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ON-FARM EVALUATION OF INTEGRATED FARMING SYSTEMS OF A MARGINAL FARMER: A CASE STUDY

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ABSTRACT

The study was undertaken in the farm of a marginal farmer in Rautapur village of north east Orissa during 1992-94 involving enterprises like field and horticultural crops, fishery, poultry, duckery, apiary, agroforestry, mushroom and dairy. Adoption of integrated farming involving above mentioned enterprises helped the marginal farmer to generate a monthly income of Rs, 1,600 excluding hus labour utilized in the farm. The production of fish, mushroom, poultry, duck and honey in the farm itsef, helped in improving the standard of living by consuming part of the produce for better nourishment of his family members.

INTRODUCTION

In India, more than 78% of the total farming community belong to marginal and small farmers having only 32.5% of the total operational area. The income from seasonal field crops alone from small and marginal farms is hardly sufficient to sustain the farmers' family. Integrated farming system (whole farm approach) is one of the potential approaches which emphasizes a judicious combination of any one or more such enterprises and effective recycling of residues/wastes for better management of the available resources for generation of more income and employment of the family during off-season (Behera and Mahapatra, 1999). Hence the study was undertaken by integrating different land-based enterprises for generating more income and employment of a marginal farmer.

MATERIALS AND METHODS

A case study was undertaken in the farm of a marginal farmer in Rautapur village of Remuna Block of Balasore district in north-east Orissa during 1992-94 involving different enterprises. The size of the holding of the farmer was 1.2 acres (0.48 ha). The farm family consisted of six members with two adults and four children. The component combinations were crop (field and horticultural crop) -fishery-mushroom-apiary-animal husbandry-bio-gas- agroforestry. Allocation of area under different enterprises/ activities in the farm is shown in Table 1.

RESULTS AND DISCUSSION

Production

In the composite pisiculture system, the monthly growth rate of fishes catla (Catla catla), rohu (Labeo rohita) and mrigal (Cirrhinus mrigala) were 85, 40 and 35 g respectively. A fish biomass of 105 kg (2420 kg/ha) was produced. The poultry and duckery unit produced 4260 and 2310 eggs respectively in a year. Paddy straw and oyster mushroom of 190 and 100 kg were produced. The apiary unit produced 5.8 kg of honey in a year. The bullocks of the farm family were utilized for land preparation and other works of the farm. Cow dung of around 14 tonnes was produced throughout the year. Biogas plant (2 m3

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size) produced gas for 2.75 hours daily wth a feeding requirement of about 40-50 kg cow-dung mixed with equal quantity of water. However, the gas produced was not sufficient for cooking requirement of the family. But about 9.5 kg fuel wood and 5 kg paddy straw (used as fuel) was saved per day by using this biogas.

Income and employment generation

Taking the performance of different components of the whole system into consideration, it was observed that the composite pisciculture unit yielded the highest return of Rs. 5.25 per unit of investment. The performance of plantation crops including Tamarind and drumstick stood next to pisciculture with Rs. 5.12 per rupee invested. This could help in generating regular/periodic income during summer months. Poultry and duckery component yielded the lowest retun of Rs. 1.20 per rupee invested (Table 2).

It is clear from the study that even in the remote area like Rautarapur without having any infrastructure like marketing, road etc., a marginal farmer having a small holding of only one acre earned his livelihood comfortably by adopting integrated farming system.

REFERENCE

Behra U K and Mahapatra I C. 1999. Income and employment generation for small and marginal farmers through integrated farming systems. *Indian Farming.* **48:**16-28.

Table 1. Allocation of area of the farm to different components of farming

Particular	Area (m2)	Component
Farm house	100	
Threshing floor	25	
Operational farm house area	110	
Cattle shed	58	
Half-covered threshing floor	30	
Compost pit	22	
Bio-gas plant	2.6	Dinabandhu model
Bio-gas tank	6.4	
Fishery pond (including poultry and duckery)	434	Catla, rohu, mrigal, white leghorn, khaki campbell
Orchard area (including apiary)	400	Mango, guava, lemon,papaya, banana, Apis cerana
Fodder unit	40	
Cropped area	2272	Maize, rice, mung, groundnut, sunhemp and vegetables
Agroforestry	800	Tamarind, drumstick, terminalia, bamboo, neem
Others (mushroom, animal husbandry, road, irrigation channel etc.)	500	Vovariella and Pleurotus mushroom species, a pair of bullock
Total	**4800**	

Table 2. Income and employment generation by the marginal farmer from different enterprises at Rautatapur village of Balasore district of Orissa

Components	Expenditure (Rs.)	Man days	Gross return (Rs.)	Net return (Rs.)	Return per rupee invested (Rs.)
Crop enterprise					
i) Field crops	795	26	1839	1044	2.31
ii) Vegetables	3445	100	9509	6064	2.76
iii) Fruit cropsi	550	5	2132	1582	3.88
v) Plantation crops	225	4	1152	927	5.12
Total	**5015**	**133**	**14632**	**9617**	**2.92**
Fishery	500	4	2625	2125	5.25
Mushroom	4046	30	6750	2704	1.67
Poultry	4080	23	4800	720	1.20
Duckery	2095	23	2335	240	1.11
Apiary	130	-	470	340	3.61
Animal husbandry	3450	45	5050	1600	1.46
Bio-gas	675	15	2465	1790	3.65
Total	**19991**	**275**	**39127**	**19136**	**1.96**