

Fish farming

An ocean of opportunity for enhanced income and livelihood

S K Singh¹, S K Dubey^{1*}, Seema Yadav¹ and Raghwendra Singh¹

¹ICAR-Agricultural Technology Application Research Institute, Rawatpur, Kanpur, Uttar Pradesh 208 002

Fish farming plays a vital role in improving the socio-economic conditions and livelihood of rural communities. Many studies have shown that pond fish farming is more profitable enterprise than rice cultivation, promoting many poor farmers in rural areas to switch to fish farming with the benefit cost ratio ranging from 1.7 to 1.9. Furthermore, the increasing human population has created a lot of pressure on diminishing agricultural land for food production. Fish farming can be considered as an alternative source of livelihood generation and may act as bridge for achieving one of the goals of SDGs (sustainable development goals) i.e. zero hunger. The blue revolution has significant role in post independence increased production of fish which is considered as a cheap source of protein and contains essential amino acids and fatty acids. The Krishi Vigyan Kendras have emerged as connecting link between the poor farmers and new technology which led to the enhanced production of fish besides livelihood generation.

Keywords: Benefit cost ratio, Blue revolution, Fish farming, Livelihood

FISH farming is considered as one of the oldest occupation and fastest way to enhance poor farmer's income as well as livelihood. It also plays a significant role in improving socio-economic status of the rural community. Fish farming is not only helpful in providing food security but also ensures-nutritional security as an outstanding source of animal protein rich in essential amino acids and fatty acids, weaving the pathway towards achieving the goal of zero hunger (one of the goal of SDGs of UN). After China, India has privilege of being known as second largest fish and aquaculture producing nation. The bloom of fisheries is because of blue revolution which has led paradigm shift in the production of fish from 0.75 MMT in 1950-51 to 13.76 MMT in 2018-19 with annual growth rate of 6.8% (NABARD 2020). This trend has shown immense potential of fisheries sector in doubling the farmer's income. The fish production has two dimensional significance i.e. employment generation and export potential. India's contribution in global fish production is 7.73% and 4% in global export. Fish and fish products in India has share of 7.28% in agricultural GVA and 1.28% in national GVA (APEDA 2020). This sector has role of providing livelihood to approximately 16 million people in fish production and 32 million in value chain of fish farming (National Fisheries Policy 2020). Though India is blessed with long coastal line and inland



Fisherman with the produce

water bodies, fish farming being supported by many government policies, acceptance of Indian fish and fish products in international market, higher growth rates in aquaculture, are some of the hurdles existing which should be rule out to nurture fish farming and dependent farmers. Major constraints in fish farming are use of traditional methods for fish culture and harvesting, poor access to quality feed and seed, poor processing facility, seasonality in the occupation, poor access to credits, lack of knowledge among farmers about government policies and subsidies, inadequate and poor infrastructure, lack of diversity in culture of fish species, lower productivity due to incidence



Mr Dinesh with his fish pond

of diseases etc. Considering these issues, here comes the multidimensional role of KVKs in nurturing of aquaculture and development of aquapreneurs. From creating awareness and promotion of fish farming among poor farmers, KVK has vital role in introduction and popularization of new and improved technologies of fish farming.

Role of fish farming in livelihood security

Sri Dinesh Jaiswal, S/o Sri Chotaka, a young farmer belonging to small farmer category was unemployed and habitant of Village – Itwa, District – Chitrakoot (Uttar Pradesh). He was performing crop farming only on a small piece of land. Mr Dinesh searched job and consulted everywhere for employment. Lastly, he decided to do fish farming along with crops. He has 2 ha land in a joint family. Mr. Dinesh consulted KVK Chitrakoot and visited demonstration unit at center. He showed his interest in fish farming. KVK, Chitrakoot trained him in composite fish farming techniques and about pre-and post-stocking management with package of practices. He excavated pond of 2500 Sqm and started fish cultivation with appropriate size of IMC fingerling. After few months, Dinesh stocked 3000 Pungas fish seed in his pond with IMC during 2021-22. Feeding and water quality management was managed efficiently in consultation with KVK Subject matter specialists.

Output

Mr. Dinesh adopted complete package of practices, stocked 5 g size fingerling of Catla, Rohu, Nain and *Pungasius* @ 10000 per ha. The feeding was done by floating fish feed and water quality management by application of lime and disinfectants with the consultation of KVK scientists time-to-time. He stocked IMC during October 2021 and *Pungasius* stocking was done during March 2022. Manuring and fertilization was done properly. He harvested fish during November 2022 and obtained yield up to 118.4 q/ha with B: C ratio of 1.40

Upscaling of the technology

Fishery is a supplementary occupation in the district even after availability of large number of small and medium water bodies. This business is limited to some families belonging to Kewat, Raikwar, Nishad community. Now due to innovations, improved

technology and production, youth of other communities is coming forward and adopting fish farming in a scientific way. Nearly 1200 ponds are available in the district and about 977 are engaged under fish farming. After successful fish farming venture of Mr. Dinesh, 15-20 farmers adopted fish farming with *pungasius* variety. The training and demonstration given by KVK, Chitrakoot, motivated many farmers to adopt fish farming for ensuring livelihood and nutritional security. Mr. Dinesh Jaiswal is an example for others who are seeking employment. This new farming has helped him to get extra income and employment opportunity. He is very happy to share his success among others and popularizing this system to others in the district as well as state.

Economic performance of fish production

Performance indicators

Pond	Farmers Pond
Date of stocking	01-04-2022
Area (ha)	0.25
Density	1.6
Initial wt. (g)	5
Final wt. (g)	640
Specific growth rate	1.989

Per Unit Economic performance

Pond	Farmers Pond
Yield (Kg/unit area)	3200
Feed consumed (Kg)	3800
Expenditure (₹)	260000
Gross return (₹)	364000
B:C ratio	1.4
FCR	1.19
Cost/kg (₹)	81.25

Economic performance/ha

Study pond	Farmers Pond
Date of harvesting	30-11-2022
Yield/ha (₹)	11840
Expenditure/ha (₹)	1040000
Gross return/ha (₹)	1456000
Net return (₹/ha)	416000

SUMMARY

Fish farming is a profitable enterprise and can be a viable option for marginal and small farmer to improve their socio-economic status. Furthermore, it could contribute to current issues of food and nutritional security at the household, community and national levels. Fish farming is predominantly appropriate for those farmers who face severe trouble with salinity in their soil, as traditional crops struggle to grow well in saline conditions. Therefore, the fresh water as well as marine fish farming can be treated as alternative source of traditional agriculture and may be integrated with it e.g. fish farming in crop field to enhance the productivity and income.

*Corresponding author email: skumar710@gmail.com