

# Shrimp Farming on Coetivy, an isolated coral island in Seychelles – a completely integrated project.

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## Abstract

The island of Coetivy is situated more than 250 km away from the main island, Mahe and its crystal clear waters cannot carry any pollutant neither shrimp disease, except from its own farm. The elongated shape of the island makes it possible to pump sea water from one side and discharge on the other side. As there is no native wild population of *Penaeus monodon* in Seychelles, we are still dependent on imports. The island has her own hatchery with a capacity of 50 million post larvae per year. The grow out consists of 78 lined ponds of 0.5 ha. Salinity of the water is 35-36 ppt. The island also has a complete processing plant, where shrimps are processed and frozen within hours after harvesting. In August 1995, a shrimp feed factory was set up to produce fresher and better quality feeds. The first shrimps grown completely on this feed are now harvested and are showing both faster growth and reduced feed conversions. The quality of the feed also made it possible to keep high density ponds (more than 70 pl/m<sup>2</sup>) till about 33 g before harvesting, resulting in one record harvest of 8.532 MT/pond (= 17 MT/ha/crop).

## Introduction

The Republic of Seychelles, situated in the Indian Ocean, consists of 115 islands, shattered around in 1340000 km<sup>2</sup> of ocean, which forms the Seychelles' Exclusive Economic Zone. However, most of the 77000 inhabitants live on 3 inner islands, Mahe, Praslin and La Digue, while most of the outlying islands are not occupied. Shrimp farming was identified as a way to develop the islands and a pilot project of 4 ponds was started on Coetivy, the closest coral island to Mahe, which was large enough. After some encouraging results, 74 more ponds were constructed. A hatchery and nursery and a processing plant was also built on the island. A refrigerated landing craft was specially built to send feed, fuel and other goods to Coetivy and bring the frozen prawns back. As a last step a shrimp feed factory was set up next to an existing livestock feed mill on Mahe, in cooperation with a Belgian partner, VDS, who is doing the management.



## Materials and methods

The farm consists of 78 square 0.5 ha ponds, lined with plastic in sectors of 4 to 12 ponds. Clear sea water is pumped untreated in the ponds at a rate varying from 10 to 30 % a day, depending on stocking density. It is drained to the other side of the island by gravity. Ponds are stocked with PL15 from 100000 to 330000 PL (density 20 to 66 PL/m<sup>2</sup>). Feeding is done 6-8 times a day at a rate of 10-2.5 % body weight per day. The shrimp feed is produced on Mahe according to the needs of the farm and is consumed within 1 month after production.



## Results

Cycle days	Stocking density (PL/m <sup>2</sup> )	Survival rate (%)	Biomass harvested (kg/0.45 Ha)	Average weight (g)	FCR	Production (MT/Ha*crop)
177	24.0	93.6	4100	36.5	2.2	8.2
183	22.0	74.6	3307	40.3	2.4	6.6
149	43.3	82.6	5727	31.9	1.8	11.5
155	60.0	79.9	6540	27.3	2.0	13.1
129	19.3	86.7	2595	30.9	1.5	5.2
190	66.0	65.4	7302	33.9	1.9	14.6
169	60.0	71.8	7031	32.6	2.1	14.1
170	51.0	98.8	<b>8532</b>	33.8	1.6	<b>17.1</b>
158	37.9	79.5	5160	34.3	2.4	10.3
165	41.4	64.3	4455	33	2.5	8.9
210	28.8	44.6	3260	50.9	2.4	6.5
138	36.8	72.4	4762	35.8	1.8	9.5
144	30.6	74.6	3923	34.4	2.1	7.8
154	36.6	89.5	5359	32.7	1.7	10.7
164	39.8	77.0	5147	34.9	2.0	10.3

## Discussion

Given the numerous problems facing the shrimp farming industry today, this setup shows shrimps can be farmed in a sustainable way. The discharge water of the farm is taken away by the sea current and eaten by fish, without negatively affecting the environment and surely not affecting our own farm. The quality of the water and speed of processing are resulting in a high quality shrimp, which catches premium prices in Japan. The setup of our own shrimp feed factory has contributed substantially to the recent success. Firstly, the feed is much fresher when used than the imported feed. Secondly, the application of formulas to cover all the nutritional needs of the shrimp without compromising on quality has resulted in a slightly more expensive feed, but with an overall benefit for the company as a whole.



Landing craft "Enterprise", built by SMB to bring shrimp feed and other supplies to Coetivy and return with first quality frozen shrimp



Processing of shrimp on the island of Coetivy.



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