

Evaluation of Farm Ponds on Agriculture in Pattanchery Panchayat of Palakkad District, Kerala, India

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ABSTRACT: Palakkad district is known as the Rice Granary of Kerala State. In this study, Pattanchery Panchayat in Kollengode block of Palakkad district has been selected to measure the economic effects of farm ponds on agriculture, as this region has a rich tradition in rice farming. Farm ponds are rain water harvesting structures which is used in fisheries and livestock activities. It also recharges groundwater by infiltration and provides water during lean seasons. Pond based integrated farming system helps to increase crop production, income, job opportunities etc... Integrated farming reduces environmental degradation and makes profit for small farmers too. So integrated farming system offer solution to the problems of land and food crisis. As paddy and plantain cultivation needs more intensive irrigation, presence of farm ponds becomes highly significant in the era of climate change. Farm ponds help to improve the living conditions of farmers. These types of water harvesting structures are economically and socially acceptable. Thus farm ponds are found to play a major role in the agricultural production, particularly during summer season.

Key words: Farm ponds, integrated farming, Palakkad

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I. INTRODUCTION

About 80% of India's population is living in rural areas. The declining trend of agricultural land is a serious issue which is affecting the whole nation. Pond based integrated farming helps to solve this problem upto some extent. Farm ponds play a major role in managing and conserving soil and water resources which are used for several purposes of farm need. These are water harvesting structures formed by the construction of a small embankment across a field waterway or by excavating a dug out. It is mainly used for farming, flood control, recreational purposes, drinking, fishing, watering livestock, fire control etc... Farm ponds have very good impact on agricultural production, employment opportunities, high income levels etc... It provides silt which is used in agricultural fields and also can be used to strengthen the embankment of fields. Farm ponds help to increase moisture status of the soil. These water harvesting structures also helps to store excessive rainwater and thus prevents flood. Farm ponds dilute contaminants of ground water. Pond based integrated farming is a multi commodity farming system in which two or more commodities are cultivated together on a common base which brings more profit and applicable to farmers on any scale. This system decreases the use of fertilizers and pesticides to provide chemical free food crops to the society. Farm ponds are also known as life saving doses. It helps to solve malnutrition by producing different types of food crops. Farm ponds act as source of support irrigation for crops and it assures farmers of a decent livelihood. As some high yielding varieties of paddy and banana requires more intensive irrigation which has been cultivated within a short period, so the presence of farm ponds becomes highly significant in this era of climate change. Increased population pressure and increasing demand for water coupled with erratic monsoon has 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 Pattancherygrama panchayat is situated in the Kollengode block, Chittur taluk of Palakkad district. The total area of the grama panchayat is 30.30 sq. kms. This grama panchayat is bounded by Perumatty grama panchayat on the north, Puthunagaram grama panchayat on the west, Vadavannur grama panchayat on the south and Muthalamada grama panchayat and Tamil nadu state on the east. It comes under midland area of Palakkad district. Chitturpuzha and Gayathripuzha, the major two tributaries of Bharathapuzha are the major flowing rivers in this region. This grama panchayat is having an agrarian nature. Farming and toddy tapping are the major economic activities of the people in this grama panchayat. Majority of the area in this panchayat is cultivated with rice. Rice, coconut and banana are mainly cultivated in this panchayat.

III. METHODOLOGY

Primary data was mainly collected from farmers and agricultural labourers through questionnaire survey. Secondary source of data was collected from grama panchayat office and department of agriculture. The present study was based on both primary and secondary data. The study was conducted at 10 farm ponds in the panchayat during 2015 – 16 which includes paddy, banana, and fishes. These ponds were selected on the basis of its supply of water to the fields and the productivity of the crops. The average pond size was 1 acre. Initially ponds made ready by draining out the whole water. Existed fishes were removed. As a primitive step, 30kgs of Cao was applied in the pond. Then 40kgs of cowdung was added. Cow dung, the main food of fishes was used to fertilize water also. Fingerlings of species like rohu, catla, grass carp, mrigal etc...were collected from hatcheries and stocked in ponds. Instead of artificial feed,

dried and powdered cow dung, cow urine, rice bran, vegetable wastes etc... were given to fishes. Fishes were harvested after 10 months. After the harvesting of fishes, again new stocks of fingerlings were introduced. The pond water was released into banana and rice fields with the help of traditional methods like through direct channels, by carrying water from ponds in vessels and using it etc... The same water was used for banana plants also. No chemicals and fertilizers were applied in both paddy and banana fields and in ponds also.

IV. RESULTS AND DISCUSSIONS

Productivity

This type of pond integrated farming includes rice, fishes, banana etc... Good results were obtained by doing integrated farming with the help of pond water. Integrated farming increased the resistance power of rice and banana plants. Reuse of waste products was the most advantage of integrated farming. Dried cow dung was the main food given to fishes. Pond based integrated farming harvests fish and provides more nutrients for irrigation in crops. During earlier periods, 1 tonne of rice was obtained before the introduction of integrated farming. Integrated farming methods increased the rice production up to 2 tonnes. Similarly in the case of banana production also, the productivity of banana was increased from 10 kgs. to 15kgs. No other chemicals or fertilizers were used in rice farming or banana farming. Only the pond water which was treated with natural manure such as powdered cow dung, cow urine, rice bran and kitchen wastes were used for farming which accelerates fish production also. In the case of fish farming, it also shows the best results. Before the introduction of integrated farming, fish production was less than 500 kgs. After two years, more than 1000 kgs. of fishes were obtained. No artificial feed was given to fishes. The present result shows that integrated farming increases fish production than traditional fish production.

Profit

Pond based integrated farming was showing positive results in all means. Rice+ fish +banana system was highly profitable. Introduction of fishes in this type of integrated farming caused this much profit. Instead of chemicals and fertilizers, only natural manure was used. So not even a rupee was spent for artificial fertilizers, which costs a lot. So that itself was a major profit. In the case of rice production, during early days farmers used to get only Rs. 30,000/-. After the introduction of pond integrated farming systems, farmers used to get more than Rs. 45,000/-. So a profit of Rs. 15,000/- was received. In banana production, farmers used to get only Rs. 50,000/- in early days. By getting the advantage from integrated farming, farmers got Rs. 10,00,00. Thus the profit became doubled. From the banana production, a profit of Rs. 50,000/- was obtained. During early days, only Rs. 55,000/- was obtained for fish production. Now, 125,000/- was obtained for fish production. About Rs. 70,000/- was received as profit in the case of fish production.

Employment and Income generation

This type of pond based integrated farming system provides more employment opportunities to the rural people. Minimum 3 to 5 people per pond got permanent job in relation with feeding, harvesting and marketing of crops and fishes. About 20 rural people also got seasonal job in association with this type of pond based integrated farming. Even 1/3rd women in this grama panchayat got job in association with cleaning of ponds and its surroundings. Integrated farming shows the involvement of farmers and their family members and helped to get more jobs in different sectors. The present study reveals that farm ponds helped to increase income and new employment opportunities.

Table1: Production before and after pond water integrated farming

Crops	Earlier Production	Present Production
Rice	1 tonne	2 tonnes
Banana	10 kgs.	15kgs.
Fish	500 kgs.	1000 kgs.

Table2: Profit before and after pond water integrated farming

Crops	Earlier Income	Present Income	Profit
Rice	30,000	45,000	15,000
Banana	50,000	1,00,000	50,000
Fish	55,000	1,25,000	70,000

V. CONCLUSION

The present study shows that pond based integrated farming provides better profits in all means. It helps to increase food production, provides job and income to many rural people. Integrated farming decreases the use of artificial fertilizers, so a large amount of money can be saved. This type of farming increases and maintains sustainability. It also helps to increase the quality of rice, banana and fishes increased due to integrated farming. The present use and maintenance of farm ponds increased water level in the wells thus the groundwater level got increased. Proper encouragement should be given to farmers for doing integrated farming to improve their living standards. The area around farm ponds can be used for planting trees, fruits and vegetables. The present positive effects of farm ponds created positive awareness among the farmers on the benefit of protecting both resources like soil and rainwater. Maintenance of farm ponds like desiltation, fencing, removal of weeds, controlling water pollution etc... can be done

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