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A study on Problems and Prospects of Freshwater Fish Farming, Agra (India)

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Abstract - ***The current A study was done. in Agra. A basic 30 people at randomfarmers was chosen, and the participatory rural assessment method was used to help them identify the challenges they were having with fish farming in that city. A total of six important sources of informationwere chosen. Farmers face technical and infrastructural challenges, according to the report. The primary technical issues are high feed costs, a lack of high-quality seeds, and biological dangers. Credit, marketing, pond ownership, insufficient technical expertise, `and limited expansion connectivity are all examples of infrastructure issues. Scientists might learn more about the technological locational issues and, as a result, recommend how to construct the experiment by giving need-based solutions. Farmers' infrastructure is also critical for the successful application of scientific aquaculture operations.****The current situation, issues, and Possibilities of inland fishing in Agra are discussed in this article*

Keywords - ***Aquaculture, Inland fishing, Fish processing, Department of Fisheries, Socio economic, Agriculture practice***

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1. INTRODUCTION

The most common kind of aquaculture is fish farming (culture), often known as pisciculture. It entails commercially rearing fish in tanks or cages, mainly for food. Fisheries and aquaculture is a science, an art, and a business all bundled into one. It is a science when it comes to fish breeding and production procedures, an art when it comes to successfully managing the operation, and a business when it comes to dealing in fish and other aquatic goods. The activity or business of capturing, processing, or selling fish or shellfish is known as fishing. Fish farming provides an option to supplying seafood to a growing marketand fish protein on the market. Fish farming encompasses all actions involving humans, from the rearing of fish through the sale of fish. Fish seed stocking, growing, harvesting, and selling of fish farmed in freshwater (ponds/tanks) and brackish water are all covered. Fish cultivation in tanks has been performed in India since 350BC [1], although on a small scale. India comes in third place among the world's top fish producers. This sector is rapidly expanding and offers several job possibilities. Fish are raised for a variety of reasons. The significance of food as a source of human nourishment dates back to the dawn of civilisation.

Increased output is one of the primary priorities of the National Policy throughout various plan periods. According to the GOI's scientific policy, our country's resources potentials must be used to boost the country's economic growth. This will lead to an increase in per capita income, output, and consumption, as well as a better socioeconomic situation for the population, as well as a reduction in malnutrition.[2] vulnerability The fisheries economist seeks to look at fisheries as enterprises that are typically connected by the interaction of fish in the sea and the sharing of land-based processing and transportation infrastructure. The major advantages received from fishing as a business include nutritional and food security, revenue, employment, infrastructure rescue, and defence services. In nature, fisheries resources are inherently alive and self-renewing.

Fisheries are cold-blooded aquatic animals that breathe via pharyngeal gills and propel themselves and balance themselves using fins. Fishes are Vertebrates are by far the most numerous.phylum, according to [3]. Some have characterised aquaculture as "underwater agriculture" and classified fish as "the most effective among farm animals in transforming feed into nutritious food." Fish are among the first vertebrates and one of the first kinds of evolutionarily higher life to arise in water. As a result, it was recognised as one of the water's jewels.Freshwater (lakes, reservoirs, rivers, beels, tanks, ponds, etc.), brackishwater (estuaries, a considerable number of lagoons, backwater impoundment, and a wide amount of mangrove swamps holding tidal waters), and sea water make up India's extensive and diverse fishing resources. Depending on the management system in place, these water resources support three types of fisheries. Capture fisheries, culture fisheries, and culture-based capture fisheries are the three types.

Capture fishing takes place mostly in coastal waters, river systems, estuaries, irrigation canals, reservoirs, and large lakes, among other places. While freshwater fish may be caught in rivers, canals, and lakes, freshwater and marine fish can be caught in estuaries, and marine fish can be caught in seawater capture fishing. Human involvement in catch fisheries occurs largely at harvest time, when man just needs to reap without having sowed.

India is blessed with both enormous open water bodies and little enclosed water bodies. There are a variety of uses, ownerships, and stakeholders for these waterways. Occasionally, theseadoption hurdlesprevent the full potential of the waters from being realised, resulting in low levels of fish production. As a result, concerns about the property regime, overexploitation of natural fish supplies, environmental deterioration, economic losses, and other issues must be addressed immediately. Multiple ownerships of such water bodies may be realised via community engagement and co-management for sustainable fish stock exploitation. It's also past time to put the responsible behaviour codefishing into effect (PC, G.O.I, 2006).In all elements of fisheries and aquaculture, India has a significant traditional knowledge and know-how. While utilising these might be very beneficial to the programmes, significant community engagement is also required for their effective implementation.

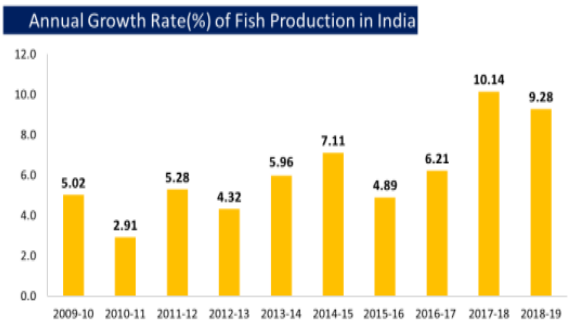
In India, fishing is another major a source of incomejobs, particularly in the rural sector. This thriving industry provides a a vast array of optionsand opportunities. Fisheries, along with agriculture, were only acknowledged as important revenue-generating sectors after independence. The sector's dynamism may be seen in India's elevenfold rise in fish output over the last six decades, from 0.75 million tonnes in 1950-51 to 9.6 million tonnes in 2012-13. This has resulted in an unprecedented average yearly growth rate of almost 4.5 percent over the years, placing the nation second only for China in world fish output.

In Agra, fish farming operations have improved the socioeconomic situations of a vast number of individuals [4]. Aquaculture practisesare capable of assistingAgra attain food self-sufficiency and alleviate poverty. In every industrial sector, accurate information on available resources, prospects, present conditions, and challenges is required for proper planning and development. Due to a lack of accurate information and socioeconomic statistics, the execution of developmental programmes often fails.

What are the benefits of fish farming

1. Fish is a good source of high-quality animal protein for humans.
2. Fish farming may easily be integrated into an existing farm to provide extra revenue and better water management.
3. Fish growth in ponds may be regulated since farmers can choose which fish species to breed.
4. The fish that are generated in a pond belong to the owner; they are safe and may be picked whenever they choose. Fish in natural waterways are freely available to anyone, making individual participation in the common harvest questionable.
5. In a pond, the fish are frequently close by.
6. Effective land use: Marginal land, such as land that is too poor or too expensive to drain for agriculture, may be successfully committed to fish farming if properly prepared.

India is one of the world's major fish producers, accounting for 7.58 percent of worldwide output. Fisheries and aquaculture continue to be a major millions of people rely on it for food, nutrition, money, and survivalof people, contributing 1.24 percent to India's (GVA) and 7.28 percent to GVA (2018-19). From 2014-15 to 2018-19, India's fisheries industry had exceptional development, with a yearly growth rate that is on averageof 10.88 percent. Table 1 & Graph 1 provide a comparison of the growth rate of the fisheries sector GVA and national GVA. From 2014-15 to 2018-19, India's fish output increased by 7.53 percent on average year (Graph-2) and reached an all-time high of 137.58 lakh metric tonnes in 2018-19. (provisional). During 2018-19, marine product exports totaled 13.93 lakh metric tonnes, valued at Rs.46,589 crores (Graph-3), with an excellent yearly growth rate averageof nearly 10% in current years.



1. Fish Farming's Socio-economic Situation

Some workers in India conducted inquiries on the socioeconomic state of the fish community and fish farmers in various states. Because of its large resource potential, job prospects, revenue creation, and as a source of animal protein in the diet, fish farming in Agra has the potential to become a district sector. Despite possessing 6.31 lakh hectares of inland the type of water resourcesof rivers, reservoirs, ponds, and tanks, inland fish output is now just 86,262 metric

tonnes, with significant room for growth. About 2.93 lakh ponds with hectaresand tanks suitable for fish production exist in the city. However, data on the city of basic infrastructure, culturing methods, and the socioeconomic situations of fish farmers in general, and Agra in particular, is limited. As a result, an effort was made to uncover the socioeconomic profile of fish farmers in the study area, with the field survey focusing on a variety of topics.

Fish farmers are the backbone of the fish farming industry and play a critical role in the industry. The farmer's socioeconomic conditions, which play a critical influence in the adoption of upgraded technology, determine the livestock output potential. People's habits and attitudes, which form their impressions of entrepreneur activities, are heavily influenced by their socioeconomic backgrounds. The fishing industry is important not just in terms of contributing to our food supply, but also as a low-cost source of animal protein that supports rural health, resource potential, and job prospects. The fishing industry, which plays an important role in the country's socioeconomic development, has been recognised as a significant source of revenue and jobs.because it stimulates It is a source of growth for a variety of subsidiary industries.of low-cost, nutritious food, in addition to being a valuable foreign exchange earner. Above all, fishing provides a source of income for a substantial portion of the economically disadvantaged people.

2. Infrastructure

The bulk of the city's fishermen use traditional and ancient fishing methods, with the design and kind of gear and vessel depending on the necessity, climate, and local conditions. Fishermen employ dug-out canoes, plank, and make loadhya, machhavas, and wahans, among other things. Fishermen may capture fish up to 5 kilometres away and at a depth of 20 metres using this antique and traditional ship. Motorized traditional crafts were first used in the state's Jaleshwar village (Veraval) in 1953. The state of Saurashtra gets several low H.P. OBMs and IBEs from USA as part of a technological cooperation mission (TCM). The first three-horsepower OBMs were launched in 1961, and from 1961 through 1966, the introduction of higher-horsepower OBMs was rapid, with an average of 98 boats added every year. In every other state, OBMs were mostly ignored by policymakers.

Given I the monies available via the standard budgeting process are limited.process, and even those are mostly grant-based if you don't know how to use them,for credit-based finance, (ii) the clear lack of credit funding in the fisheries sector, and (iii) the need to fill Department of Fisheries, Ministry of Fisheries, Animal Husbandry, major gaps in fisheries infrastructureand Dairying has established a dedicated (FIDF). The FIDF plans to build fisheries infrastructure in both the marine and inland sectors, as well as increase fish output, in order to meet the Blue Revolution's aim of 15 million tonnes by 2020. The Hon'ble Finance Minister announced in the U.B 2018 that a corpus of Rs. 10,000 crores will be set aside for the establishment of a Fisheries and (FIDF) for the fisheries sector and an (AHIDF) for the animal husbandry sector's infrastructure needed

2. INLAND FISHING OPPORTUNITIES IN AGRA

It is obvious that initiatives for improving freshwater aquaculture fish production should focus on the sectors' horizontal and vertical expansion. The components listed below are crucial to the success of these strategies:

- Diversified production by integrating agriculture and other related industries.
- Emphasis on seed production, particularly for carps, shrimp, catfish, and freshwater prawns.
- Remote sensing technology aids in the conservation of fish variety and habitat.
- Investing in high-cost storage options for both marine and inland fisheries.
- Useful method for introducing cage and pen culture to inland bodies of water.
- Changes to the leasing policy to allow for leases of more than 10 years.
- Distribute fish production throughout the states.
- Anti-disease formulations for fish.
- Infrastructure development for both production and post-harvest activities.

3. GOVERNMENT SCHEMES FOR FISHERY DEVELOPMENT

The PMMSY is designed to close significant Production and productivity gaps, quality, technology, post-harvest infrastructure and management, and value chain modernisation are all issues that need to be addressed.and strengthening, and traceability, fisheries management, and fisher welfare. (PMMSY) has the following goals and objectives:

(a) Harnessing the potential of fisheries in a sustainable, responsible, inclusive, and equitable manner
(b) Improving Expansion and intensification of fishing production and productivity, diversification, and productive use of land and water
(c) Modernizing and strengthening post-harvest management and quality enhancement are part of the value chain.
(d) Doubling fishers' and fish farmers' earnings and creating jobs;
(e) Increasing agricultural GVA and exports;
(f) Social, physical, and Fishermen's and fish farmers' economic security; and

(g) The management and regulation of fisheries must be robust.framework.

4. OBJECTIVES

The primary objective of The purpose of this research is to look at the existing state of affairs.of fish farming in Agra as well as its future potential.

a) Determine the socioeconomic status of Agra's fish farmers.
b) To investigate the infrastructure issues with fish aquaculture in Agra.
c) To assess the viability of fish aquaculture in Agra.

5. METHODOLOGY

Humans are sensible creatures. They have a lot of issues or concerns on their minds that he wants to address. The use of research technique aids in the solution of the problem in a methodical way. The procedures used to perform the current investigation are discussed in this chapter. It provides a discussion of the study design approach as well as data analysis techniques.

5.1 Research Design

The current study uses a descriptive research design since it was impossible to directly manipulate all of the factors in order to achieve the study's goal. As a result, the study simply reports what has occurred or is occurring. The most descriptive study has a major objectiveis to describe the current condition of circumstances. Even though the researcher could not control the variables in this study, descriptive research was employed to determine cost. Ex post facto research is often utilised in descriptive research studies in social science and business. Ex post facto literally means "after the event" or "retrospectively." It refers to investigations that study and explore probable cause-and-effect linkages by examining a current situation or state of things and seeking for plausible reasonable causal elements throughout time. In effect, the researcher looks at the elements that seem to be linked to certain events or circumstances.

5.2 Analytical Methods

According to the study's goal, the acquired data was categorised and tallied. Descriptive statistics such as percentage, mean, and standard deviation were utilised to analyse the data. The coefficient of correlation and the chi square were employed to determine the associations between the variables. there are three points Scaling techniques were also utilised to determine the severity of the fish growers' concerns. In the first step, respondents are asked to rate the severity of issues on a three-point scale, with high, medium, and low evaluations assigned weights of 3,2, and 1, respectively.

For each property, the mean value has been determined as follows:

fx/n = mean value

Where f = the number of replies received for each rating,

x = the value assigned,

n = the number of observations.

The mean value of various challenges experienced by fish farmers is computed in the second step.

6. RESULTS AND DISCUSSION

The study's findings are divided into sections. Personal characteristics of respondents, knowledge,

A. Personal characteristics

- **Age Group** - The respondents' ages varied from 30 to over 50 years, and they were divided into three groups: young (under 30 years), middle aged (30-50 years), and old aged (above 50 years) (above 50 years). Young fish farmers accounted for the highest share (48%) whereas older fish farmers accounted for the lowest (4%). The effectiveness of fish farming varies depending on the age and quantity of fish farmers. The greatest age level in 20-30 years old, which **is comparable to the results of this study.**
- **Education level** - Education is a key instrument for changing people's ideas about technical advancements, which will assist to improve the condition of the fish farming community. The majority of the fish farmers in the study region were literate. Out of all respondents, 43% were educated up to the secondary school level, followed by 33% at the primary school level, 12% at the senior upper secondary level, and 6% at the college level, with just 6% of fish farmers being illiterate.
- **Social participation**: - The fish farmers in the study region took part in social activities as members of several organisations. Approximately 94% of respondents are members of a single group, 6% are not members of any organisation, and none of the respondents hold an independent office.

B. Knowledge of fish farming practices

Based on the findings, it can be concluded that respondents' knowledge levels ranged from moderate to poor. The majority of those who took part in the survey(71.30 percent) had a poor

degree of understanding about fish farming procedures, while 26.85 percent had a medium level of expertise.

7. SUGGESTION AND PLAN OF ACTION

Based on the study's components, which included personal characteristics, knowledge of fish farming practises, extent of adoption of fish farming practises, knowledge and adoption gap index, constraints, and a lengthy discussion with fisheries stack holders, the following recommendations helped to improve the farming practises and socioeconomic status of Agra fish farmers.Establishment of essential infrastructural facilities at the taluka level, such as hatcheries and feed mills Marketing channels are being established. establishing effective technology transfer centres and model demonstration units Units of value-added fish products for freshwater fishes are being prepared. Financial ties and assistance Aquaculture operations should be seen in the same light as agriculture. In aquaculture, a multidisciplinary integrated strategy is being developed. Policymakers, government bankers, and fish producers should collaborateto promote coordination and collaboration.

8. CONCLUSION

According to the findings of this study, the study region offers extensive fisheries resources that might be used to boost fish production and close the gap between demand and supply in the state, as well as export fish to adjacent states. Although there is a lot of promise in fish production and marketing, it is currently quite unstructured and uncontrolled in the study region. For a variety of reasons, it has been ignored for a long time, and required efforts in fish production and marketing have not been done. Improved fish production, marketing, and distribution would not only help to close the demand-supply gap for fish throughout the state, but it would also help to ensure the food and nutritional security of a large population. Farmers in the study region are using traditional fish farming methods and harvesting just once a year. There are several organisations and regulations in place to promote fish production and selling throughout the nation; nevertheless, an unified market policy for fish is required. More training should be organised in rural regions so that contemporary fish farming techniques can be taught to fish farmers and the state's fish yield can be increased.

Production and distribution of fishshould be developed with the help of the government and the private sector, since this industry offers a lot of job possibilities and improves the people's living in Agra. In the city, there are certain issues with fish aquaculture. These issues should be investigated in order to enhance fish farming and rural development. The difficulties that farmers face should be the beginning point for investigations. The concerned authorities should shift their mindset and think in terms of the farmers: how can they best utilise their potential, how can they contribute to their own well-being, and then provide proper support to the fish farmers so that they can develop fish farming as a well-established enterprise. There should be laws in place to guarantee that the city's small fish farmers benefit from liberalisation and other changes as well. All fish farmers and government officials should collaborateto elevate agriculture, particularly fish farming, to a higher level.More training should be organised in rural regions so that contemporary fish farming techniques can be taught to fish farmers and the city's fish yield can be increased. Fish growers have a number of challenges in terms of production and marketing. The difficulties that fish growers confront stymie the growth process. To enhance the production and sale of fish in the city, the three primary significant concerns of transportation, high input costs, and storage should be addressed.

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