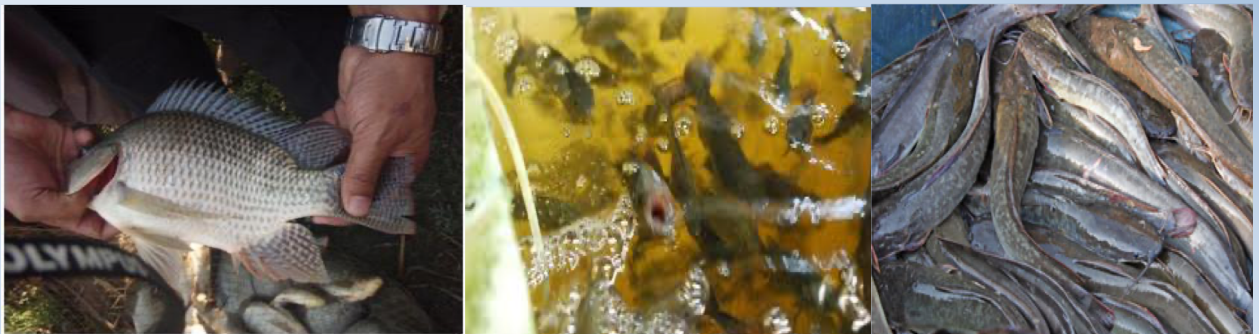


2022

Cluster Profile

FRESH WATER FISH FARMING, MANDI BAHAUDDIN



Turn Potential into Profit

Small & Medium Enterprises Development Authority (SMEDA)
Ministry of Industries & Production (MoI&P)
Government of Pakistan

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1 Introduction – Mandi Bahauddin

Mandi Bahauddin is a district of the Punjab province of Pakistan. It is located in the North-West of River Jelum and is bounded by Gujrat district on the East and by Gujranwala and Hifizabad districts on the South. The total area of the district is around 2,673 square kilo meters and is comprised of three Tehsils.

Sugarcane, wheat and rice are the main crops grown in the district. Whereas, citrus, guava, potatoes and cauliflowers are among the major fruits and vegetables grown in the district. An area of around 19,275 acres is under forest.

2 Description of Cluster

2.1 History & Background of Cluster

The fishing industry of Pakistan has the potential for further developments. Although its share of the GDP currently is 0.9%, Pakistan earns 6% of its total foreign exchange earnings by exporting fishes, shrimps and other fish products.

People of Mandi Bahauddin have been involved in fishing at river sides of Jelum from decades. However, the business of establishing inland fishing farms was started in the area in mid-nineties but attained commercial growth in early 2003 due to entrance of large number of people in the business. Currently it is recognized as the third largest sector in terms of business activity and potential investment. Majority of big families and investors of the area are associated with the fish farming business. As per industry estimates currently around 3,000 acres of land is being occupied by the fish farms. Despite the prevailing positive trend of establishing fish farms on commercial basis and with an abundance of freshwater resources, Mandi Bahauddin has yet not been able to tap even 30% of the potential area for inland fish production. Many entrepreneurs have, however, chosen to take this occupation on commercial scale.

2.2 Defining the Products

Fish is an animal which lives and breathes in water. All fish are vertebrates (have a backbone) and most breathe through gills and have fins and scales. Fish make up about half of all known vertebrate species.

Fish is a high protein, low fattening food that provides high range of health benefits. The white fleshed fish is lower in fat than any other source of protein and enrich in omega 3 fatty acids. Fish meat is medically recommended as a diet for human body, it produced essential nutrients in significant amount which is required for healthy body. Moreover, fishes are low in the bad fats commonly found in red meat, called omega 6 fatty acids that make it even more favorable product as compare to red meat. Fish are nutrient product and wildly consumed around the world in verities



of food items. They are used in various traditional dishes such as Fish Meal, Amritsari Fish, Tandoori Fish, Fish Tikka and Fish Pakora etc., and also consumed in modern dishes like burgers, pizzas and canned products. In addition, fish are also used in medicine industry.

2.3 Core Cluster Actors

The owners of fish farms are the core clusters actors. The farming is done in water ponds. The information about core cluster actors is presented in the table below:

Table 1: Core Cluster Actors Fish Cluster. Mandi Bahauddin

Description	Details
Number of Farms	Total Farms: Approximately 200 <ul style="list-style-type: none"> • Large Size Farms: Around 15 (50-90 acre) • Medium and Small Size Farms: More than 100 (10-50 acre) • Very Small Farm Holdings: Approximately 70~80 (Having an area of less than 10 acres)
Employment Generated	Approximately 2000 (Directly and Indirectly Employed)
Capacity Utilization	Approximately 80%

2.4 Other Cluster Actors

In addition to the fish farmers, there are certain other actors who provide the support services to the fish farmers for completing their business activities.

- Fish Seed Suppliers: 07 suppliers operating in the cluster)
- Feed Suppliers: 10 suppliers
- Fish Hatcheries: 05
- Ponds Establishing Contractors: Electric motor and diesel pump are the main machinery required for water supply to farms. These items are very easily available in the nearest cities, like Gujrat, Gujranwala, Daska, and Lahore.

2.5 Geographical Location

Geographically the majority of fish farms are concentrated at following locations in Mandi Bahauddin.

- Bhaghat
- Qadradab



- Phalia
- Shehadianwali
- Rasool Beraj

Whereas dealer setups and shops are concentrated on main Bhaghat Fish Market

2.6 Current Cluster Scenario

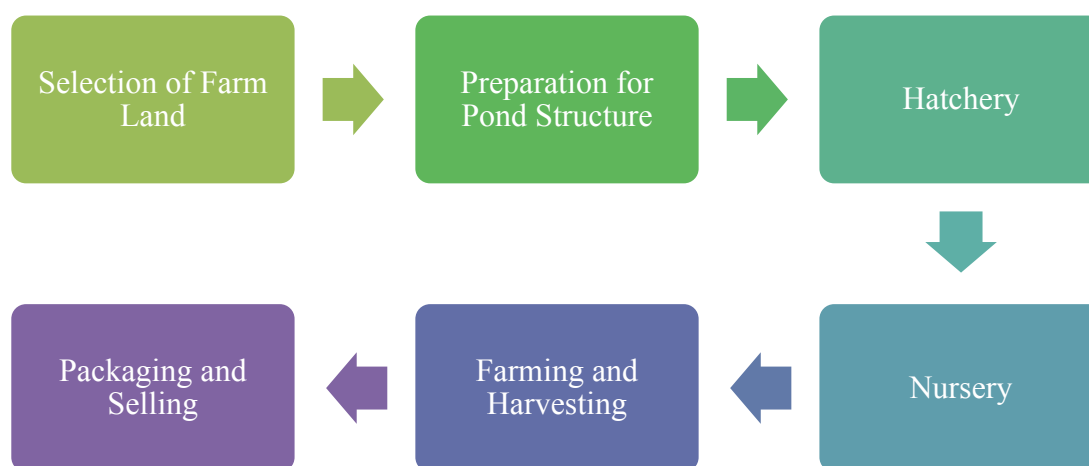
Fisheries Cluster in the Mandi Bahauddin Region is growing over the last one and half decades with an increasing demand of processed fish in local as well as in export market. This increasing trend is also quite evident in the cluster as number of fish farms has increased from 3,000 acre in late nineties to 20,000 acre in 2021. There are 315 farmers registered with District Fisheries Department with 6,000 acre land.

3 Analysis of Business Operation

3.1 Production Operations

The main process for execution of fresh water fish farm mainly includes the following:

Figure 1: Process Flow Diagram – Inland Fish Farming



Selection of Farm Land

Selection of an appropriate site is one of the most crucial factors for establishing fresh water fish farm. The important factors to be considered in this regard mainly include quality of the soil, land topography and water quality and availability. The soil must have 25-30% clay content for building dykes, water retention and good production. There must be ample water of good quality. Lifting water to fill in large ponds is very costly and area that can be gravity filled or drained is generally

referred. Special attention should be given to the selection of land. It should be a non-cultivated area and be located nearer to rivers bank, canals or ponds. The selected location should have enough elevation so that it can easily be dried in off season. In addition to that easy supply of water and accessibility of road should be ensured.

For a small scale farm at least 5 acres of land would be required, whereas establishing a farm on around 50 acres of land would be a more feasible and profitable business venture.

Preparation for Pond Structure

The site for fish farm will require proper surveying to determine the slope; bed of pond should be kept slight in slope to take advantage by allowing the water to flow as much as possible by gravity. Water distribution channels should be placed on top of the pond dikes and the drainage channels from the ponds should be kept at the lowest point of the land.

Hatchery

Hatching of the fish is the first step and consists of breeding time of around five to six months. Majority of hatcheries are working independently and sold the animal to interested farmers on commercial basis. There are certain farms who progressed enough to have their hatcheries. These are generally known as integrated fish farms. There are around 30 hatcheries currently operative in the cluster and fulfilling the requirements of local fish farms effectively.

Nursery

After hatching a small animal come into the nursery farm, almost all farmers tried to prepare his nursery in his own farms for getting a good yields. Animal grows here and ready for next step. In nursery small animals spend more than seven to nine month for providing good yields.

Farming and Harvesting

Keeping in view the weather and geographical conditions of the region, the appropriate time to start farming is mid of March, while the ideal harvesting time is mid of October.

Water color is a good indicator of its quality. A good robust green color is most desirable, maintainable by the addition of feed (cow dung) when the green starts to fade to a light brown. Fertilizers should be added on regular basis throughout the summer to sustain the productivity. Once the pond (s) are constructed and stocked, harvesting / selling can begin after 12 months. 15 months are preferred but 18 months give the highest results. A harvest cycle can be attained to provide fish during 6-8 months of the year.

Harvest techniques, proper management of harvesters, transportation to market and having reliable staff to sell the produce is also very important.



On average, you should expect to sell over Rs. 100,000 worth of fish per acre (gross). Average net income from fish farms is over Rs. 50,000 per acre per year but with proper management, net profits of Rs. 100,000 per acre per year can be achieved. Intensive culture has not yet been developed because of non-availability of low-cost feed and limited production expertise.

Packaging and Selling

Fish is a perishable commodity and cannot be kept for a long period of time without proper arrangements of preserving them. This is what big farmers from Mandi Bahauddin have been doing for the past few years. They have managed to sell their fish in almost all corners of the country.

Packaging process is carefully designed and performed to increase shelf life of products as well as easy handling till the point-of-consumption. Even a good product needs good presentation to sell in the market. Mostly farmers used big polythene shopper, water filled in these bags and put fish into water. These bags put to vans and shipped them in different markets. Main fish markets are Lahore, Islamabad, Rawalpindi, Hasanabdal, and Pashawer. There are few small markets also located within the cluster, but they play the role of middle man.

3.2 Raw Material Availability

The organic fertilizer used in fish farms as feed raw material is generally acquired from three main sources i.e. chicken manure, cow dung and rice polish. All of these items are easily available in the local grain market. The new trend of establishing integrated fish farms along with animal husbandry activities like dairy, poultry, piggery or duck rearing to ensure the regular supply of organic manure for fish ponds.

3.3 Quality Control

An important aspect of production process is ensuring standardization and quality control. No real quality control system and standard is followed in the farming. Physical appearance and measurement fits are the only parameters considered. Usually they lack cold storage facilities, have poor hygienic conditions and inadequate communication links, etc. Most aquaculture product is consumed locally.

3.4 Marketing & Sales

For every big trader and fish farmer, there are many small and marginal farmers who have been selling their catch in local markets for ages. They earn more out of the trade involved with their catch, something big farmers are not able to do. The bargaining power of small farmers reduces considerably when they sell their catch in the local market. These farmers have also started to sell their produce in nearby towns where they get relatively better rates. Big farmers hardly ever follow this route, and they sell their catch to wholesalers, who pass it on to local suppliers from whom the



retailers buy. This has remained the same even when live fish have been carried over long distances.

Normally products are rated by customers demand. And some big farmers have shops along with farming setups where they sold directly to end user. Marketing and sales is limited to word of mouth and sales agents only. To keep the stock fresh and fit enough to be sold in markets, suitable ice containers and cold storages are essential. It is also mandatory to have good transportation links to main wholesale markets. These are expensive affairs and big entrepreneurs can afford it, but it is not possible for individual farmers.

The marketing chain for fish is quite similar to that of other agricultural commodities. Products are sold into the market to wholesalers and then onto retailers and end consumers through agents working on a commission basis. Farmed fish tend to be marketed either at the farm gate, through intermediaries or by open auction, where ice-packed fish is sent to fish markets and sold. Buyers can be members of the public, retailers, wholesalers and agents for processing plants or exporters. Traders play a big role in the selling process because majority of fish farmers sell their produce to trades. The terms of sale mainly depends on the relationship of farm owners and traders.

3.5 Financing

Fish farms owners generally require credit and financing for procurement of baby fish from hatcheries, animal seed and feed. For this purpose an informal credit system prevails in the cluster which usually varies from season to season.

Mandi Bahauddin being a small business city of Punjab has branches of almost all the major banks operating in the country. However, no special financing scheme for fish farmers has been introduced by the financial institution. The financing schemes offered by the financial institutions do not fulfill the requirements of the cluster actors. The financial institutions are hesitant to offer modified monetary products to the SMEs involved in the business of fish farming. An inadequate level of education of entrepreneurs is also an obstacle to accept the financial products offered by financial institutions.

3.6 Human Resource Management

Majority of the fishermen are uneducated and there is a dearth of trained manpower in the fisheries cluster of Mandi Bahauddin. Presently, no formal training is required to seek employment in a fish farm. Though, there is a huge demand of trained manpower particularly in the areas of fish hatching, nursing, farming process, harvesting and storing; but as such, formally trained manpower is not available in the cluster and fish farmers have to rely on traditional and informally trained resources.

The sector is severally short on skilled and technically qualified labor. Aquaculture may also be adopted as vocational subject in secondary schools as is agriculture. In collaboration with



Provincial/Areas Fisheries Depts, schools should arrange farm visits for students/pupils to hatcheries, private farms, landing centers, fish processing and marketing facilities.

The employed labor force does not have any specialized technical or vocational certificates/diplomas from any technical institutions. Shortage of specialized technical training institutes is also major concern for the cluster. There is no coordination and linkages between the industry demands and educational curriculum adopted at operational technical training institutes in the district. It resulted in workers unawareness about latest production techniques. The materials should also be provided in local languages because in most cases common farmer understands just one language.

3.7 SWOT Analysis

Strengths

- Easy accessibility of raw material and farm inputs.
- High profitability of the business.
- Export potential of fisheries and aquaculture sectors.
- Growing market of frozen sea food both locally and internationally.
- Availability of cheap labor force.
- Geographical location of the cluster makes it an appropriate and perfect place for establishing fish farms.
- Strong historical environment and business familiarity of entrepreneurs.

Weaknesses

- High cost of utilities and non-availability of electricity.
- Lack of storage and transportation facilities, especially in the perspective of large city markets and export market.
- Unskilled labor force,
- Conventional ways of doing business and out dated practices of farming.
- Lack of marketing awareness (branding and retailing).
- Non Availability of financial support.
- Lack of long term vision or policy.

Opportunities

- Huge potential in emerging frozen sea food business in both local and export market.
- Should be promoted for increasing livelihood of local rural entrepreneurs.
- Potential for high market growth due to widen gap between demand and supply of foods items vis-à-vis population.



- Target the export potential in the markets of USA, Japan, Sri Lanka, Singapore, EU and the Gulf States.

Threats

- Lack of infrastructure.
- Inadequacy in the research and development sector.
- Inadequacies in fisheries and aquaculture statistical data.
- Decreasing water levels, low propensity of rains and low organic matter is a major concern for the fish farm business in the cluster.
- Conventional methods leads to high rate of mortality as well as post-harvest losses.

4 Institutional Setup

4.1 Entrepreneur's Associations

Fish farmers Association

Address: Kisan Board Mandi Bahauddin, Phalia road Mandi Bahauddin

Mandi Bahauddin Chamber of Commerce & Industry (MBCCI)

Address: Jinnah Town phase 2, Phalia road Mandi Bahauddin

Tel:

4.2 Support Institutions

Regional Business Center (RBC) – Small & Medium Enterprises Development Authority (SMEDA)

Address: C/0 GCCI, GTCCI Building Near National Furnishers, G.T Road, Gujrat

Tel: (+92) 300-9707383

Web: www.smeda.org.pk

Email: rukhsar@smeda.org.pk

Punjab Small Industries Corporation (PSIC)

Address: Regional Office, National Highway, Kamran Colony, Gujranwala

Web: www.psic.gop

Tel: 055-4299074

Trade Development Authority of Pakistan (TDAP)

Address: 3-Civil Lines, Irrigation Road, Gujranwala

Tel: (+92) 55 9330557



Web: www.tdap.org.pk

5 Investment Opportunities in Cluster

Along with the typical fish farms some other possible options for investment in the cluster across various stages of business are as follows:

- Establishment of Frozen Sea Food Units
- Establishment of Hatcheries for Producing Fin Fish
- High Tech Integrated Fish Farms
- Cold Chain Storage Facilities
- Refrigerated Containers for Transportation
- Bio Flock Fish Farming

