

STUDIES ON POND BASED INTEGRATED FARMING IN VANIYAMKULAM PANCHAYAT OF PALAKKAD DISTRICT, KERALA, INDIA

¹Lekshmi. G.S, ²S.M. Shalima, ³E. Saravanan and ⁴P.K. Shaji

¹Research Associate, ² Senior Research Fellow, ³Emeritus Scientist, ⁴Research Scientist,
Environmental Resources Research Centre, P.B.No.1230, N.C.C. Road, Peroorkada. P.O,
Thiruvananthapuram-695005, Kerala State.

Abstract: Palakkad is the largest district in Kerala State. Palakkad district is known as the 'Granary of Kerala State'. Vaniyamkulam Grama Panchayat in Ottapalam block of Palakkad district has been taken as study area. Farm ponds are one of the renewable gifts of nature which acts as rainwater harvesting structure. It recharges groundwater, checks soil erosion and retains silt. Pond based integrated farming helps to increase the quantity and quality of the crops and fishes. Reuse of waste products are the most important advantage of integrated farming. These type of integrated farming practices has become benefitted with the help of farm ponds.

Key words: Palakkad, Farm Ponds, Integrated Farming.

I. INTRODUCTION

Farm ponds are one of the most effective water storage structures used to collect excess runoff water. They are mainly used for farming, drinking, fishing, fire control, cooking etc... It helps to dilute groundwater contaminants. These structures helps to conserve groundwater and increases water level of wells. Pond based integrated farming helps to solve malnutrition problem by producing different types of food crops. It also helps to improve the living standards of farmers by increasing crop production, more job opportunities, high income levels, etc... Farm ponds are considered as lifesaving irrigation of crops. It provides protective irrigation in times of delayed monsoons. Farm ponds have more effect on microclimate. These structures can be used in all watersheds with suitable modifications depending on soil types and slopes. It can be concluded that water can be harvested and supplemental irrigation could be given even in the arid regions with the help of farm ponds. Increased population coupled with more demand for water forced to reinvent and use small water harvesting structures like ponds, check dams etc... especially in the rural areas.

II. STUDY AREA

The present study area Vaniyamkulam grama panchayat is situated in the Ottapalam block of Palakkad district. The total area of the grama panchayat is 1548 hectares. This grama panchayat is bounded by Chalavara and Ananganadi grama panchayats on the north, Pattambi block on the west, Thrissur district on the south and Lakkidiperoor grama panchayat on the east. Bharathapuzha is the major river in this region. This grama panchayat is having an agrarian nature, as farming is the major economic activity of the people. Rice, vegetables, coconut and banana are mainly cultivated in this panchayat.

III. METHODOLOGY

The present study was conducted during 2019 and 2020. The study was conducted at 8 farm ponds and recently using for integrated farming activities. Initially all the existing fishes were removed and 20 kg of cow dung was applied in the pond. Fingerlings of catla, rohu, tilapia, grass carp, nutter etc... was stocked in ponds. Ponds taken for this study are perennial in nature. The average pond size was 10 cents. Azolla, rabbit urine, kitchen wastes, vegetable wastes etc... were given to fishes instead of artificial feed. Fishes were harvested

after an interval of six months. This pond water was used for vegetable farming. Pumpkin, bottle gourd, ash gourd, bitter gourd, ridge gourd, long beans, green chillies were major vegetables cultivated using pond water. With the help of pond water vegetables such as carrot, cabbage and cauliflower were also cultivated during winter season. No artificial feed and chemical fertilizers were applied in this type of integrated farming.

IV. RESULTS AND DISCUSSIONS

4.1 Productivity

The major attraction of the pond based integrated farming systems are the production of organic food. Now a days there is an increasing demand for organic farming, due to the unavailability of pure food substances. Pond based integrated farming increased the production and taste of fishes and vegetables. During earlier periods, 4,000 kg of vegetables were obtained before the introduction of pond based integrated farming. Integrated farming increased the vegetables production upto 6,000 kg after a year. However, this approach for horticultural production exhibited a great impact over the farmers having similar ponds for income generation and family nutrition. Integrated pond farming management made positive impacts on small and marginal farmers in terms of best quality and quantity too. Being the major component of the integrated pond management, production of pisciculture also exhibited positive results. Fish production was about 500 kg before the introduction of integrated farming. This type of integrated farming helps to increase fish production upto 700 kg after one year. The present result shows that integrated farming increases food production and reduces wastes also. So, horticulture cum fish farming helps to generate sustainable production and profitability for small and marginal farmers.

Table1: Production before and after pond water integrated farming

Crops	Earlier Production	Present Production
Vegetables	4,000 kg	6,000 kg
Fish	500 kg	700 kg

4.2 Profit

Pond based integrated horticulture cum fish farming was exhibiting encouraging results in terms of money also. This type of horticulture cum fish farming system was very much profitable. Only natural manure was used in this type of farming, so not even a single rupee was spent for chemical fertilizers. That was the major profit. During early days, farmers used to get only Rs.3,40,000 for the production of vegetables. But after the introduction of horticulture cum fish integrated farming, farmers used to get about Rs. 4,00,000/-, so a profit of Rs. 60,000/- was received for production of vegetables per year. For fish production, only Rs. 40,000/- was obtained. But the introduction of integrated farming systems increased aquacultural profit to about Rs. 1,40,000/-. So a huge profit of Rs. 1,00,000/- was obtained only for fish production.

Table2: Profit before and after pond water integrated farming

Crops	Earlier Income	Present Income	Profit in Rupees
Vegetables	3,40,000	4,00,000	60,000
Fish	40,000	1,40,000	1,00,000

4.3 Other Advantages

Other than productivity and profit, pond based integrated farming also helped to utilize family labour and reduced labour cost also. It also helps to strengthen the relationship between the family members too. Both men

and women engaged in activities like trellis preparation, cleaning of ponds and its surroundings, harvesting and marketing of fishes and vegetables etc... It shows gender equality. Pond based integrated farming management offers solution to meet the increasing demand for food and diversification in food habits. Integrated farming also helps to improve the livelihood sustainability of poor farmers. Overall, pond based integrated farming was an excellent approach for sustainable production, income generation and zero labour cost of the resource poor rural households.

CONCLUSION

Farmers may be encouraged to construct ponds as micro balancing reservoirs by providing financial assistance. The area around farm ponds can be used for planting trees, medicinal plants etc... Pond based integrated farming systems created positive awareness among the farmers, so small and marginal farmers of other areas can also adopt this method. Integrated horticulture cum fish farming is not only economically viable, but socially acceptable also. So proper encouragement should be given to farmers for doing integrated farming to raise their living standards.

REFERENCES

- [1]Ameta, K. 2014. A Study on Sloping Agricultural Land Technology for Tribal Empowerment: With Special Reference to Jhadol and Kotra. *Indian Journal of Applied Research*, 4(4):313-314.
- [2]Chavai,A.M., Rakshe,U.V and Shinde,S.B. 2015. Impact of Farm Pond on the Beneficiary Farmers of Maharashtra. *International Journal of Tropical Agriculture*, 33(4): 3525-3528.
- [3]Desai,R., Patil,B.L., Kunnal,L.B., Jayasree,H and Basavaraj,H. 2007. Impact Assessment of FarmPonds in Dharwad District of Karnataka. *Karnataka Journal of Agricultural Sciences*, 20(2): 426-427.
- [4]Kumbhar,V.P., Swami,V.A and Kulkarni,S.S. 2013. Effectiveness of Watershed Management- Means Of Economical Development- A Case Study. *IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE)*, 6 (6):07-14.
- [5]Mane,N.P., Ulemale,D.H and Thakare, S.S. 2015. A comparative analysis on impact of farm pond's on farmer's economy in Amravati district. *International Research Journal of Agricultural Economics and Statistics*, 6(2):287-292.
- [6]Prabha,L.U. 2014. Impact of Farm Ponds on Cropping Pattern – A Case Study on Vembedu Village in Tamilnadu. *International Journal of Innovative Research in Advanced Engineering*, 1(4):50-52.
- [7]Rabbani,G., Rahman,S.H and Faulkner,L. 2013. Impacts of Climatic Hazards on the Small Wetland Ecosystems (ponds): Evidence from Some Selected Areas of Coastal Bangladesh. *Sustainability*, 5:1510-1521.
- [8]Samindre,M.S. and More,M.R. 2012. Assessment of farm pond with respect to water harvesting and recycling. *International Journal of Agricultural Engineering*, 5(2):198-201.
- [9]Sekhar,D., Rao,K.T and Rao,N.V. 2014. Studies on Integrated Farming Systems for Tribal Areas of Eastern Ghats in Andhra Pradesh. *Indian Journal of Applied Research*, 4(10):14-16.
- [10]Venu,B.N., Simha,R.L and Reddy,V.V. 2015. Economic Analysis of Farm Ponds in Tungabhadra Project command Area of Karnataka, India. *International Journal of Agricultural Science and Research*, 5(3):193-198.