

# Aquaculture Spectrum™

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**Silver Pompano, *Trachinotus blochii***

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# SILVER POMPANO, *TRACHINOTUS BLOCHII* –

## A potential fish for coastal aquaculture in India

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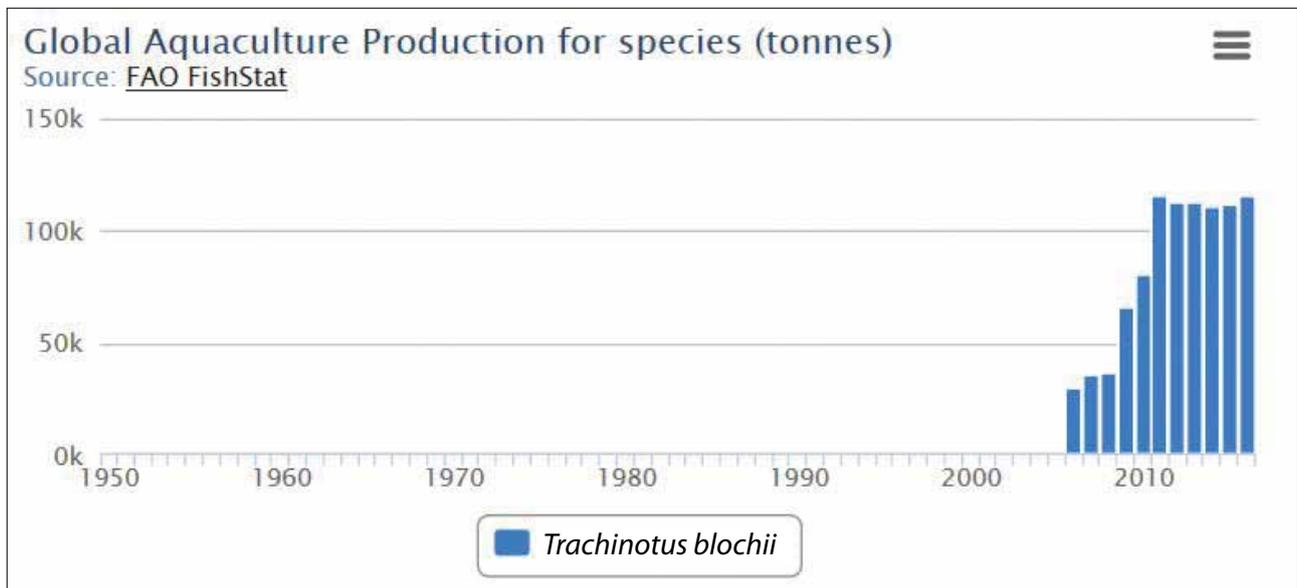


Adult Silver Pompano

### Introduction

Silver Pompano, *Trachinotus blochii* is one of the ideal species suitable for brackish water aquaculture in earthen ponds as well as for Mariculture in sea cages, mainly due to its fast growth, good meat quality and high market demand. Apart from having a good

taste and with fewer spines, Silver Pompano has high levels of Omega 3 fatty acids such as EPA and DHA in their meat. The Silver Pompano, also called as snub nose pompano is caught only sporadically in the commercial fishery and hence its availability is rather scarce. It is a much sought after species and hence its demand can only be met through



aquaculture. Silver Pompano aquaculture is done in Indo-Pacific region countries, especially China, as well as Vietnam, Malaysia, India, and the Philippines. Total global production of all species of pompano is in excess of 110,000 tonnes and appears to be growing (FAO, 2016). A small amount of Silver Pompano produced in Indonesia is being sold to restaurants and higher end grocery stores in the USA. The hatchery technologies have been transferred throughout the Indo-pacific region. In addition to cage farming, the good growth rate in low saline earthen ponds indicates its potential for commercial expansion. The production of Pompano in RAS also appears to be promising (FAO, 2016).

Farming of Silver Pompano can be successfully carried out in ponds, tanks and floating sea cages. The species is pelagic, very active and is able to acclimatize and grow well even at a lower salinity of about 10 ppt and hence is suitable for farming in the vast low saline waters of our country besides its potential for sea cage farming. The shape, colouration and meat quality of this fish is comparable with that of the silver pomfret. In the international market, the dockside price of Florida pompano averaged at \$ 8/kg and in India, the current price of Silver Pompano is about Rs.225-250/-per kg at fish landing centres and around Rs. 300/- per kg in retail markets. Silver Pompano is commonly known as "Seevani Parai" in Tamil, "Chanduva Para" in Telugu and "Peeyada" in Malayalam.

The Central Marine Fisheries Research Institute

initiated aquaculture research on pompano from 2008 and the first successful broodstock development, induced breeding and larval production was achieved in 2011. Following the successful seed production of Silver Pompano, demonstration of Pompano farming in brackishwater ponds was initiated by the CMFRI to popularize the fish among the farmers about its suitability for aquaculture. The first farming demonstration from the hatchery produced seed was carried out in a coastal aquaculture pond at Anthervedi Village, East Godavari District, Andhra Pradesh. The demonstration proved that Silver Pompano could be successfully farmed in brackish water shrimp culture ponds as an alternative species with high survival rate, appreciable FCR and good meat quality. The fishes attained an average weight of 450 grams in 240 days (8 months) of culture. However, marketing can be initiated from 200 grams onwards. Based on the experience gained on the brackishwater farming of Silver Pompano, the practices to be adopted for farming are given below:-

### Pond Preparation

As is being done in shrimp farming, the ponds have to be dried until cracks appear on the surface. The top layer of the soil containing waste accumulated from the previous crop of fish or shrimp has to be removed. Ploughing has to be done to a depth of 30 cm. Feeding areas, corners and trenches in the pond has to be properly tilled and dried to avoid formation of black

soil. The average water pH of 7.5-8.5 would be ideal for pompano farming. The level of lime application during pond preparation depends on the pH of the soil. Hence, the dosage has to be calculated accordingly. Water pumped into the ponds have to be adequately filtered using double layered filter mesh (100 micron) to avoid introducing other fishes or predators. A week before stocking, the pond must be fertilized with either organic or inorganic fertilizers to stimulate the plankton bloom.

## Salinity

Pompano are euryhaline and can tolerate salinities ranging from 5 - 60 ppt. However, the ideal salinity for farming would be between 15 and 25 ppt. It is essential that a water depth of 2 m is maintained throughout the culture period.

## Nursery Rearing and Seed Stocking

Hatchery produced pompano fingerlings of 1 inch size can be stocked in happas/ pens of 2 meter length, 2.0 meter width and 1.5 meter depth. While stocking, care should be taken to avoid agitation/disturbing the pond bottom as this increases the suspended solid load in the water, which can cause gill choking in the fingerlings, leading to mortality. Too many persons entering into the pond during stocking should therefore be avoided. The fingerlings have to be reared in happas for a period of around 60 days or until they attain 10 - 15 grams size after which they can be released into the open pond.



*Silver Pompano fingerlings*



*Pompano of around 25 gms after nursery rearing*

*Nursery rearing of Silver pompano in hapas*



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## Nursery rearing of Pompano

The mesh size of the happa could initially be of 4 mm size and it can be subsequently changed with 8 mm mesh size after 30 days. In each happa, about 200 fingerlings of around 25 grams can be stocked. After attaining 30 grams size, ideally around 10,000 nos. can be stocked in a one hectare pond. Alternately, the pond could be made into three pen compartments by partitioning with 20 mm net and fishes can be stocked in the middle portion of the pen. When they attain about 50 grams size one portion of the pen towards outlet side of the pond could be removed so as to rear the fishes in one half of the pond. Once the fishes attain about 100 grams size, the remaining partition of the pen also could be removed so that the fish are now reared in the entire pond. For rearing in sea cages, a stocking density of 30 to 40/m<sup>3</sup> can be maintained.

## Nutritional Requirement & Feeding

Silver Pompano is a fast moving marine fish and it requires highly nutritive feed to meet the energy requirements. During nursery rearing, Silver Pompano can be weaned to any type of feeds viz., extruded floating pellet, sinking pellet feed and chopped trash fishes. Ideally Silver Pompano can be weaned to extruded floating pellet feed to avoid feed wastage and spoilage of pond bottom. During the happa rearing phase, feeding has to be administered 4 times a day, while it can be reduced to three feeds a day in the grow-out phase in the open pond. The feed size should be lesser than the mouth size of the fish and hence, suitable sized feed has to be selected for feeding the fishes. When fishes are reared directly in the pond or in pens, floating feeding zones have to be installed for effective consumption of floating pellet feed and to minimize the wastage.

*Feeding zone made with PVC pipes*



The details of feed and feeding schedule of pompano are as follows:-

Weight of the fish	Weight of the fish	Crude Protein %	Crude Fat %	% to be fed as per the biomass	Feeding / day
> 1 Gram	> 1 Gram	50	10	30	4
1 - 10 gram	1 - 10 gram	40	8	20	4
10 - 100 gram	10 - 100 gram	36	8	8	3
100 - 250 gram	100 - 250 gram	32	6	5	3
250 - 500 gram	250 - 500 gram	32	6	3	3

A mix of two sizes of feed pellet can be used if there is any size variation of the fishes found during the regular sampling. If sinking pellet feed is used, at least 4 - 8 feed trays (80 cm x 80 cm) per pond could be placed. Regular sampling of fishes once in 30 days has to be carried out to determine growth rate and to calculate the FCR. In the first farming demonstration, FCR was 1: 1.8 with the above formulations.

## Water Quality Management

A good plankton bloom is essential for the early stages of pompano (until 100 grams) culture. If the colour of the pond water is clear, a mixture of organic (10-30 kg/ha) and inorganic fertilizers (1-3 kg/ha) can be applied to obtain algal bloom. Sufficient water level must be maintained in the ponds to reduce risks of the growth of benthic algae. The water depth in the shallowest part of the pond should be at least 150 cm. The water should never be turbid as it results in choking of gills of the pompano fishes. Water quality can be maintained by exchanging 10% of the water once in a week; 20% per week after 3 months and 30% per week after 6 months. If water colour is too dark, the quantum of water exchange can be proportionately increased. To maintain water pH within an optimum range of 7.5 - 8.5, agriculture lime ( $\text{CaCO}_3$ ) has to be applied regularly. Dissolved oxygen (D.O) level should be maintained above 5 ppm at all times. Paddle wheel aerators can be placed in the pond to create minor water current and to maintain the DO level. Aeration is a must during late evening to early morning period when the fishes attains 100 grams size and above.

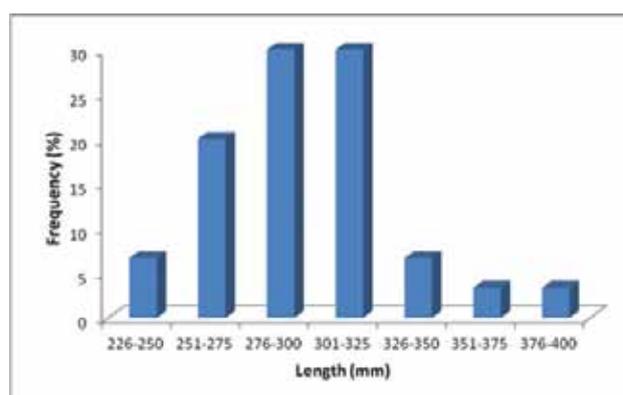
## Growth Pattern

During the entire culture period the growth pattern of Silver Pompano has to be monitored through regular

sampling of fishes at monthly intervals. The length and weight of the fish at different days of culture are tabulated below:-

DOC	Growth (mm)	Weight (g)
1	30.59 ± 0.24	2.00 ± 0.04
30	73.42 ± 0.53	15.08 ± 0.16
60	102.88 ± 1.91	34.60 ± 0.41
90	158.39 ± 2.42	72.54 ± 1.95
120	182.30 ± 2.03	101.82 ± 3.11
150	203.71 ± 3.73	172.39 ± 4.55
180	226.51 ± 2.90	258.31 ± 5.76
210	273.07 ± 3.62	375.32 ± 8.07
240	296.88 ± 6.27	464.65 ± 10.25

Unlike other fishes, silver pompano reaches almost uniform size at the time of harvest and every fish will attain marketable size within the culture period. The size distribution at the time of harvest (after rearing 8 months) is given below:-



Size distribution of Silver Pompano



*Pompano of around 300g size*

## Health Management

Silver Pompano is a very hardy species and is not very susceptible to diseases/infections. However, parasitic infestation of copepods may occur when they are reared in high salinities. During farming in ponds improper pond preparation /disinfection of culture water may sometimes lead to infestation of protozoan gill parasites like *Trichodina* sp. and *Amyloodinium* sp. These protozoan parasites are generally noticed when the ponds have high organic load. Proper pond preparation by ploughing and drying; disinfection of water by chlorination and application of disinfectants containing formalin or BKC at 2-5 ppm dosage

would help to eliminate these protozoan parasites. Periodical application of commercially available pond management chemicals like Iodine solution also would help to keep the fishes free from any infections. Suitable feed supplements could also be administered in the feed to enhance the immunity levels.

## Harvesting

Harvesting of Silver Pompano could be carried out using drag net as is being done in fresh water fish ponds. To ensure the freshness and quality of harvested fish, washing in clean water and chill killing can be done. Harvested fishes can be stocked in plastic crates by adding layers of ice in equal quantities at the bottom and top of the fish. It is suggested that harvesting of pompano fish could be planned during the marine trawl ban period to get a better price in the local markets.



*Harvesting of Silver pompano*



Harvested pompano of 500g size

## Marketing

Though Silver Pompano is a suitable species for coastal aquaculture, it is a new entrant in the consumer market due to its scarce availability. Taste and meat quality of silver pompano is well known in the states of Kerala, Karnataka, Maharashtra, Gujarat and West Bengal. Popularization of health benefits of consuming silver pompano in the maritime states and metropolitan cities will help to create a good market

demand. There is also a good export potential for pompano in the Europe and USA market. Production volume in the country has to be scaled up and consistent supply assured if the export market are to be penetrated into.

## Economics

The unit economics for pond culture of silver pompano in one hectare water spread area is detailed below.

Sl. No.	Head of expense	Cost in Rs.
Operational Expenditure*		
1	Pond preparation	30,000.00
2	Cost of 10,000 Numbers of Pompano seeds @ Rs 5.0/seed	50,000.00
3	Seed transportation cost	10,000.00
4	Cost of 7650 Kgs of pellet feed @ Rs.60/kg	4,59,000.00
5	Labour Charges @ Rs.6000/ Person for 8 months	48,000.00
6	Electricity & Fuel Charges	60,000.00
7	Management Chemicals	20,000.00
8	Harvesting Expenses	20,000.00
9	Miscellaneous Expenses	10,000.00
	<b>Total</b>	<b>7,07,000.00</b>

\*Cost worked out for the existing pond

Sl. No.	Production Estimates	
1	Survival 85%	= 8,500 fishes
2	Feed Conversion Ratio	= 1 : 1.8
3	Average size of each fish at the time of harvest	= 500 grams
4	Total harvest	= 4,250 Kgs
5	Sale price of the produce @ Rs.250/kg	= Rs. 10,62,500/-
	<b>Gross Income from the harvest</b>	<b>= Rs. 10,62,500/-</b>

Sl. No.	Economics	
1	Gross income from Harvest	= Rs. 10,62,500/-
2	Operational expenditure	= Rs. 7,07,000/-
3	Gross income - Operational expenses	= Rs. 3,55,500/-
	<b>Net Profit</b>	<b>= Rs. 3,55,500/-</b>

## Conclusion

Brackishwater shrimp aquaculture in India is totally shrimp centric now. With the lessons learnt from the shrimp farming sector, it is well understood that species diversification with varieties of finfish (including high valued species such as Silver Pompano) is a vital requirement for sustainable production in coastal aquaculture. Generally, high valued marine fishes are in good demand in the Indian market which often faces scarcity and inconsistent supply of the same. In the domestic market, there is a demand for Silver Pompano in the size range of 200 grams and above. Hence, it is felt that Silver pompano aquaculture, which is a lucrative activity can emerge as a major aquaculture enterprise in the coming years.

## Further reading

**Jayakumar. R,** Abdul Nazar, A K, Tamilmani, G, Sakthivel, M, Kalidas, C, Ramesh Kumar, P, Rao, G Hanumanta and Gopakumar, G. (2014). Evaluation of growth and production performance of hatchery produced silver pompano *Trachinotus blochii* (Lacépède, 1801) fingerlings under brackishwater pond farming in India. *Indian Journal of Fisheries*, 61 (3):58-62.

McMaster, M.F. and Gopakumar, G. (2016). Cultured Aquatic Species Information Programme. *Trachinotus* spp (T carolinus, T.blochii). In: FAO Fisheries and Aquaculture Department, Rome.



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The first author of this article Dr. R. Jayakumar, Ph.D., is one of the renowned Scientist working on Aquaculture in India. He is Principal Scientist and Scientist in Charge of Central Marine Fisheries Research Institute, Mandapam Regional Centre, Mandapam Camp. Worked in private firms engaged in shrimp farming, hatchery and processing in various capacities from 1993-1998. Served in

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