



Farm ponds in coconut gardens for doubling farm income

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Coconut based homesteads are lighthouses of experiential learning and practical innovations of Integrated Farming Systems (IFS). Fish culture, especially in homestead based small backyard ponds, has the potential for higher profit, nutritional benefit and employment opportunities to farmers. The presence of natural habitats in coconut homesteads such as branches of tress, roots of tress, aquatic vegetation are considered as good shelter and sources for production of natural food useful for growth and reproduction of fish. The challenging social process of land fragmentation put forward the low scale of production, lesser marketable surplus and farm income and the lack of mechanism for customized technology packages for small and

marginal farmers according to their resource base. Several participatory social experimentations by ICAR CPCRI, proved that clustering of individual interventions can promote social welfare by reducing cost of interventions, accelerating knowledge spread and technology adoption as mobilizing farming community.

ICAR Farmer FIRST Program (FFP)

ICAR- CPCRI is implementing the 'Farmer FIRST Programme' since November 2016 in Pathiyoor panchayath of Alappuzha district, Kerala state. The Farmer FIRST Programme (FFP) is unique in terms of the five pillars of underlying factors such as Farm, Innovations, Resources, Science and Technology



(FIRST) underscoring the need for paradigm shift in agricultural research and extension. The target of doubling farm income by 2022 requires flexibility in approaches, technology/ knowledge assemblages as well as integration of innovations and experimental learning of farming community, for modest achievements.

Homestead is a challenging beauty of diversity in terms of resources, possibilities and problem based on locations, farmer's knowledge, experiences and livelihood options. In the Farmer FIRST Programme, 1000 farm families are involved in the interventions either individually, clusters or women farmer Self Help Groups (SHG). The farming system is predominantly coconut based with additional components of poultry, livestock (cows), inter/mixed crops, farm ponds and small scale processing. The interventions are being implemented in six modules of crop, horticulture, integrated farming systems, natural resource management and value addition in the coconut based homestead systems of the 1627 ha of entire panchayath.

Doubling farmers' income is one of the major goals to achieve by utilizing technologies, attaining social empowerment, skill up gradation and effective resource management. The challenges include income improvement of farmers and ensuring food

security for 9.1 billion population by 2050. The role of farm and farm family is of prime importance in whole farm approach. Hence learning the field situation also adds to farming system research and extension approach towards realistic doubling of farm income.

Farm ponds of coconut based homesteads – A case study

The Farmer FIRST Programme (FFP) is unique in terms of the five pillars of underlying factors such as Farm, Innovations, Resources, Science and Technology (FIRST) underscoring the need for paradigm shift in agricultural research and extension.

A survey was conducted among 740 coconut farmers for characterizing the farming systems and to delineate the resources. The data indicated that majority of the land holdings are of 25-100 cents (90.1 to 0.4 ha). This reiterates the appropriateness of group/ cluster farming approach in the panchayath. All the farmers surveyed were educated and only 10.01 percent of the total farmers surveyed were young

farmers (below 40 years age). Around 25 percent of the land holdings were of size 25-50 cents (90.11 to 0.20 ha) and 20.57 percent with 51 to 100 cents (0.21 to 0.40 ha). Only 8.66 percent of farm holdings were above 0.4 ha. The study showed that 29.2 percent of the coconut based homesteads had farm ponds which served the purpose of irrigation, water collection, conservation and fish culture.

The depth of the ponds also varied from 5 to 20 feet and it was reported that around one third



of the ponds were dry during summer seasons and the rest assured with water availability throughout the year. Besides natural farm ponds, 7 rural youths are maintaining artificial lined ponds for intensive fish culture in the panchayath. A total of 74 farm ponds in coconut gardens were selected in the FFP intervention from the 19 wards of Pathiyoor panchayath based on the willingness to invest in the pond rejuvenation, agreement on adoption of good agricultural practices and to share the information



for larger learning. The farmers were given 4 training programmes with fisheries experts and experienced farmers on pond preparation to fish culture. Based on the preference of participating farmers 65000 fish fingerlings of Nile Tilapia (*Oreochromis niloticus*) and Koi Anabas (*Anabas testudineus*) were distributed to water area of more than 1 lakh square metre.

Fish culture in farm ponds was included as a major component of in the 'Homestead Farm Plan for doubling farm income'. The critical management points perceived and solved through collective information exchange and innovations were the release and acclimatization of the fingerlings to each of the pond water. The pH level of the water was assessed before the release of fingerlings. They were released to a 'happa' (rectangular shaped light

floating structure covered with small sized mesh net leaving upper portion open) in the pond water and appropriate size of feed given and took care up to one month minimum. This practice enabled survival of more than 90 percent of fingerlings and the farmer could monitor the growth and health of them. The pond should be protected from fish predators like tortoises, reptiles and water birds. The feed size to be enhanced with the growth of fishes and chopped greens can be included supplementary feeds. Regular observation of health of fishes and maintaining of oxygen level and required transparency of water is also crucial according to the farmers. The participating farmers already started local marketing of mature fish @ Rs. 250 to 300 per kilogram and the harvest will be completed by January 2020. It was estimated that 10-15 tons of fresh fish worth Rs. 15 to 20 lakhs could be realized in the FFP panchayath. This transformation of farm ponds provides quality protein and fresh fish to consumers and improves the diet diversity of the community.

Farm ponds as summer solace to coconut palms

With the arrival of summer season the farm ponds should also serve as micro reservoirs for irrigating coconut seedlings and bearing palms in homesteads. For coconut seedlings up to two years old, 45 liters of water is to be given once in four days. Bearing palms need 200 liters of water once in 4 days. Coconut palm basins should be mulched with dried coconut fronds and other organic residues from the homesteads to maintain moisture and protect soil from direct sunlight. Reports indicated that 30-40 percent additional yield of nuts could be obtained by adopting irrigation. Hence revival of farm ponds could transform the coconut gardens to income units and conservation of natural resources. ■