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Economics of integrated farming system in Amravati district

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Abstract

Crop production is subjected high degree of risk and uncertainty and provide only seasonal, irregular and uncertain income and employment to the farmer. In order to minimize the risk farmer are practicing integrated farming system. The present investigation on economics of integrated farming systems undertaken in Amravati district. The primary data were collected from 120 farmers. The finding of study observed that among the identified integrated farming system, crop + livestock + horticulture farming system was profitable as indicate from the B:C ratio i.e. 1.40, followed by crop + horticulture + vermicompost i.e. 1.34 followed by crop + livestock i.e. 1.31, and crop farming system i.e. 1.22. Based on sustainability values index (SVI) derived from different integrated farming system, maximum SVI values was recorded in crop + livestock + horticulture IFS i.e. 0.81 followed by crop + horticulture + vermicompost i.e. 0.77. Therefore, the intensification of IFS with crop, horticulture, livestock and vermicompost should be popularized among the farmers on a larger scale, as it provides scope for higher returns.

Keywords: Integrated farming system, cost and returns, B: C ratio, sustainability

Introduction

Integrated Farming System (IFS) is a sustainable system of agriculture where sequential linkages between two or more farming activities are undertaken. It is a system which comprises of inter-related set of enterprises with crop activity as base, which increase the income of the farmer. The basic aim of IFS is to derive a set of resource development and utilization practices, which lead to substantial and sustained increase in agricultural production. With the growing challenges to meet the food security in country, it is pertinent to integrate our cropping fields with alternate income generating activities.

The integrated farming system represent an appropriate combination of farm enterprises viz., horticulture, livestock, poultry, goat rearing, vermicompost etc. It involves a complex combination of inputs, managed by farming families influenced by the environmental, political, economic, institutional and social factor.

The study of integrated farming system is importance not only from planner's point of view but also from farmers. By keeping in view its importance, the study was carried out to estimate cost, returns and B: C ratio of different farming system. The specific objectives was to estimate cost and returns of identified integrated farming system and to estimate sustainability value index of integrated farming system.

Methodology

The Amravati district was selected purposively for present study. And from Amravati district three tahsils i.e. Amravati, Achalpur, Chandur Railway were selected for study.

From each tahsils two village were selected. From identified integrated farming system 30 farmer from each integrated farming system i.e. crop, crop + livestock (Cow), crop + livestock + horticulture (Vegetables) and crop + horticulture + vermin-compost were selected.

The primary data were collected for year 2023-24 with the help of specially designed pre tested schedule by personal interview method.

For analysis of data simple tabular analysis, standard cost concept and sustainability value index was used. The data were analysed by using cost concept like cost 'A' cost 'B' cost 'C' were used for estimating the cost of cultivation of crops. Cost concept for livestock included variable costs like feed cost, labour charges and interest on working capital @ 12%. Cost concept for horticulture like cost 'A' cost 'B' cost 'C' were evaluated. Cost concept for vermin-compost includes cost of earthworm, labour charges and interest on working capital @ 7%. The fixed cost in livestock includes interest on fixed capital and depreciation on fixed asset and depreciation on animals. The fixed cost in vermin-compost includes vermed price. The B:C ratio was workout on the basis of cost incurred and returns obtained from each integrated farming system. Sustainability values index (SVI)

for each model was calculated by the formula, (Kumar *et al.* 2015a).

$$SVI = NR - SD/MNR$$

Where,

NR = Net returns

MNR = Maximum net returns

SD = Standard deviation

Results and Discussion

The study was undertaken to estimate cost and returns of identified integrated farming system and to estimate sustainability value index of integrated farming system.

Cost of cultivation of identified integrated farming system

The expenditure on the inputs utilization in identified integrated farming system were workout and presented in table 1

Table 1: Cost of cultivation of identified integrated farming system (₹/ha)

Item		Crop	Crop + Livestock	Crop + Livestock + Horticulture	Crop + Horticulture+ Vermi-compost
1		2	3	4	5
Hired Human Labour	Male	24564.54	26037.54	47397.82	48138.23
	Female	39742.57	40418.43	79135.25	81640.67
	Total	64307.11	66455.98	126533.07	129778.90
Bullock Labour		14733.46	15987.34	22865.11	23647.32
Machine charges		36652.94	33113.51	40790.28	47676.75
Seed		30332.51	31265.34	62816.91	60899.37
Manures		4921.30	4378.96	3848.14	3623.87
Fertilizer	N	6623.62	6953.07	11612.48	10814.10
	P	8486.50	10688.88	15641.15	14725.11
	K	2592.05	2652.70	4503.83	5111.73
	Total	17702.18	20294.65	31757.46	30650.94
Irrigation charges		5190.64	7035.48	11819.80	12341.23
Bio-fertilizers/ Micronutrient		972.31	1026.36	901.81	1068.58
Insecticide(Plant Protection)		14579.07	15094.19	44246.78	45038.71
Incidental charges		7007.82	5753.32	6855.88	7869.20
Repairing Charges		3920.78	3629.50	4178.96	4015.43
Secondary Activity		0.00	51623.26	54050.13	14128.23
Working Capital		200320.12	255657.88	410664.33	380738.54
Interest on working Capital		12019.21	18239.29	28023.92	22776.72
Depreciation		6577.11	9881.28	16247.92	9408.68
Land Revenue		268.19	274.65	641.98	597.48
COST "A"		219184.63	284053.10	455578.15	413521.42
Rental Value of land		78306.85	80144.38	149911.48	148852.73
Int. on Fixed.Cap. @ 10%		11845.25	26765.20	35095.87	31818.04
COST "B"		309336.73	390962.68	640585.50	594192.19
Family Human Labour	Male	24167.85	25253.85	35733.84	33007.95
	Female	8128.62	8896.22	16359.76	16182.11
	Total	32296.47	34150.07	52093.60	49190.06
Cost "C"		341633.21	425112.76	692679.10	643382.24
Value of total produce Crop Milch		417837.99	439754.53	841531.62	827820.61
Vermicompost		0.00	119147.30	126743.33	0.00
		0.00	0.00	0.00	35726.67
Total		417837.99	558901.83	968274.95	863547.28

From table 1, it was observed that, In case of crop farming system, cost 'A', cost 'B', cost 'C' was ₹ 219184.63, ₹ 309336.73, ₹ 341633.21. The gross return was ₹ 417837.99. In case of crop + livestock integrated farming system, cost 'A', cost 'B' and cost 'C' was ₹ 284053.10, ₹ 390962.68 and ₹ 425112.76 respectively. The gross returns was ₹ 558901.83. In case of crop + livestock + horticulture integrated farming system cost 'A', cost 'B', cost 'C' was ₹ 455578.15, ₹ 640585.50, ₹ 692679.10 respectively. The gross returns was ₹ 968274.95. In case of crop + horticulture + vermin-compost integrated farming system, cost 'A', cost 'B', cost 'C' was ₹

413521.42, ₹ 594192.19, ₹ 643382.24 respectively. The gross returns was ₹ 863547.28.

Economics of identified integrated farming system

The cost and returns of identified integrated farming system were presented in table 2.

From the table 3, it was revealed that, in crop farming system average gross returns worked out ₹ 417837.99. The net returns obtained at various costs were ₹ 198653.36 at cost 'A', ₹ 108501.26 at cost 'B' and ₹ 76204.78 at cost 'C'. In crop + livestock integrated farming system average gross returns worked out ₹ 558901.83. The net returns obtained at

various costs were ₹ 274848.73 at cost 'A', ₹ 167939.15 at cost 'B', ₹ 133789.07 at cost 'C'. In crop + livestock +

horticulture integrated farming system average gross returns ₹ 968274.95.

Table 2: Cost and returns of identified integrated farming system

Sr. No.	Particulars	Crop	Crop + Livestock	Crop+ Livestock+ Horticulture	Vermi-compost
1	Value of Main Produce	411230.83	552248.05	960948.39	856720.66
2	Value of By- Produce	6607.16	6653.78	7326.56	6826.62
3	Gross Return	417837.99	558901.83	968274.95	863547.28
4	Cost of Cultivation at				
	Cost "A"	219184.63	284053.10	455578.15	413521.42
	Cost "B"	309336.73	390962.68	640585.50	594192.19
	Cost "C"	341633.21	425112.76	692679.10	643382.24
5	Return at				
	Cost "A"	198653.36	274848.73	512696.80	450025.86
	Cost "B"	108501.26	167939.15	327689.45	269355.09
	Cost "C"	76204.78	133789.07	275595.85	220165.04
6	Output input ratio at				
	Cost "A"	1.91	1.97	2.13	2.09
	Cost "B"	1.35	1.43	1.51	1.45
	Cost "C"	1.22	1.31	1.40	1.34

The net returns obtained at various cost were ₹512696.80 at cost 'A', ₹ 327689.45 at cost 'B' and ₹ 275595.85 at cost 'C'. In crop + horticulture + vermin-compost integrated farming system average gross returns worked out ₹863547.28. The net returns obtained at various costs were ₹ 450025.86 at cost 'A', ₹269355.09 at cost 'B', ₹ 220165.04 at cost 'C'.

The highest B: C ratio at cost 'A' was recorded in crop + livestock + horticulture integrated farming system i.e. 2.13 followed by crop + horticulture + vermin-compost integrated farming system i.e. 2.09. The B: C ratio at cost 'C' was recorded highest in crop+ livestock + horticulture integrated farming system i.e. 1.40 followed by crop + horticulture + vermin-compost integrated farming system i.e. 1.34.

Sustainability value index of integrated farming system

In integrated farming system, since more than one component is involved, yield and net returns assessment of this system index (SVI) also varied among integrated farming system during the study. Markedly higher value of SVI were associated with crop + livestock + horticulture integrated becomes important. In these situations, obtaining maximum sustained level of yield is more desirable. Sustainability value farming system i.e. 0.81 followed by crop + horticulture + vermicompost i.e. 0.77, followed by crop + livestock 0.59 and crop farming system i.e. 0.34. However, sustainability value index of different components were much higher over crop alone. Higher the SVI, higher will be the net return and more profitable will be the IFS.



Fig 1: Sustainability Value Index

Conclusion

From this study it is concluded that, Among the different integrated farming system, the B:C ratio was observed highest at cost 'C' i.e. 1.40 in case of crop + livestock + horticulture and sustainability value index also highest in this integrated farming system. Hence, crop + livestock + horticulture was profitable and sustainable than other three integrated farming system.

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