1981 at Ouenghi by the SASV and handed over in 1991 to a private entrepreneur for harvesting and marketing (13,700 kg harvested in 1991), under the terms of the original agreement.

— AQUAMON: has 6 ponds totalling 45 ha in area, constructed in 3 stages from 1983 to 1990 at Tontouta (156,619 kg harvested in 1991).

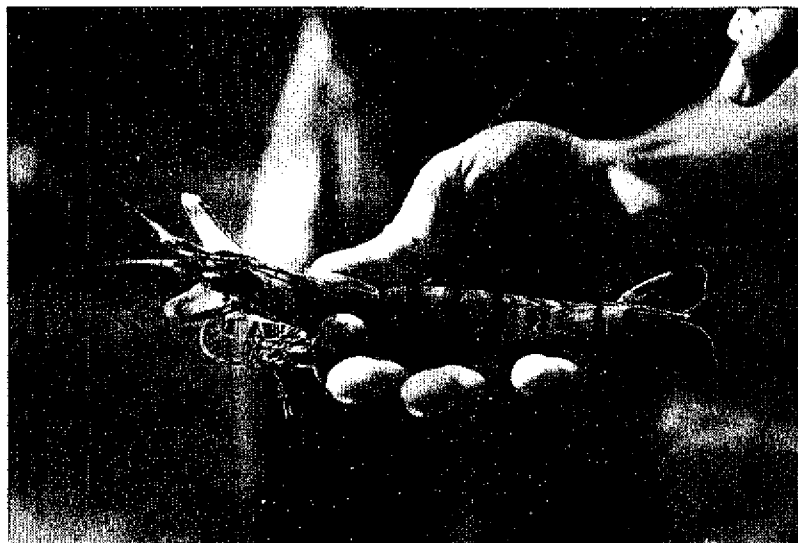
— BASSINS DE DUMBEA: has 3 ponds totalling 15 ha in area, constructed from 1988 to 1990 (38,209 kg harvested in 1991).

— SASV: the research station at Ouenghi, has about 20 ponds totalling 8.5 ha in area



A Station d'Aquaculture de Saint-Vincent-based researcher is showing a diagram representing the different post-larvae stages.

* IFREMER 35.97 per cent, France Aquaculture 16.4 per cent, SPAC 15.65 per cent, BCI 12.32 per cent, PROPARGO 10.59 per cent, ICAP 4.34 per cent, Southern Province 4.34 per cent, other 0.39 per cent



A technician showing a marketable-stage shrimp

(41,453 kg harvested in 1991).

- SEAFARM: has 10 ponds totalling 35 ha in area at Bouraké. Construction was completed only in 1991 and the first harvest will take place in 1992.
- SODACAL: has 12 grow-out ponds and 12 juvenile rearing ponds totalling 129 ha in area, constructed in two stages, in 1984 and in 1987 (398,535 kg were harvested in 1991).

Because of the serious problems that occurred with locally produced shrimp food pellets in 1988 and 1989, the private farms will still be using a high proportion of shrimp food imported from Asia in 1992. However, this year, two locally produced seeds using different ingredients will come on the market for the first time and should prove more reliable.

Several feasibility studies have been conducted over the last few years but only one new grow-out farm will be opened in 1992, at Voh. With its 40 ha of ponds, the Voh farm will be

the first aquaculture venture of the Northern Province.

Processing for export

SODACAL has been operating a modern, export-standard processing plant since 1986. The plant is equipped with an automatic grader, cooking pots and a brine freezer and has an output of 5 tonnes of IQF (individual quick frozen) shrimps (raw or cooked) per 24 hours. It is located at the Noumea Port next to the General Cold Store and can therefore use these storage facilities pending shipment.

These cold storage facilities are to be overhauled and improved in 1992. The post-harvest automatic anti-oxidant treatment chain set up in 1991 on the SODACAL farm should be integrated into the processing plant in the city in 1992.

The average CIF price for export-grade shrimps has been rising steadily despite a not very favourable exchange rate for the Australian dollar (80.60 CFP francs). It was 1,121 CFP francs/kg in 1991. The very marked increase in the average

size of shrimps produced largely accounts for the good price they now fetch. Shrimps are being exported to France (193 tonnes), Australia (148.7 tonnes), Japan (11 tonnes), Tahiti (9.704 tonnes), New Zealand (8.4 tonnes) and Wallis (2.13 tonnes).

Production cost ex-pond was about 800 CFP francs/kg in 1991 at SODACAL and is expected to be reduced through improvement of yields (intensification) and better food-conversion rates, as food costs still currently represent between 40 and 50 per cent of the total production cost.

The 'export cost' (i.e. from arrival at the processing plant to CIF delivery) was 278 CFP francs in 1991 as against 342 CFP francs in 1990 and should be further reduced in 1992 (to about 235 CFP francs per kg) with the expected increase in quantities processed.

The export premium introduced by the Price Stabilization Board for three years, from 1989 to 1991 (120 CFP francs/kg for the first 350 tonnes of shrimps exported in 1991) is to be replaced in 1992 by another type of incentive guaranteeing a minimum exchange rate for the Australian dollar in respect of exports to Australia.

In 1991 SODACAL processed and exported part of the output from the other four shrimp farms:

- 65.7 tonnes for AQUAMON;
- 26.6 tonnes for SASV; and
- 2.4 tonnes for AQUAFARM.

A shrimp producers' association is to be established in 1992, with a view to joint utilisation

of the existing processing plant and marketing of all New Caledonian shrimps under a single tradename. Quality control will be set up concurrently to protect this tradename.

Prospects

Despite all its assets, New Caledonian shrimp aquaculture will never quite be able to compete with the large Asian producers, because energy, raw materials (imported) and labour costs are too high.

To stand a chance on the world market, the New Caledonian product must be 'different' (*P. Stylirostris* species which is uncommon and extra-large) and of excellent quality (stringent quality control and a single tradename). By increasing the quantities available for export (an estimated 600 tonnes in 1992) while decreasing production and processing costs, it will be possible to supply markets more regularly and more reliably.

The future for New Caledonian shrimp aquaculture looks bright and the initial results obtained by SEAFARM, the more intensive 'new generation' farm, could attract new investors and make banks more willing to grant loans. Just putting 1,000 ha of ponds into operation would yield between 4000 and 5000 tonnes of shrimps, result in a turnover of more than 5 billion CFP francs and directly generate 500 jobs.



Technician using a hand cast net to collect some shrimp specimens for analysis