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Economic analysis of integrated farming system for doubling farmers income in western Maharashtra

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Abstract

Integrated farming is defined as a biologically integrated system, which integrates natural resources in a regulated mechanism into farming activities to achieve maximum replacement of off-farm inputs and sustain farm income. The productivity of a diversified cropping system always tends to increase when it is integrated with dairy, horticulture components. The present investigation on economics of integrated farming systems for doubling farmer's income in Western Maharashtra helps farmers to achieve maximum returns and income from different integrated components, thereby improving their standard of living. The primary data were collected from 12 Villages of Kolhapur, Pune and Nashik district. The total sample size for the study was 180 farmers. The finding of study observed that among the identified integrated farming system, crop + dairy + horticulture (C+D+H) farming system was profitable as indicate from the B:C ratio i.e. 1.68, followed by crop + dairy (C+D) i.e. 1.40 followed by crop only i.e. 1.25. Also the IBCR of crop + dairy + horticulture (C+D+H) farming system was 1.93 followed by crop + dairy (C+D) i.e. 1.53 Therefore, It was concluded that farm income from the farming system i.e. crop + dairy + horticulture (C+D+H) was more than the crops only in the study area. So that, intensification of Integrated farming system with crop, dairy and horticulture, should be popularized among the farmers on a larger scale, as it provides scope for higher returns.

Keywords: Integrated farming system, farm income, crop diversification

Introduction

Agriculture is one of the most fundamental activities that supports human life, providing food, raw materials, and other products that are essential to societies around the world. The agriculture continually faces challenges due to environmental changes, population growth, fragmentation of agricultural land, market fluctuations, and the pursuit of improved livelihoods. In response, integrated farming systems (IFS) have emerged as a promising strategy to address these multifaceted challenges in agriculture. "Integrated Farming Systems defined as an output from one subsystem in an integrated farming system, which otherwise may have been wasted, becomes an input to another subsystem resulting in a greater efficiency of output of desired products from the land/water area under a farmer's control". (FAO 2008) Integrated farming is a farming system that involves the integration of multiple components of agriculture, such as crop cultivation, livestock rearing, aquaculture, agroforestry, and other allied activities, in a single farm unit.

Integrated farming emphasizes the use of natural processes and ecological principles to enhance productivity and sustainability. In an integrated farming system, the waste products of one component are utilized as inputs for another, resulting in a closed-loop system that minimizes waste and promotes efficiency. For example, livestock

waste can be used as fertilizer for crops, and crop residues can be used as feed for livestock. Integrated farming can help farmers to improve their income and livelihoods, as well as promote food security and environmental sustainability. Integrated farming can also help to conserve natural resources and promote biodiversity, as it involves the integration of different farming practices that utilize the land and its resources in a more efficient and sustainable manner.

Keeping above fact in view, the present study was designed to estimate the economics of integrated farming system adopters in order to understand economic potential of integrated farming system.

Methodology

'Western Maharashtra' region was selected for present study on the basis of diversification in farming system. The main aim of this study was to analyze the selected farming systems economically. Three major farming systems adopted in the region considered for the present study was F.S.-I (Crops only), F. S.-II (Crops + Dairy) and F. S. - III (Crops + Dairy + Horticulture).

Three districts viz; Kolhapur, Pune and Nashik were purposively selected on the basis of livestock population density, presence of both irrigated as well as rainfed area, regional diversity etc. The most representative Tahsils, one

irrigated and one rainfed Tahsils were selected from each district. Thus, three irrigated and three rainfed Tahsils were selected from all three districts. Two villages were selected randomly from each Tahsil. In all 12 villages (6 irrigated and 6 rainfed) were selected. From each village, 15 farmers were selected purposively in such a way that, 5 farmers from each farming system were selected out of three selected farming systems in that district. As such total 180 sample farmers were selected randomly for the study. The data were collected through the personal interview. The collected data were processed and statistically analyzed by using statistical technique like computation of mean and percentage. Standard costs concept generally used in farm management study i.e. Cost A, Cost B and Cost C employed for estimation of economics of farming system.

Results and Discussion

Per farm costs and returns of irrigated and rainfed region of all the three selected farming systems are presented in the Table 1.

The analysis of the cost and returns from farming systems I, II, and III reveals significant differences in profitability and productivity across irrigated and rainfed regions.

Farming System I: The average cost per farm in irrigated regions was ₹ 2,47,288, while in rainfed regions it was ₹ 1,78,049. The higher input costs in irrigated regions made farming more expensive, although the gross returns were not explicitly highlighted for this system. The output-input ratio was 1.25, indicating modest efficiency.

Farming System II: The average cost per farm in irrigated and rainfed regions was ₹ 5,27,808 and ₹ 3,89,434, respectively. Gross returns were significantly higher in irrigated regions (₹ 8,10,891) compared to rainfed ones (₹ 4,70,025), suggesting greater productivity. The system's overall output-input ratio stood at 1.40, with net returns of ₹ 1,81,837, making it moderately profitable.

Farming System III: This system demonstrated the highest gross returns, with ₹ 21,21,671 in irrigated regions and ₹ 11,99,360 in rainfed ones. The average cost per farm was also highest at ₹ 11,22,679 in irrigated regions and ₹ 8,51,282 in rainfed ones. The output-input ratio (1.68) and IBCR (1.93) indicate exceptional profitability, with net returns reaching ₹ 6,73,535, marking it as the most advantageous farming system.

Table 1: Per farm cost and return structure of selected Farming Systems (Rs/farm)

Sr. No.	Particulars	Farming system I (Crop only)			Farming system II (Crops +Dairy)			Farming system III (Crops+ Dairy +Horticulture)		
		Irrigated	Rainfed	Overall	Irrigated	Rainfed	Overall	Irrigated	Rainfed	Overall
1	Gross Returns	328466	201476	264971	810891	470025	640458	2121671	1199360	1660515
2	Cost A	128270	82734	105502	222514	178460	200487	445791	386518	416155
3	Cost B	230125	163276	196700	444260	309391	376825	928433	711548	819990
4	Cost C	247288	178049	212669	527808	389434	458621	1122679	851282	986980
7	Net Return	81178	23427	52302	283083	80591	181837	998992	348078	673535
10	Output-Input Ratio at Cost C	1.33	1.13	1.25	1.54	1.21	1.40	1.89	1.41	1.68
11	Added Cost	-	-	-	280519	211385	245952	594871	461848	528359
12	Added Return	-	-	-	482425	268549	375487	1310780	729335	1020057
13	IBCR	-	-	-	1.72	1.27	1.53	2.20	1.58	1.93

Conclusion

The study indicated that In conclusion, farming system III emerged as the most productive and profitable system, particularly in irrigated regions, due to its superior gross and net returns and higher output-input ratio. These findings underline the critical role of irrigation in enhancing agricultural productivity and profitability across diverse farming systems.

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