

SHRIMP FARMING IN PUNJAB A SUCCESS STORY



Fisheries Department, Punjab

4th Floor, Livestock Complex, S.A.S. Nagar, Punjab



Cover page : Hon'ble Chief Minister Punjab facilitating progressive shrimp farmer of Punjab
Above picture : S. Tript Rajinder Singh Bajwa, Cabinet Minister, GoPb, Animal Husbandry, Fisheries and Dairy Development Department, appreciating efforts of a shrimp farmer at Sahiwal Cow Workshop organized on 19th December 2019.

Tript Rajinder Singh Bajwa

Cabinet Minister,

Govt. of Punjab, Department of Animal Husbandry, Fisheries and Dairy Development



MESSAGE

Shrimp (Jhinga) farming has been recently introduced on commercial scale by Fisheries Department, Punjab which is new way of farming in saline affected districts namely Mansa, Bathinda, Sri Muktsar Sahib, Fazilka, Ferozepur and Faridkot. Many parts of this land area are useless for any agricultural or horticultural activities due to the high saline nature of soil and ground water. Being the least rainfall region of the country, the

soil and water salinity has been increasing year after year.

Shrimp is farmed in the brackish water of coastal areas worldwide. In India, Vannamei shrimp variety was introduced in 2009 and is now being produced and exported in large quantities to other countries. This variety is now being farmed in Punjab and after the trial within three years in the year 2019-20 in 410 acre pond area about 750 tons of shrimp was produced which became a small portion of the shrimp exported to foreign countries. Punjab Government is extending all possible technical as well as financial assistance to the farmers which is improving their economic status.

I am very happy to learn that more and more farmers are adopting jhinga farming in Punjab with the guidance and under supervision of Fisheries Department. The year 2020 may be a temporary setback due to COVID-19, but jhinga farming is going to prosper in Punjab in coming years. Farmers must use their zero earning land of saline affected areas to earn very good income within 4-5 months, join this activity as their jobs and come out from the vagaries of poverty and helplessness.

I am sure this Success Story will prove a milestone for many in future.

Tript Rajinder Singh Bajwa

Jaspal Singh, IAS

Principal Secretary, Govt. of Punjab, Dept. of Animal Husbandry,
Fisheries & Dairy Development



PREFACE

Thousands of acre of land in south western part of Punjab has turned water logged and saline in nature. Few attempts have been made to reclaim these portions, yet lot of lands remain unfit for any agricultural activities. The economical condition of small and marginal farmers residing in these areas is represented as debt ridden and due to non productivity of their lands, the area is considered as suicidal prone belt of the state. More than a decade back, fish farming was introduced in these areas. Wherever possible, canal water was added to bring down the salinity as Indian Major Carps which are

produced in rest of the state and country do not survive in more saline waters.

Fisheries Department, Punjab made an official trial in just one acre farmer's pond during June to October 2016 wherein 4 tons of shrimp with a value of Rs. 12.80 lacs was produced. This small attempt encouraged to initiate an extended trial in a bigger area. During 2017-18, shrimp farming was initiated by 14 farmers in 37.5 acre area. It resulted in 121 tons of shrimp production with an average productivity of 8 tons per hectare. This year, in 2019-20, the area has increased to 410 acre so far and shrimp production to 750 tons.

Subsidies to procure equipment, implements, shrimp seed and feed was provided to farmers initially by Govt. of Punjab and from 2017-18 onwards with the help of Govt. of India and farmers were allowed to make their purchases with best available materials.

Shrimp farming has proved to be a Game Changer in this area. Many of the farmers have come out of debt trap and doing shrimp farming with surplus income. Their zero earning lands which were like a curse are providing them a decent lives. Many of them have more than doubled their incomes from these least productive lands.

I appeal to the farmers of Punjab to participate in this venture, double your income and bring prosperity to your family.

Jaspal Singh

Dr. Madan Mohan

Director & Warden of Fisheries Punjab



ACKNOWLEDGEMENTS

The success of initial trial of shrimp farming made by Fisheries Department of Punjab in about one acre land during June-October 2016 encouraged for pilot scale attempt in 37.5 acre area in 2017 which has now spread in about 410 acre in 2019 resulting in so far 750 ton shrimp production.

The timely financial help in the form of subsidies provided by the Punjab Government inculcated initial push in farmers as well as in Fisheries Department which is gratefully acknowledged. Right from shrimp seed stocking to rearing phase and finally during harvesting, Director and

Technical Team made weekly visits to encourage and impart technical help to farmers which created a deep sense of confidence in them.

The small and marginal shrimp farmers evinced lot of courage by participating in revenue intensive venture and believing the Director and his team, which is thankfully acknowledged. The initial draft of trial in one acre land was prepared by GADVASU which is thankfully acknowledged. The Scientist In-charge and his Scientists team of Regional Research Centre of CIFE, Rohtak and Scientists of RRC of CIFA Bathinda helped Fisheries Department, Punjab in many ways by giving necessary training to the prospective shrimp farmers; imparting their knowledge of shrimp farming; serving in committees ;making several trips from Rohtak to the shrimp farming areas of Punjab whenever requested. We extend our gratitude to these researchers. The help from some Faculty members of GADVASU is also acknowledged.

The High Level Officials of Punjab Govt. provided guidance and encouragement during the entire period without which this success was not possible. We extend our million of thanks to them for helping us to succeed in reducing debt ridden miseries of atleast few farmers of saline affected area.

Dr. Madan Mohan

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1. Shrimp Farming in Punjab- A Success Story

Introduction

Shrimp farming in India, till 2009, was represented by tiger shrimp, *Penaeus monodon*. About 1,90,000 ha brackishwater area have been developed for shrimp culture in the country spread over all the coastal states. Since 1995 culture of *P. monodon* was affected by White Spot Syndrome Virus (WSSV) and the development of shrimp farming has become stagnant.

Most of the Southeast Asian countries like Thailand, Vietnam, Indonesia were also culturing *P. monodon* and since 2001-02 onwards most of them have shifted to culture of exotic White leg shrimp, *Litopenaeus vannamei* because of the availability of Specific Pathogen Free (SPF) and Specific Pathogen Resistant (SPR) broodstock. In India, Pilot-scale introduction of *L. vannamei* was initiated in 2003 and after a risk analysis study large-scale introduction has been permitted in 2009 in India.

The total Fish production in India has crossed 13 million ton mark. Fish and fish product export during the year 2018-19 from India was to the tune of Rs. 47,620 crore wherein contribution of processed shrimp was about 62% being Rs. 29,494 crore. It indicates that White legged shrimp, *Litopenaeus vannamei* has become a game changer in Indian aquaculture Industry, owing to faster growth rate, tolerance to high stocking density and tolerance to wide ranges of salinity and temperatures. Following the tremendous success in coastal states, the Government of India has framed guidelines to undertake shrimp culture in inland areas where water salinity is more than 0.50 ppt with the approval from state level committees. In this regard the experimental trials done at Central Institute of Fisheries Education Rohtak Regional Centre had successfully proved that this exotic shrimp can be successfully cultured in the saline affected soils with some cost effective ionic amendments.

The south west districts of Punjab i.e. Shri Muktsar Sahib, Faridkot, Ferozepur, Fazilka, Mansa and

Bathinda are having the saline affected water logged problem. Out of these districts Shri Muktsar Sahib and Fazilka are adversely affected. Though the lot of land has been reclaimed still there exists thousand of hectares of area belonging to poor farmers which has become completely unfit for agriculture and is almost zero earning land. The shrimp farming hold a huge potential in this area. It shall be not wrong to say that future of this area lies only and only in shrimp/fish culture.

The shrimp farming technology for white legged shrimp (*L. vennamei*) in coastal brackish water areas have been developed by ICAR- Central Institute of Brackishwater Aquaculture Chennai and its commercial production in coastal areas started in 2009. This technology was modified and developed for inland saline areas of Haryana by Regional Research Centre of CIFE Rohtak during 2012-13 under "Niche Area of Excellence" Scheme of Education Division of ICAR in their experimental farm. The technology was transferred to farmers at Rohtak in 2014-15. GADVASU also made an attempt to culture Tiger shrimp in Punjab.



Water logged saline affected areas of Fazilka and Sri Muktsar Sahib

2. Shrimp farming as scientific tool to double farmer's income:



2.1. Suitability of shrimp *L. vannamei* for farming in inland saline affected areas

L. *vannamei* Farming is done for 110-140 days duration, when it grows to export size of 25-40 g. Its 8-10 t per hectare production is very common in coastal areas. In Andhra Pradesh, farmers produce upto 20-22 t per ha. But high density farming is very dangerous, 40-60 no per cubic metres is ideal. This shrimp grows better at water temp. of 30-34°C. and Salinity tolerance of 5-40 ppt. Grows better over 10 ppt though GOI permits after 0.5 ppt. The Oxygen level in the pond must be always more the 4 ppm. This shrimp variety requires low protein (20-25%) feed and develops 65-70% meat in its body.

2.1.2. Water Quality- Ideal Parameters

For shrimp farming, following water quality parameters are very essential.

- | | |
|----------------------------|--|
| • Potassium | 18-20 mg per litre, if less potash to be added |
| • Magnesium | 140-150 mg per litre |
| • Sodium & potassium ratio | 30:1 ideal |
| • Mg to Ca ratio | 3.4:1 is ideal |
| • Salinity | 10 and above is ideal |
| • Alkalinity | 180-200 ppm is ideal. |



3. Shrimp (*L. vannamei*) farming trial in farmer's pond:

Punjab which led Green Revolution in India for food grain self sufficiency, has taken a major step for Blue Revolution and doubling the income of fish farmers of the state. The steps involved were utilization of zero earning saline affected water logged land, diversification in fish farming, utilization of conventional but innovative brackish water shrimp farming technology in inland regions.

With a view to explore the possibility of shrimp farming in saline affected water areas, an experimental trial was carried out on a small one acre land area of a private farmer where the Department of Fisheries provided financial assistance to the tune of Rs 11.66 Lakhs to facilitate purchase of seed, feed, and implements and the farmer undertook rearing of the shrimp under the technical guidance of Central Institute of Fisheries, Regional Centre, Rohtak, and Guru Angad Dev Veterinary and Animal Sciences University,

The actual shrimp farming trial began on 26th June, 2016 when consignment of 2 lakh seed of *L. vannamei* arrived from Andhra Pradesh. Its health was excellent even after long distance transportation though by air upto Delhi and then onwards by road. It was stocked in pond in the presence of A.D.C. Muktasar Sahib and Director of Fisheries, Punjab.

After 110 days, shrimp was harvested on 13th October, 2016. This was an excellent day for harvesting when night temperature started drifting towards lower side. All the parameters during vannamei farming proved to be correct and got converted into excellent biomass i.e. shrimp crop. The final survival of 80% at the time of harvesting was superb. In just one acre of zero income saline affected water logged land, about 4 tons of vannamei shrimp with a value of Rs. 12.80 lakhs was produced.





Shrimp pond ready for stocking



Conditioning of shrimp seed



Checking the quality of the seed



Shrimp Seed stocking ceremony



Press cutting of beginning of shrimp farming



4. Promotion of Shrimp Farming in Saline Affected Areas of Punjab

After the successful trial, it was decided that the experiment needs to be expanded on a larger scale in the saline affected districts through a pilot project. It was decided that: 1) a Demonstration Farm cum Training Centre (DFTC) be set upon about ten acres land to show case best practices to the farmers and also provide them requisite training and b) encourage shrimp farming by small farmers by providing subsidies and technical support to them to set up small shrimp farms of 1 to 2.5 acres (1 ha) each.

4.1. Extended trial during 2017-18:

The news about the success of the trial spread in saline affected areas of Punjab. In response to Fisheries Department's advertisements in newspapers, about 90 small and poor farmers applied for subsidy. Majority of them were given training in shrimp farming at CIFE Regional Centre Rohtak. After screening the applications based on the suitability of water testing report, and financial status of the farmers, the proposal of 14 farmers were approved and shrimp farming was initiated in about 37.5 acre area. This financial assistance inculcated the required trigger in poor farmers to take up its farming. It helped them in providing employment, good income using zero earning land for useful purposes.

4.2. Initiating shrimp farming in Punjab:

For initiating the process, Society publishes its advertisement in local newspapers to invite applications from farmers interested for undertaking shrimp farming. The applications are received at District offices. All the documents are verified and applications are submitted to Fisheries Department Head Quarters. These applications are screened by a Screening

Committee comprised of experts, fisheries officials and FFDA Chairmen of concerned districts. After screening, the application are considered by a Approval Committee comprised of Director Fisheries Department, Director Dairy Department and Senior Level Representative from Banking system. After the approval, instructions are sent to FFDAs and funds are released by the Society.

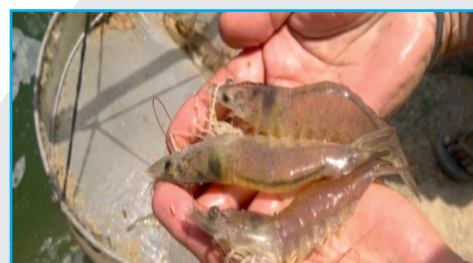
4.2.1. Stocking of shrimp seed in ponds:

Since, this was the first pilot attempt to extend shrimp farming in broader area of saline affected portion of south-western Punjab, Director himself alongwith his technical officers from head quarters made it a point to be available at the time of shrimp seed stocking in all the 19 ponds of 14 farmers. The seed was bought and brought from the reputed hatcheries from Andhra Pradesh and Tamil Nadu, certified by Coastal Aquaculture Authority of India and pathogen free certificate was given by the hatcheries. Similarly, shrimp feed for various life stages was purchased from reputed firms which was supplied at farmer's ponds. The technical details for feeding and rearing were explained to the farmers by the Director and scientists from Regional Research Centre of CIFE, Rohtak. All the farmers followed the instructions.



4.3. Weekly observations of Shrimp farming in 2017-18:

It was considered essential as far as possible to make weekly visits by the Director and technical officers from head quarters and whenever required by the scientists from CIFE, Rohtak. The water condition during rearing period, feeding schedule and health of the shrimp was closely monitored. On rest of the days, farmers were contacted over mobile as well requested to inform the Fisheries Department about any unusual behaviour of shrimp in their ponds.



Observations for Shrimp Farming in progress during 2017-18

During 2017-18, in all the subsidized ponds survival and growth of the shrimp was very good. A production of 3-4 tons per acre was expected from the ponds. In some of the ponds shrimp growth was very fast, and harvesting started from last week of September. Rate of shrimp at farmer's pond in Punjab offered during 2017

varied from Rs 300 to Rs 480- per kg and poor farmers were expected to get very good income. Some farmers continued its farming for more than 4 months. From 37.5 acre pond area, about 121 tons of shrimp was produced.



4.3. Formation of a "Society of Promotion of Shrimp Farming in Punjab"

To implement the Project, a "Society for Promotion of Shrimp Farming in Punjab" has been constituted and registered to look into all aspects of the project which help in promotion of Shrimp farming in saline affected water logged areas of Punjab. The Society is performing the function of the principal implementing agency in the state for the implementation of shrimp culture/farming in saline affected areas under the aegis of Department of Fisheries, Punjab. Society help to implement central sector/centrally sponsored schemes or other schemes related to shrimp culture/farming as decided by Govt. from time to time and activities relating to shrimp culture for focused attention and professional management.

The Society is engaged :

- I. To promote shrimp culture/farming in saline effected water logged areas of Punjab.
- II. To develop the infrastructure for shrimp culture in Punjab.
- III. To provide the financial assistance to prospective shrimp culturist/ farmers on pond preparation, seed, feed, fertilisers, equipments etc to develop and promote shrimp culture/farming in state.
- IV. To assist the farmers to procure the seed of shrimp from hatcheries, certified by central/state agencies.
- V. To assist the Prospective/shrimp farmers in obtaining financial assistance from Banks/ other Financial Institutes.

4.4. Steps taken for implementing shrimp farming:

Following steps were taken during 2017 by the Society for initiating shrimp farming in Punjab.

- a) Preparation of project document.
- b) Approval of the project document.
- c) Issuing Notification for formation of Society
- d) Formation of Society
- e) Registration of Society
- f) Formation of Screening committee
- g) Formation of Approval committee
- h) Publication of advts for inviting application from farmers.
- i) Water sample collection and analysis at CIFE Centre Rohtak
- j) Training of prospective shrimp farmers at CIFE Centre Rohtak
- k) Screening of farmers applications by Screening Committee
- l) Approval of shrimp farming cases by Approval Committee
- m) Funds transfer to FFDAs at districts
- n) Preparation of shrimp ponds
- o) Purchase of machinery and equipments
- p) Purchase of shrimp seed and feed from coastal areas
- q) Stocking of ponds with shrimp seed initiated from first week of June.
- r) Rearing of shrimp in ponds
- s) Harvesting

5. Shrimp farming in 2018-19:

After the success of extended trial in about 37.5 acre pond area, farmers evinced lot of confidence and interest. The shrimp farming was carried out in about 252 acre area compared to 37.5 acre covered during the previous year. About 520 tons of shrimp was produced.



Observations for Shrimp Farming in progress during 2018-19

5.1. Harvesting of shrimp during 2018-19:



Awareness program at Jheriawali Mansa District on 14th January 2019:

An awareness program for taking up shrimp farming in coming season was organized on 14th January 2019 at Jheriawali village of Mansa district which was inaugurated by Hon'ble Cabinet Minister Animal Husbandry, Fisheries & dairy Development wherein farmers were made aware about the benefits of shrimp culture.



Shrimp farmers at Fisheries Seminar on 4th December 2017, at Patiala



Hon'ble Cabinet Minister, S. Balbir Singh Sidhu inaugurating awareness program

6. Shrimp farming in clusters during 2019-20:

During the year, 2019 , shrimp farming has been carried out in about 410 acre area compared to 252 acre covered during the previous year. About 750 tons of shrimp was harvested . The main feature during the year is that shrimp farming has developed in few clusters which is proving good for input supply as well as for harvesting and marketing. This will prove to be very handy in developing processing and preserving facilities in near future. Few districtwise pockets of ponds are given here.

6.1. District- Fazilka:

The Fazilka district has shown very good growth. From only 9 farmers in 2016, a good number of 63 farmers are now engaged in shrimp farming. Three shrimp ponds clusters have come up in one village of Bahadur Khera covering about 140 acre. The farmers of other villages of the district wherever soil and water salinity is suitable are taking up shrimp farming. Few clusters of this district are given here.

1. Sh. Sukhpal Singh & others, Bahadur khera, 60 acre cluster



2. Sh. Karuna & others, Bahadur khera, 40 acre & Sunil & others 40 acre



6.2. District Muktsar Saheb

1. Shri Upjeet, Bhagwanpura, 30 acres



2. Sh. Saroop Singh & others, Ratta tibba, 30 acres cluster



3. Sh. Rupinderpal Singh, Jandwala, 9 acres



4. Sh. Lakhwinder Singh, Rattakhera, 9 acres



6.3. Dist. Mansa:



Vill.-Jheriawali



Vill. Bhalaike

6.4. Dist. Bathinda:



Vill.-Jheriawali



Vill. Bhalaike

7. Remarkable Results during four years:

- From one farmer involved in shrimp farming trial in 2016, the shrimp farming increased to 14 farmers in 2017; to 97 farmers in 2018-19 and now gone up to 133 farmers in 2019-20.
- From one acre in trial during 2016, increased to 37.5 acre in 2017 ; 252 acres in 2018-19 has gone upto 410 acre in 2019-20.
- About 750 tons of shrimp was produced in 2019-20 compared to 520 tons in 2018-19 and 121.85 tons of shrimp in 2017-18.
- From the trial , 4 ton shrimp was valued at Rs. 12.80 lacs, in 2017 about 121.85 ton shrimp valued at Rs. 4.08 crore; in 2018-19 shrimp rate was bit lower and 520 tons at a average farm gate price Rs 280-300, the total value of shrimp was Rs 14 to 15 crore. In 2019-20, about 745 t shrimp at the average rate of Rs. 300-320, has been valued at 22 crore to 24 crore.
- With scientific and careful handling of shrimp farming, Rs. 3-5 lac per acre profit can easily be achieved.

8. Appreciation by Hon'ble Cabinet Minister Sahib:

Animal Husbandry Department Punjab organized Sahiwal cow Workshop on 9th December 2019 at Dhingawali in Dist. Fazilka which was inaugurated by our Honorable Tript Rajinder Singh Bajwa Ji, Cabinet Minister, Department of Animal Husbandry, Fisheries and Dairy Development.



Fisheries Department Punjab put a stall on this occasion. Our Hon'ble Minister interacted with our officials and some shrimp farmers. He appreciated the work being done on shrimp farming.



9. Appreciation by Hon'ble Chief Minister Sahib Punjab:

Honourable Chief Minister as Chief Guest facilitated shrimp farmer from Punjab during Zee TV program for honouring best efforts of farmers

of Punjab, Haryana and Himachal Pradesh. for getting very good shrimp production and resultant income.



Hon'ble Chief Minister Punjab visited Fisheries Stall during 2nd Oct. 2018 Exhibition organized by the Fisheries Department at Punjab Vikas Bhawan Mohali and appreciated the work being done by the department.

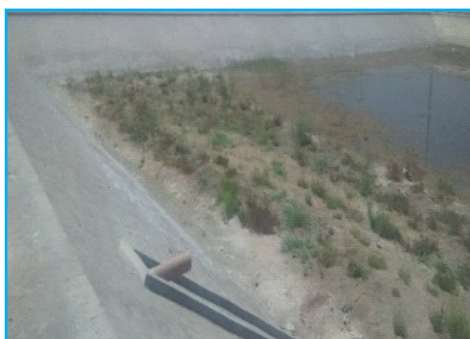


10. Establishment of Demonstration Farm cum Training Centre (DFTC) for Shrimp Farming in Punjab:

A Demonstration Farm cum Training centre has been established by the Department of Fisheries, Government of Punjab at Ena khera district Sri Muktsar Saheb which is suitable for shrimp farming from technical point of view. This will serve as demonstration unit for brackish water shrimp and fish farming to the farmers of the area. This centre comprises of about 15 acres of land made available by the Gram Panchayat . The

DFTC have shrimp and fish ponds having a pond area of about 12 acres (area could be increased as per requirement of the Centre); and office cum laboratory for Project Management, Two labs- one for Soil and Water Testing and the other for Health Management /Disease Diagnostic/SPF seed testing, Feed Mill and store, Training Hall, General Store, Washroom and Toilets and Staff Quarters.





10.1 Implications of shrimp farming on economic status of farmers:

- The many poor farmers of south-western region of Punjab are debt ridden, living in suicidal prone area where in many families agricultural income is meagre. The shrimp farming brings a big hope to these poor families for their subsistence and to get rid of some of their loans in a phased manner.
- In 2016, shrimp farming trial was conducted in just one acre pond yielding 4 tons of shrimp. During 2017, 14 farmers were engaged in shrimp farming in 37.5 acre of pond area ranging from 1 to 2.5 acres and produced 121 tons of shrimp. During 2018, 97 farmers carried out shrimp farming in about 248 acre and produced about 520 tons of shrimp. With about average Rs. 280-300 per kg farm gate price, it was worth Rs. 14-15 crore. During 2019, 133 farmers carried out shrimp farming in 410 acre and produced about 750 tons of shrimp. Some of the farmers are achieving 4 tons per acre production with careful farming. The good crop and profit per acre is helping the poor farmers to come out from the vagaries of poverty and indebtedness. They will have sufficient funds to extend their shrimp farming beyond this preliminary phase.
- The shrimp farming is bound to bring prosperity to farmers whose lands have become saline and are unfit for cultivation of any agricultural crop. Vannamei shrimp is one such meat commodity which has a very high demand both in national and international markets and fetches very high price. The shrimp farming duration is only 4- summer months which can be extended to two crops. It is worth mentioning, that the target region (South western region of Punjab) is free from many of the dreadful shrimp pathogens that are major bottle necks to the shrimp culture in coastal region.
- Shrimp farming is becoming a game changer in Punjab fish farming arena which will trigger introduction and establishment of its processing units when its production crosses a thousand ton mark.

11. Potential of shrimp farming in Punjab:

11.1. Expansion in Shrimp Farming In Punjab:

The four years continuous increase after initial trial, in number of farmers, area of shrimp farming, shrimp production indicates that farmers have readily accepted this diversified form of allied agriculture activity. These are given in following table. This has to be seen as a sign of new entrepreneurship developing from the very zero earning land resources which hitherto remained devoid of any fruitful activities. For mobilising their share of investments, most of them have borrowed money from the relatives and market. This way, society is helping the poor farmers to initiate shrimp farming to come out from the vagaries of poverty and indebtedness.

Sl. No.	Year	No. of farmers	Area under shrimp farming (in acres)	Shrimp production in tons
1.	2016-17	1	1	4
2.	2017-18	14	37.5	121
3.	2018-19	97	248	520
4.	2019-20	133	410	750

Since presently, the culture duration for producing shrimp is only 4- summer months, but the farmers of northern India can easily take two crops per year between March and November. This way the profit in the same year can be multiplied by the farmers.

With the increase in numbers, the innocent farmers may face few problems. The so called agents or dealers of mediocre companies may misguide these innocent farmers by providing sub-standard shrimp seed and feed at a very cheaper prices and even may not provide shrimp

seed's disease free certificates from the shrimp hatcheries or even hatcheries may not be Coastal Aquaculture Authority recognized. The farmers have to be very careful and wherever they suspect the genuineness of the products, must inform the Fisheries Department. The farmers are advised to procure very good quality of shrimp seed and feed which will help them in getting good profits.

The achievements made in shrimp farming by the state's farmers indicates that state may cross 10,000- 15,000 acre area mark or more which will produce 40 to 50 thousand tons of shrimp by 2030. This exportable commodity will attract lot of investments in infrastructure, establishing many shrimp processing units, packaging, value addition and will become one of the very important shrimp exporting hub of the country.

Unlike situation in the coastal region, the inland saline shrimp culture can be made sustainable and secure, if strict bio-security and preventive measures are followed to prevent the entry of the shrimp pathogens into this region. Moreover the lessons which have been learnt from coastal tiger shrimp culture would be very much useful for achieving the sustainability.

11.2. Employment Generation:

The shrimp farming provides livelihood to a large number of economically under privileged population of the coastal areas of the country. Its farming involves pond preparation, seed production in approved

hatcheries, shrimp feed production, shrimp rearing upto marketable size, shrimp and pond health management. All these activities are operated by the skilled manpower. Department of Fisheries Punjab is helping the shrimp farmers in many ways by providing training to the prospective shrimp farmers and this training is one of the essential requirement for getting state help like subsidies for starting shrimp farming. Hence, increase in shrimp farming activities is generating good number of jobs in the state. During 2019, about 133 farmers

carried out shrimp farming. During shrimp rearing period, a farmer has to be very careful and attentive and visit his pond daily. Many of the farmers either singularly or collectively engage a skilled person to look after their ponds. The shrimp seed and feed is delivered at the farmers pond for which people are engaged. Finally, for harvesting another set of skilled manpower is engaged. This way, shrimp farming is creating good number of job in saline affected areas which will only multiply in future.

Although the construction is complete. "We have yet not of AIIMS in Bathinda city.

Area under shrimp farming nearly doubles as farmers rake in profits

Sarbmeet Singh
slettersch@hindustantimes.com

MUKTSAR: Lakhwinder Singh, 48, a farmer from Ratta Khara village in Lambi, district Muktsar, is now earning a handsome income from the waterlogged land, in which the traditional wheat and paddy farming was not possible due to high salinity and waterlogging in the region. Land in this area, once a curse for farmers, has become a boon for them, all thanks to aquaculture.

Farmers in Muktsar, Fazilka, Ferozepur, Mansa, Bathinda districts of Malwa region of the state are rapidly switching to shrimp farming, or the cultivation of prawns, which are high in demand and fetch good money.

FROM 248 TO 400 ACRES IN ONE YEAR

From 248 acres last year, the area under shrimp farming across the state has increased to 400 acres. "More and more farmers are taking it up for the good income it generates for them. From one acre in 2016, we are now farming shrimp on 400 acres. Our target is to cover 500 acres this year," said Madan Mohan, director of fisheries.

From last year's 66.5 acres in Muktsar, this year shrimp is cultivated on 138 acres. Officials said that approximately 88 thousand hectares of land is affected by saline water, mainly in south-west Punjab, creating a huge scope for aquaculture in the state.

MORE PROFITABLE THAN CROPS

Shrimp farming is an aquaculture business that exists in marine environment mainly in soil having salinity ≤ 5 ppt. The shrimp season lasts four months,

carried out shrimp farming. During shrimp rearing period, a farmer has to be very careful and attentive and visit his pond daily. Many of the farmers either singularly or collectively engage a skilled person to look after their ponds. The shrimp seed and feed is delivered at the farmers pond for which people are engaged. Finally, for harvesting another set of skilled manpower is engaged. This way, shrimp farming is creating good number of job in saline affected areas which will only multiply in future.

about 4,000 kg of shrimp can be produced from a pond on an acre of land. Shrimp fetch up to ₹350 per kg. After excluding costs, the net profit can range up to ₹4-5 lakh per acre.

LAKHWINDER SINGH, a farmer

from July to October.

About 4,000 kg of shrimp can be produced from a pond excavated on an acre of land, which can fetch a price of Rs 250-350 per kg. After excluding costs, the net profit can range from 4-5 lakh per acre, which is very less in case of conventional cropping system.

"On an average a farmer can earn up to Rs 60 thousand from an

acre of wheat-paddy crops after excluding the costs," says Davinder Kumar Grover, director, agro-economic research centre.

40% SUBSIDY ON POND

The state government provides 40% subsidy on digging a pond. "A unit comprising of one hectare costs Rs 10 lakhs to the farmer and state government provides 4 lakhs subsidy to them per acre. In 2018, area under shrimp in Muktsar was 66 acres and we will likely touch 150 acres this year," said Rajinder Kataria, assistant director fisheries Muktsar.

"To encourage farmers to switch to shrimp farming, we are holding awareness camps in several districts. The future of shrimp is very bright and can change the fortunes of farmers," added Kataria.

Lakhwinder, who now wants to encourage the next generation to adopt the aqua venture says,

"Earlier the land was of almost no use to us due to waterlogging but with the efforts of former chief minister Parkash Singh Badal, the land is no profitable for us," says Saroop Singh, another farmer, who, from 1.5 acre under shrimp has extended the aqua culture to 12 acres now.

Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana is also working intensively to develop aquaculture in the zero-earning saline land of south-west districts of Punjab.

"Shrimp is a sensitive crop and our staff is always in contact with farmers to offer them technical support. The area should be free of pathogens and the seed should be disease-free and bought from government-approved hatcheries only," says Prabhjeet Singh, scientist (GADVASU).

(L) Farmer Lakhwinder Singh and labourers working at a shrimp farm in Lambi, Muktsar district.

SANJEEV KUMAR/HT

"A farmer can earn nearly Rs 4 lakh from shrimp farming per acre. Since many farmers are taking it up, the district is attracting merchants who pay cash to farmers."



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Director and Warden of Fisheries Punjab

Livestock Complex, Sector-68, S.A.S. Nagar (Punjab),

Phone- 0172- 2217135

E-mail : dwfpunjab@gmail.com