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Impact of Farm Ponds on the Beneficiary Farmers in Tamil Nadu

Dr. B. Yasodha Jagadeeswari[1], Dr. P. Maria Sophiya[2], A.Fouzia Kousar[3]
[1]Assistant Professor, PG & Research Department of Economics,
Holy Cross College (Autonomous), Tiruchirappalli - 620002.
[2]Assistant Professor,PG & Research Department of Economics,
Holy Cross College (Autonomous), Tiruchirappalli - 620002.
[3]Assistant Professor,PG & Research Department of Economics,
Holy Cross College (Autonomous),Tiruchirappalli - 620002.

ABSTRACT

The 2030 Agenda for Sustainable Development provides a framework that can serve as a backdrop to help integrate both sectors in policy discussions and optimise their contributions to achieving the Sustainable Development Goals (SDGs). However, the global context in which irrigation takes place is changing rapidly. A call for healthier and more sustainable food systems is placing new demands on how irrigation is developed and managed. Farm ponds and small tanks constructed at a appropriate locations capture and store surface and sub surface flow of rain water for future use. Funding through Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) provides for creation of productive assets at village level, beside wage employment to the local people for their livelihood. The fisheries sector contributes to the national income, exports, food and nutritional security and employment generation. As per the estimates of the Central Statistical Organisation (CSO), of the Government of India, the value of GDP from fisheries sector at current prices during 2011–2012 was Rs 65 541 crores, which is 4.47 per cent of the total GDP of agriculture and allied sectors. Fish contributes substantially to the domestic food security of India which has a per capita consumption of more than 6.00 kg per annum. The fisheries sector provides employment to more than seven million people and has proved to be one of the major contributors to foreign exchange earnings of the country. Small scale aquaculture plays an important role in rural poverty elevation. The study was carried out based on existing research and secondary data. Here, we aim to tell a success story of such small-scale aquaculture from a rural area in Tamilnadu of India on Farm Ponds were excavated under the MGNREGA and Fish Culture is encouraged under RKVY.

KEYWORDS: Farm Ponds, SDGs, Food Security, RKVY, Rural Development, Fish farm, MGNREGA.

1. INTRODUCTION

The Indian economy is predominantly rural and agricultural. Indian agriculture has responsibility of providing national as well as household food and nutritional security to its spilling over millions. Widespread occurrence of ill-effects of green revolution technologies in all intensively cultivated areas like Punjab and Haryana is threatening the sustainability of the important agricultural production systems and national food security. The declining trend in size of land holding poses a serious challenge to the sustainability and profitability of farming. The average size of the landholding has declined to 1.16 ha during 2010-11 from 2.28 ha in 1970-71. If this trend continues, the average size of holding in India would be mere 0.68 ha in

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2020 and would be further reduced to 0.32 ha in 2030(Agriculture Census, 2010-11). The performance of agricultural sector in the economy continues to be low despite having a plethora of programs and initiatives directed towards its development. One of the main reasons for is underperformance can be attributed to its high dependency on monsoons. Rain fed agriculture contributes 40 per cent to the country's food grain production with 60 per cent area vulnerable for weather vagaries (Kareemulla et al., 2009). Variations in the monsoon can cause crop failure in the short run and even drought in the long run (Kishore et al. 2015). This is a serious concern for the development of the economy as well as for the well-being of the households engaged in agricultural workforce. They account for around 70% of the rural population in India and 52% of rural population in Tamilnadu who are dependent on agriculture as their main source of livelihood (Agricultural Census, 2011). A fishery in India is a very important economic activity and a flourishing sector with varied resources and potentials. India is also an important country that produces fish through aquaculture in the world. As the second largest country in aquaculture production, the share of inland fisheries and aquaculture has gone up from 46 percent in the 1980s to over 85 percent in recent years in total fish production. Global demand for fish, in part due to its rich protein content, has been consistently increasing with human population growth. In this context, fish culture has been gaining importance to compensate for the declining fish production from capture sources and as a main alternative for the management of sustainable fish production output. In recent years, aquaculture has become the world's largest growing food industry with an annual growth of 10% compared to 2% to 3% of other major food sectors. Aquaculture production has been increasing at an average rate of 3.9% within developed countries compared to an average increase of 8.2% in developing countries.

Indian fisheries and aquaculture is an important sector of food production, providing nutritional security to the food basket, contributing to the agricultural exports and engaging about 14 million people in different activities. With diverse resources ranging from deep seas to lakes in the mountains and more than 10% of the global biodiversity in terms of fish and shellfish species since independence, the country has shown continuous and sustained increments in fish production. Constituting about 6.3% of the global fish production, the sector contributes to 1.1% of the Gross Domestic Product (GDP) and 5.15% of the agricultural GDP. The total fish production of 10.1 million metric tonnes presently has nearly 65% contribution from the inland sector and nearly the same from culture fisheries. The annual carp seed production is to the tune of 25 billion and that of shrimp about 12 billion, with increasing diversification in the recent past. Along with food fish culture, ornamental fish culture and high value fish farming are gaining importance in the recent past. The production from marine sector has almost reached its potential as most of the resources have already been overexploited and therefore there is little scope for increasing the production from that source. On the contrary, most of the inland fishery resources are underexploited and there is tremendous scope for triggering fish production from different inland fisheries resources. The socio-economic benefits derived from aquaculture expansion include the provision of nutrients, employment and income generation for the poor, diversification of production and generation of foreign exchange earnings through export of high-value products. Costly feed and low market price have also been important factors in slowing down progress in farming and the mass involvement of rural communities in carp and shrimp culture is also difficult due to limited water and financial resources. India is considered one of the most suitable countries in the world for small-scale freshwater rural aquaculture development, because of its favorable resources and agro-climatic conditions. Land-based

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culture systems in inland areas have the greatest potential because aquaculture can be integrated with the existing agricultural practice of small scale farming households.

In Tamil Nadu, Inland fisheries contribute around 38% of total fish production and Marine Fisheries contributes to the rest. Tamil Nadu has a total area of 3.73 lakh ha of inland water bodies and these are used for Fish Culture in the traditional way. Homestead pond culture occurs as a small component of the larger household farming system. Homestead ponds are used for multiple purposes including bathing, washing and watering livestock. In addition, many households excavate soil with which to raise the base of their homes in order to avoid flooding. Pond culture represents the mainstay of aquaculture in India, accounting for 85.8% of total recorded production and 57.7% of the area under culture. In the past, ponds such as these were often used to capture wild fish which entered during flooding in the monsoon season, and in some cases, were stocked with fry harvested from nearby rivers, but received very little, if any, additional intentional management. One important aspect of aquaculture development is the modification of existing homestead pond to commercial culture venture. Small scale aquaculture plays an important role in rural poverty elevation. Present study was carried out at villages of Tamilnadu and aimed to fathom out the story of small scale aquaculture in Tamilnadu with its problems, solution and economics. The study was carried out based on existing research and secondary data. Small scale aquaculture in Tamil Nadu plays a significant role in meeting the homestead fish protein demand and serves as an important livelihood option. Rural people of Tamilnadu convert house hold pond to culture farm and faced problem which includes fund, disease, feed crisis, bloom and others. Therefore, government involvement and providing extension service can mitigate these problems. Though small-scale aquaculture is widely practiced in India, but story of this practice is not widely focused in research sector. Here, we aim to tell a success story of such small-scale aquaculture from a rural area of Tamil Nadu in India.

BACKGROUND TO THE STUDY

This paper highlights the cases of such rural farmers in aquaculture who have struggled and have established a mark for themselves in this field of agriculture sector particularly in the State of Tamil Nadu. In a state where people claim fate is more important for success, the success story of a veteran farmer from Cauvery delta region of Tamilnadu is a shining example of how technologically and innovative cultivation methods can transform the agrarian economy and uplift the lives of millions of farmers. As the area of study is emergent, research into rural farmers in aquaculture is necessarily exploratory in nature. The data collected were secondary in nature and the sources of data were internet, magazines and newspaper articles.

NEED FOR THE STUDY

Fish is a nutritious food item containing a good amount of protein, omega-3 fatty acids, minerals and other nutrients. It is consumed by the people of India and World on a daily basis. With an increase in demands, the price of fish and fish products are also increasing day by day. So, commercial fish production has established itself as a profit-oriented business. Freshwater fish farming is one of the important fish production systems. It indicates raising and rearing fish in a freshwater system like tanks, ponds and other enclosures in a commercial manner for the purpose of food production. Before starting the fish production, the preparation of the pond is a

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crucial step which affects the production directly. In this article, we will discuss briefly the pond preparation procedure and how it can help the fish farmers towards better production.

2. OBJECTIVES, METHODS AND MATERIALS

The objective of the present paper is Highlight the Most Successful farmers in Tamilnadu on Farm Ponds were excavated under the MGNREGA and Fish Culture is encouraged under RKVY. Present research is articulated with both qualitative method and quantitative data to identify the insight of small scale aquaculture in Tamilnadu of India. This paper is based on secondary data, primarily through literature, study of journals, articles and textual analysis, and websites. Overall this exploratory research explores the Most Successful farmers in Tamilnadu on Farm Ponds were
excavated under the MGNREGSA and Fish Culture is encouraged under RKVY. Qualitative research approaches and procedures have been applied to explore pertinent information for this study.

POND PREPARATION FOR FISH FARMING

A successful aquaculture practice with a good harvesting is usually due to proper construction preparation and maintenance of the fish pond. Fish pond preparation is the basic and first step in freshwater fish farming. Pond preparation is to be done intensively to enhance the fish production of the pond. Without proper preparation of the pond bottom if we start the fish culture technique it will create a huge problem and production will be of poor quality. In the case of the pond preparation process, good management practices are the basic solution for obtaining better fish yield. Feed and water quality are the two major factors governing the productivity of the fish culture pond. Sustainable methods should always be chosen to make pond preparation more suitable for environment-friendly fish farming technique.

MULTIPURPOSE FARM PONDS - MONEY MAKING PONDS

The majority of the Indian population is dependent on agriculture and allied sectors for their livelihood and income. Therefore, maximum emphasis is given to the development and improvement of these sectors. Farmers in the country usually follow the agricultural practices only after successful practices and inventions set by scientists of government and public sector research institutes and Universities. Aquaculture in the past ten years has witnessed both horizontal and vertical expansion, with total production increasing from 0.37 million tonnes in 1980 to 4.43 million tonnes during 2012–2013, an increase of over 12 fold. Greater adoption of modern farming techniques and assured higher profit margins in carp culture over most other agricultural enterprises has attracted farmers to fish farming. The production from marine sector has almost reached its potential as most of the resources have already been overexploited and therefore there is little scope for increasing the production from that source. On the contrary, most of the inland fishery resources are underexploited and there is tremendous scope for triggering fish production from different inland fisheries resources.

THE SPLENDID FACE OF INLAND FISHERIES IN TAMIL NADU

Under RKVY, the Tamil Nadu Government through the Department of Fisheries intervened in the activities of the small & marginal farmers especially of the Cauvery Delta area by way of

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creating multipurpose farm ponds and introducing fish culture in these ponds and changed their lives forever for better. These beneficiary farmers regard these multipurpose farm ponds indeed as their Money Making ponds owing to their stupendous success.

FISHERIES SCENARIO

In Tamil Nadu, Inland fisheries contribute around 38% of total fish production and Marine Fisheries contributes to the rest. Tamil Nadu has a total area of 3.73 lakh ha of inland water bodies and these are used for Fish Culture in the traditional way. All these water bodies are monsoon dependent and thus highly seasonal. The limited water retention period of 4 to 6 months in these water bodies necessitate meticulous planning with respect to fish seed production and subsequent stocking to achieve satisfactory fish production.

IDEA BEHIND

Creation of Water bodies in the form of Farm Ponds in agricultural lands appeared to be the best option for increasing the area under inland fisheries which required voluntary participation by agriculturists. The Department of Fisheries, through demonstrations, convinced the farmers by showing the multiple benefits of creation of farm ponds like water retention, ground water recharge, and irrigation water for agricultural crops besides getting additional income from the fish culture. The farmers realized the benefits of having a Farm Pond in their fields especially in the Cauvery Delta region. This realization of farmers led the Department of Fisheries to positively intervene and moot two exclusive proposals under the Rashtriya Krishi Vikas Yojana titled “Introduction of Fish culture in Multi-Purpose farm ponds of Drought affected Cauvery Delta Region.” and “Propagation of Fish culture in Multi- Purpose farm ponds in Tamil Nadu” during 2013-14.

PROJECT

During 2013-14, an amount of Rs.311.84 lakhs was sanctioned for the project “Introduction of Fish culture in Multi-Purpose farm ponds of Drought affected Cauvery Delta Region” and Rs.33.46 lakhs was sanctioned for the project “Propagation of Fish culture in Multi-Purpose farm ponds in Tamil Nadu” under Rashtriya Krishi Vikas Yojana.

3. METHODOLOGY

The Farm Ponds of size 15 m x 15m x 1.5m were excavated in the sites of Small & Marginal farmers identified through the Joint Walk through Survey by the Assistant Director of Fisheries/Inspector of Fisheries of the concerned district and officials of Rural Development Department along with the beneficiaries. Farm Ponds were excavated under the MGNREGS and Fish Culture is encouraged under RKVY. In multipurpose farm ponds, fish seeds of Indian Major Carps namely Catla (surface feeder), Rohu (column feeder), Mrigal (Bottom feeder) which are having different feeding habits were stocked following composite fish culture technique. When these fishes are stocked in the farm pond, the feed available in all the three layers of pond water have been utilized effectively.

ASSISTANCE

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Input subsidy assistance @ 50% is extended to Small & Marginal farmers for fish seed, feed cost and harvesting material. Training on Fish Culture is also provided to the selected beneficiaries**.**

SUCCESS STRIKES

In Tamil Nadu, additional water spread area of 151.861 ha. has been brought under fish culture by way of this scheme and 20.12 lakh fish seeds were stocked in multipurpose farm ponds. So far 300 tonnes of fishes have been harvested from the farm ponds all over Tamil Nadu. Highest of 120.26 tons of fishes have been harvested from farm ponds of Thanjavur District. After seeing and believing in the profitability of fish culture in farm ponds, many farmers have expanded their pond size by excavating additional area. 2286 ponds are sustainable in delta districts.

SUCCESS LEADS TO SCALING UP

Owing to the huge success of this scheme and based on the demand from the farmers, Rs. 113.54 lakh has been sanctioned under NADP for the year 2014-15 also for carrying out fish culture in 600 farm ponds. Under this scheme, 576 farm ponds covering water spread area of 28.03 ha. Were stocked with 3.14 lakh fish seeds and culture is in progress.

SUCCESS STORY IN FISH FARMING

CASE STUDIES

Farm Ponds were excavated under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and Fish Culture is encouraged under Rashtriya Krishi Vikas Yojana (RKVY). Farm ponds built under the MGNREGA has immensely benefitted agriculture and has become a strong alternate source of income for many beneficiaries. With fisheries department providing fish seeds and fish feed under convergence, fish cultivation is thriving in many parts of the Tamil Nadu .The ponds have also turned out to be a blessing for agriculture as it has led to significant rise in water table in agricultural lands.

This is a success story of marginal farmers who, with the technical guidance from the project and their own determination, practiced intensive rearing of fishes in farm pond and augmented their farm production, in turn enhancing income generation from a meager area.

CASE 1: Thiru. A. MUTHALEEP, FARMER FROM VAANATHIRAJAPURAM

This story is of a poor farmer from vaanathirajapuram villaage of nagapattinam district in Tamilnadu. Thiru. A. Muthaleep got his Area 900 sq.m farm pond constructed under MGNREGA in 2013. Fish seed of Common Carp was stocked in a pucca structure of 15mx15mx1.5m. He was highly motivated by the growth of fish in this small pond of just 337.5m3. This pond provided bit of additional income and nutritious cheap animal protein to him and his family. During his first seeding, Muthaleep received a 389.6 Kg fish seeds from the fisheries department and since then he has harvested so many times. During each harvest he got around 1200 kg fish and he have sold produce worth Rs 1, 20,000 per yield. Subsidy given by department was Rs.16626.00. he spent around Rs 31,626 on fish feed and maintenance and earns a profit of around Rs 88,374.

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CASE 2: Mr.JOHN, A FARMER FROM THOTTAKADU PANCHAYAT

Mr.John is a farmer belonging to Thottakadu village of Thanjavur district,Tamilnadu. He owns seven acres of agricultural land. He constructed his farm pond under MGNREGA in 2013. The man got himself fully involved fish culture. The farm pond received a lot of water in the subsequent season. He says that his life has improved tremendously after the construction of this pond in his 7 acre agriculture land. "Water level has increased significantly in my farm land and fish farming has become a strong source of income for me''. During his first seeding, John received a thousand fish seeds from the fisheries department and since then he has harvested five times. "During each harvest I got around 500 kg fish and I have sold produce worth Rs 75000 per yield. I spent around Rs 25,000 on fish feed and maintenance and earn a profit of around Rs 50,000''. John says that with the income he earned from the farm pond he could make meaningful contributions to his children's education. "I can even take a loan for my child's education now as I am confident that I can repay it with the income I earn through fish farming''

CASE 3: Thiru.ASHOKAN CHINNAYAN, A MIGRANT LABOURER

Thiru.Ashokan Chinnayan, a migrant labourer from Thottakadu village of Thanjavur district,Tamilnadu. He also testifies that fish farming has become a strong alternate source of income for him. He is a forerunner in realizing the benefits of the Farm pond in this locality. He himself excavated a small Farm pond. "I cultivate four varieties of fish. Although I did not make an enormous profit during my past two harvests as some of my fish perished, fish farming has become a consistent source of income for me. Nowadays I don't migrate much to nearby cities in search of work. I focus more on ways to improve my fish farming''

CASE 4: Mr.BALAKUMAR, A FARMER FROM ACHAMPATTI PANCHAYAT

Mr.Balakumar, a farmer from Achampatti panchayat, Budalur block is busy churning out plans to expand his fish farming as it has become a main source of income for him. "This land is unproductive and I used to earn a meagre income from agriculture. But now with fish farming a great success, I am planning to focus more on it and is constructing one more pond here''. Balakumar who has seeded his farm pond twice was able to lease out the produce for Rs50,000 during each harvest. He had received 500 fish seeds and 100 kg fish feed from the fisheries department.

CASE 5: Mr.SHIVAKUMAR, A FARMER FROM KOTTANKUDY PANACHAYAT

Thiru.Shivakumar, a farmer from Kottankudy panachayat, Thalaynayar block, Nagapattinam also shares a similar story. "My income from agriculture is meagre as this is a drought prone region. However, Fish cultivation has been a great success and during my both harvests I earned around Rs50,000 to Rs65,000''says Shivakumar. He received 500 fish seeds and 100 kg fish feed from fisheries department.

CASE 6: Mrs.CHANDIRA, A FARMER FROM KOTTANKUDY PANACHAYAT

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Mrs.Chandira, a farmer from Kottankudy panachayat, Thalaynayar block, Nagapattinam is eagerly looking forward for her next harvest. She is able to do agriculture in her once acre land only during one season and is now relying on fish farming to make a living for the rest of the year. "I have harvested twice and shared my first harvest with my relatives and friends. My second harvest was not that profitable as I did not have much knowledge about fish farming and unknowingly undertook a premature harvest. However I have seeded 1000 fish seeds now and is planning to harvest after six months. I am sure I will make good money this time''.

4. CONCLUSION

The major learning from these case studies of Successful farmers they managed to survive and succeed in this cut throat competition with their hard work, diligence and perseverance. They are the six Successful farmers in fish farming of the State of Tamilnadu, the physical manifestation of will, power, hard work, grace, and dedication. The production of fishes in the farm pond provides a good source of protein rich and nutritious food for the rural folks. Aquaculture over recent years has not only led to substantial socio-economic benefits such as increased nutritional levels, income, employment and foreign exchange, but has also brought vast un-utilized and under-utilized land and water resources under culture. Such a fish culture activity can generate several direct and indirect employment opportunities for rural youths and folks. Over the years, however, culture practices have undergone considerable intensification and with the possibility of obtaining high productivity levels there has been a state of flux between the different farming practices. In the brackish water sector there were issues of waste generation, conversion of agricultural land, salinization, degradation of soil and the environment due to the extensive use of drugs and chemicals, destruction of mangroves and so on. Though some of these issues posed concerns, most however, were isolated instances with the bulk of farming conforming to eco-requirements. Sustainability of aquaculture is the one of the most important factor for culture expansion. Sustainable aquaculture is the cost effective production of aquatic organisms, which keeps a harmonic and continuous interaction with the ecosystems and the local communities. Management practice which reduces environmental impacts from aquaculture is best. Thus, sustainable aquaculture must be economically beneficial, environmentally physical and socially equitable. Small scale aquaculture expansion is the solution as it has no environmental impact and socially acceptable and economically beneficial.

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