E-ISSN: 2618-0618
P-ISSN: 2618-060X

NAAS Rating (2025): 5.20
www.agronomyjournals.com
2025; SP-8(8): 31-35
Received: 10-06-2025
Accepted: 12-07-2025

MS Surwase
PG Scholar (Agri), Department of Agricultural Economics, College of Agriculture, Latur, Maharashtra, India

RD Shelke
Professor, (Agricultural Economics) Department of Agricultural Economics, College of Agriculture, Latur, Maharashtra, India

SH Kamble
Associate Professor (Agricultural Economics), Department of Agricultural Economics, College of Agriculture, Latur, Maharashtra, India.

TB Vadak
PG Scholar (Agri), Department of Agricultural Economics, College of Agriculture, Latur, Maharashtra, India

Corresponding Author:
MS Surwase
PG Scholar (Agri), Department of Agricultural Economics, College of Agriculture, Latur, Maharashtra, India

Impact of integrated farming systems on increasing farmers income in Dharashiv district of Maharashtra state

MS Surwase, RD Shelke, SH Kamble and TB Vadak

DOI: https://www.doi.org/10.33545/2618060X.2025.v8.i8Sa.3470

Abstract
This study explores the "Impact of integrated farming system on increasing farmers income in Dharashiv district of Maharashtra state. Primary data was collected from 96 farmers, with 48 farmers selected from each tahsil, namely Kallamb and Dharashiv. The four integrated farming systems were observed *viz*. Crop+ dairy, Crop +dairy+ hort, Crop+ dairy+ poultry and Crop+ goatery+ hort integrated farming system. The highest per hectare total cost was recorded in the Crop+ dairy +hort integrated farming system. i.e.₹.1378846.29., Followed by Crop+ dairy+ poultry integrated farming system.i.e.₹.1361667.6. Gross return was highest in Crop+ dairy +hort integrated farming system.i.e.₹.2301278., followed by Crop+ dairy+ poultry integrated farming system. i.e.₹.1987577. However, the highest net returns were observed in the Crop+ dairy+ hort integrated farming system. i.e.₹.922431.71. with a B:C ratio of 1.67 indicating superior profitability compared to other systems. The study suggested that the combination of integrated farming activities is needed for increasing the profitability of farming to achieve to increasing the farmer's income.

Keywords: Integrated farming systems, cropping pattern, standard cost of cultivation, gross return, net returns

Introduction
Indian's economy mainly depends on agriculture, especially by small and marginal farmers. These farmers form 86.2% of the farming population, but they operate only 47.3% of the total farmland, according to the 10th Agricultural Census (2015-16). Over the years, the average land size per farmer has gone down from 2.28 hectares in 1970-71 to 1.08 hectares in 2015-16. After the Green Revolution, many Indian farmers began focusing on single- crop farming systems. This shift has caused problems like poor soil health, higher chances of crop failure, and reduced productivity.

As the world's population keeps growing, more resources are needed to meet basic human needs. In developing countries, land and water are becoming harder to access, while the population continues to rise. A good farming system helps farm families use their resources wisely. It includes various types of farm activities such as growing crops, raising animals, fish farming, agroforestry, fruit and vegetable farming and silk farming. These activities help improve farm productivity and income.

Integrated farming system is not only a reliable way of obtaining fairly high productivity with considerable scope for resource recycling, but also a concept of ecological soundness leading to sustainable agriculture. Farming system represents an appropriate combination of farm enterprises, *viz*. cropping systems, horticulture, livestock, fishery, poultry and the means available to the farmers to raise them for profitability. The livestock- farming system has recently focused on a significant momentum that provides the highest food output subsequently enhancing the income of the farmers by involving them in various active livestock enterprises.

The Integrated Farming System helps farmers increase their income, which improves their livelihood security. If one component of the system fails or becomes less profitable, other components can still support the farmer financially. IFS allows farmers to produce more from

the same land and time by combining crops with allied activities like livestock and poultry. It helps improve profitability, ensures sustainability, provides a balanced diet, protects the environment, and generates income throughout the year. It also creates job opportunities and helps solve fuel- related problems. This system helps farmers grow economically faster. IFS is considered one of the best ways to increase profits from farming. The main idea behind IFS is to reduce waste by using the by-products from one activity as input for another. This process lowers production costs and increases productivity.

Objectives

To examine and compare the cost and returns of the integrated farming systems.

Methodology

The present investigation was carried out to evaluate the integrated farming systems in Dharashiv district. The study is based on primary data in Dharashiv district. Two tahsils of Dharashiv district namely Kallamb and Dharashiv were selected purposively as these tahsils are observed more sample. Then,6 villages were be selected randomly for the study on the basis of IFS. Total ninety-six farmers were selected for the present study by survey method. The data pertained to the year 2023-24.

Analysis of data

The standard cost concept was use to achieve the objective.

Cost concept for crop production

The cost of cultivation was worked out by using the accepted cost concepts.

Cost A_1: It includes

1. Value Hired human labour
2. Value Hired and owned bullock labour
3. Value of Machine labour
4. Value of Seed (both farm seed and purchased)
5. Value of Fertilizers and manures (owned and purchased)
6. Value of Plant protection
7. Value of Irrigation charges
8. Value of Miscellaneous expences
9. Value of Land revenue
10. Depreciation
11. Interest on working capital

Cost A_2: Cost A_1 + rent paid for leased-in land
Cost B_1: Cost A_1 + interest on fixed capital (excluding land)
Cost B_2: Cost B_1+ rental value of owned land + rent for leased-in land
Cost C_1: Cost B_1+ imputed value of family labour
Cost C_2: Cost B_2 + Imputed value of family labour
Cost C_3: Cost C_2 + 10 per cent of cost C as management cost

1. Income measures

a. Gross income: It is the total value of main product.

$GI = (Q_m \times P_m)$

Where,
GI = Gross income
Q_m= Quantity of main product
P_m = Price of main product

Results and Discussion

Farming systems in selected district

The integrated farming system in study area was presented in Table 1. From Table 1. It was revealed that 24 farmers from the Crop +dairy integrated farming system, 24 farmers from Crop+ dairy +hort integrated farming systems,24 farmers from Crop+ dairy+ poulty integrated farming systems and 24 farmers from Crop+ goatery+ hort farming system were taken from the study**.**

Economics of Crop+ dairy farming systems

The costs and returns of different enterprises under the Crop integrated farming system in the study area and the share of cost and returns of each enterprise in the whole farming system were presented in Table 2. It is observed from the table that the gross returns of the Crop +dairy integrated farming system as a whole was ₹.1054337, the net returns ₹.265815.65, and the benefit-cost ratio was 1.34. It is also revealed from the table that from different crop enterprises the highest net returns was observed from the Dairy (/cow) i.e.₹.124161.48, followed by Sugarcane crop and Soybean crop i.e. ₹. 54447.17 and ₹.33134.49 respectively. In this integrated farming system, the gross returns was highest in the Sugarcane crop ₹. 273300, followed by Dairy(/cow) and Dairy(/Buffalo) i.e. ₹.247380 and ₹.195710 respectively. The B: C ratio indicates the profitability of the Crop+ dairy farming systems. The highest B:C ratio was observed in Dairy(/cow) i.e. 2.01 followed by Gram and Sugarcane i.e. 1.39 and 1.25 respectively.

Economics of Crop + Dairy +Hort integrated farming system

The costs and returns of different enterprises under the Crop + Dairy+ Hort integrated farming system in the study area and the share of cost and returns of each enterprise in the whole farming system were presented in Table 3. It is revealed from the table that gross returns and net returns from the Crop + dairy+ hort integrated farming system as a whole is ₹.2301278 and ₹.922431.71 respectively, and the B: C ratio is 1.67. It is observed in the table that gross returns are highest in Mango crop i.e. ₹. 728000, followed by Sapota and Sugarcane crops i.e. ₹.519600, and ₹.263750 respectively. Net returns highest in mango i.e. ₹.395235.34 followed by sapota and dairy(/cow) i.e.₹.276665.55, and ₹.116475.16 respectively. In this integrated farming system benefit-cost ratio is highest in mango crop i.e.2.18, followed by sapota and dairy(/cow) enterprises i.e. 2.14 and 1.92 respectively.

Economics of Crop + dairy+ poultry integrated farming system

The costs and returns of different enterprises under the Crop + dairy+ poultry crop farming system in the study area and the share of cost and returns of each enterprise in the whole farming system were presented in Table 4. It is revealed from the table that gross returns and net returns from the Crop + dairy +poultry integrated farming system as a whole is ₹.1987577, and ₹. 625909.4 respectively, and the B: C ratio is 1.46. It is observed from the table that gross returns are highest in poultry i.e.₹.1161468, followed by sugarcane and dairy(/cow) i.e.₹.259500 and ₹.222620 respectively. Net returns highest in poultry i.e. ₹. 395462.9 followed by dairy(/cow) and sugarcane crops i.e.₹. 98031.96, and ₹. 43814.24 respectively. In this integrated farming system benefit-cost ratio is highest in dairy(/cow) i.e.1.79, followed by soybean and poultry enterprise i.e. 1.61 and 1.52 respectively.

Economics of Crop + goatery+ hort integrated farming system

The costs and returns of different enterprises under the Crop + goatery +hort integrated farming system in the study area and the share of cost and returns of each enterprise in the whole farming system were presented in Table 5. It is revealed from the table that in Crop + goatery+ hort integrated farming system as whole gross returns i.e.₹. 1362825, net returns i.e. ₹.441468.36, and B:C ratio is 1.48. It is also observed from the table that among different enterprises, the highest net returns were observed from mango crop ₹.322263.07 followed by sugarcane and soybean enterprises i.e.₹.30622.87 & ₹.29834.67 respectively. Among the different enterprises highest gross returns observed from Mango enterprise was ₹. 715360 followed by sugarcane and wheat enterprises i.e.₹.266500, and ₹.90728 respectively. The 5 benefit-cost ratio was highest in mango crop i.e. 1.81, followed by soybean and gram crop i.e. 1.54 and 1.31 respectively.

Cost and returns of integrated farming systems

A study on the economics of farming systems helps to understand the profitability and selection of appropriate farming systems on the farm. The data on cost and returns on various farming systems are presented in Table 6. It is revealed from the table that, in the Crop +dairy integrated farming system average gross returns worked out to ₹.1054337. The net returns obtained at various costs were ₹.499532.61 at cost A1, ₹.775919.61 at cost B1, and ₹.265815.65 at cost C3. In the Crop + dairy+ hort integrated farming system average gross returns worked out to ₹.2301278. The net returns obtained at various costs were ₹.1354858.29 at cost A, ₹.1779636.34 at cost B, and ₹.922431.71 at cost C3. The average gross returns in the Crop +dairy+ poultry farming system were Rs.1987577. The net returns obtained at various costs were ₹. 857454.44 at cost A1, ₹. 1709545.31 at cost B1, and ₹. 625909.4 at cost C3. In the Crop + goatery+ hort farming system average gross returns worked out to ₹. 1362825. The net returns obtained at various costs were ₹.846765.78 at cost A1, ₹. 877670.45 at cost B1, and ₹. 441468.36 at cost C3. The highest net returns at cost C3 was recorded in the Crop + dairy+ hort integrated farming system i.e.₹. 922431.71 followed by the Crop + dairy+ poultry integrated farming system i.e.₹.625909.4. Among the integrated farming systems, the B:C ratio was observed highest at cost C3 i.e.1.67 in the Crop + dairy+ hort integrated farming system followed by Crop + goatery+ hort integrated farming system, and Crop + dairy+ poultry & Crop+ dairy integrated farming system i.e.1.48,1.46 and 1.34 respectively. Hence Crop + dairy+ hort integrated farming system was more profitable than the other three integrated farming systems.

Comparative economics of selected integrated farming system

The four integrated farming systems identified as major farming systems across the study area, irrespective of the district are compared for their returns generating capacity, costs involved, net returns, and benefit-cost ratio. The outcomes of the analysis are presented in Table 7. Table 7 reveals that the per hectare total cost was the highest in the Crop + dairy +hort integrated farming system i.e.₹.1378846.29 followed by Crop +dairy+ poultry i.e.₹.1361667.6, Crop + goatery +hort crop i.e.₹.921356.64 and Crop+ dairy crop i.e.₹.788521.35. Among the systems, the highest per hectare gross returns was observed in the Crop + dairy+ hort integrated farming system i.e.₹.2301278 followed by Crop + dairy+ poultry, Crop +goatery+ hort and 6 Crop+ dairy integrated farming system i.e.₹.1987577, ₹.1362825 & ₹.1054337. The net returns was highest in Crop + dairy +hort i.e.₹. 922431.71, followed by Crop + dairy+ poultry i.e. ₹.625909.4, Crop +goatery+ hort i.e.₹.441468.36. and Crop +dairy i.e. ₹. 265815.65. Also, the B:C ratio was the highest in Crop + dairy +hort integrated farming system i.e. 1.67 followed by Crop + goatery+ hort integrated farming system i.e.1.48, the Crop + dairy+ poultry integrated farming system i.e.1.46.and Crop +dairy integrated farming system.i.e.1.34.

It is calculated based on income on the hectare of agricultural land of each farming system and the number of animal units and poultry units that exist in respective integrated farming systems. It is seen from the table that among the selected integrated farming systems the farmer practicing the Crop + dairy+ hort integrated farming system has fetched the highest returns. It is suggested that to improve the economic condition of selected farmers, they should establish dairy unit, poultry unit, goatery unit and horticultural crop as subsidiary occupation in addition to crops.

Table 1: Selected integrated farming systems in Dharashiv district

Farming systems	Sample size
Crop+ Dairy	24
Crop+ Dairy+ Hort	24
Crop+ Dairy+ Poultry	24
Crop+ Goatery +Hort	24
Total	96

Table 2: Economics of Crop+ dairy integrated farming systems (₹/ha)

Sr. No.	Particulars	Total cost	Gross return	Net return	B:C Ratio
1	Soyabean	55671.51	88806	33134.49	1.6
2	Sugarcane	218852.83	273300	54447.17	1.25
3	Gram	61677.84	85737	24059.16	1.39
4	Wheat	73435.55	88600	15164.45	1.21
5	Sorghum	65216.77	74804	9587.23	1.15
6	Dairy (₹/Cow)	123218.52	247380	124161.48	2.01
7	Dairy (₹/Buffalo)	190448.33	195710	5261.67	1.03
	Overall	788521.35	1054337	265815.65	1.34

Table 3: Economics of Crop+ dairy+ hort integrated farming systems (₹/ha)

Sr. No	Particulars	Total cost	Gross return	Net return	B:C Ratio
1	Soyabean	53448.5	81008	27559.5	1.52
2	Sugarcane	231968.24	263750	31781.76	1.14
3	Gram	63785.89	89376	25590.11	1.4
4	Wheat	70738.44	86873	16134.56	1.23
5	Sorghum	68900.62	79974	11073.38	1.16
6	Dairy (₹/Cow)	127221.84	243697	116475.16	1.92
7	Dairy (₹/Buffalo)	187083.67	209000	21916.33	1.12
8	Mango	332764.65	728000	395235.34	2.18
9	Sapota	242934.44	519600	276665.55	2.14
	Overall	1378846.29	2301278	922431.71	1.67

Table 4: Economics of Crop+ dairy+ poultry integrated farming systems (₹/ha)

Sr. No.	Particulars	Total cost	Gross return	Net return	B:C Ratio
1	Soyabean	56682.92	91318	34635.08	1.61
2	Sugarcane	215685.76	259500	43814.24	1.2
3	Gram	57625.81	79605	21979.19	1.38
4	Wheat	74120.56	89574	15453.44	1.21
5	Sorghum	66959.42	83492	16532.58	1.25
6	Dairy (₹/Cow)	124588.04	222620	98031.96	1.79
7	Poultry (₹/batch)	766005.09	1161468	395462.9	1.52
	Overall	1361667.6	1987577	625909.4	1.46

Table 5: Economics of Crop+ goatery+ hort integrated farming systems (₹/ha)

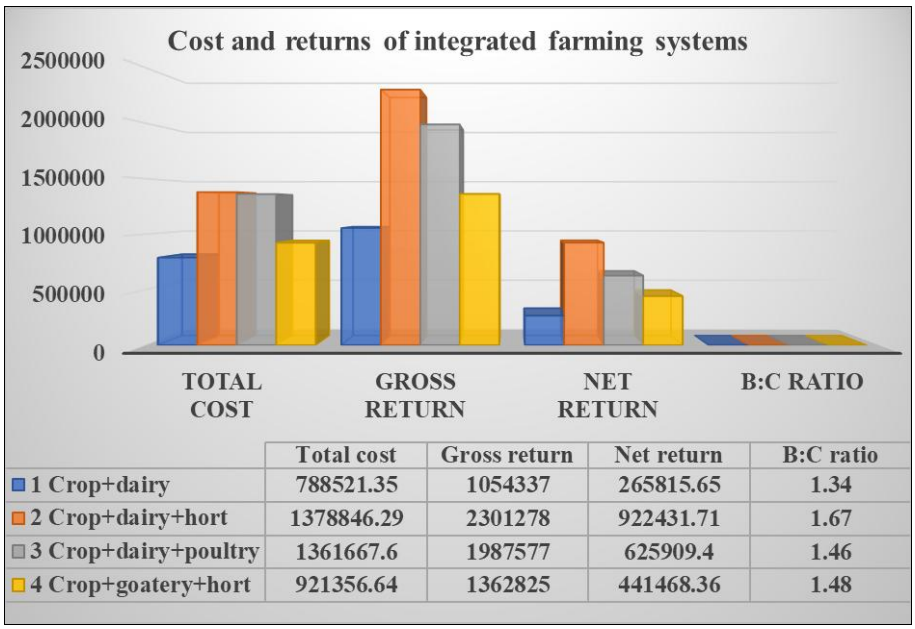
Sr. No.	Particulars	Total cost	Gross return	Net return	B:C Ratio
1	Soyabean	54969.33	84804	29834.67	1.54
2	Sugarcane	235877.1	266500	30622.87	1.13
3	Gram	58080.36	76269	18188.64	1.31
4	Wheat	71315.04	90728	19412.96	1.27
5	Sorghum	67200.26	78944	11743.74	1.17
6	Goatery (₹/goat)	40817.6	50220	9402.39	1.23
7	Mango	393096.9	715360	322263.07	1.81
	Overall	921356.6	1362825	441468.36	1.48

Table 6: Cost and returns of integrated farming systems (₹/ha)

Sr. No.	Particulars	Crop+ dairy	Crop+ dairy+ hort	Crop+ dairy+ poultry	Crop +goatery +hort
1.	Value of Main Produce	1019570	2257130	1956542.5	1327350
2.	Value of By- Produce	34767	44148	31034.5	35475
3.	Gross return	1054337	2301278	1987577	1362825
4.	Cost of cultivation at				
	Cost-A_1	554804.39	946419.71	1130122.56	516059.22
	Cost -B_1	278417.39	521641.66	278031.69	485154.55
	Cost-C_3	788521.35	1378846.29	1361667.6	921356.64
5.	Net returns at				
	Cost-A_1	499532.61	1354858.29	857454.44	846765.78
	Cost -B_1	775919.61	1779636.34	1709545.31	877670.45
	Cost-C_3	265815.65	922431.71	625909.4	441468.36
6.	Benefit-Cost ratio at				
	Cost-A_1	1.90	2.43	1.76	2.64
	Cost -B_1	3.79	4.41	7.15	2.81
	Cost-C_3	1.34	1.67	1.46	1.48

Table 7: Comparative economics of integrated farming systems (₹/ha)

Sr. No.	Particulars	Total cost	Gross return	Net return	B:C ratio
1.	Crop+ dairy	788521.35	1054337	265815.65	1.34
2.	Crop+ dairy+ hort	1378846.29	2301278	922431.71	1.67
3.	Crop+ dairy +poultry	1361667.6	1987577	625909.4	1.46
4.	Crop+ goatery +hort	921356.64	1362825	441468.36	1.48



Conclusion

Based on the results obtained from the study, the following conclusions are drawn.

1. The four integrated farming systems were selected from the study area. *viz*. Crop+ dairy integrated farming system, Crop +dairy +hort integrated farming system, Crop +dairy +poultry and Crop+ goatery+ hort integrated farming system.
2. The per hectare total cost was highest in the Crop +dairy +hort integrated farming system.i.e.₹1378846.29 followed by the Crop+ dairy +poultry integrated farming system.i.e.₹.1361667.6, Crop +goatery +hort integrated farming system. i.e. ₹.921356.64. and Crop +dairy integrated farming system. i.e. ₹788521.35.

3. Among the systems, the highest per hectare gross returns was observed in the Crop+ dairy +hort integrated farming system. i.e. ₹.2301278 followed by the Crop+ dairy+ poultry integrated farming system. i.e. ₹.1987577., Crop +goatery +hort integrated farming system. i.e. ₹.1362825. and Crop+ dairy integrated farming system. i.e. ₹.1054337.
4. The net returns was highest in Crop+ dairy+ hort integrated farming system. i.e. ₹.922431.71 followed by Crop+ dairy+ poultry integrated farming system. i.e. ₹.625909.4., Crop+ goatery +hort integrated farming system. i.e. ₹.441468.36. and Crop+ dairy integrated farming system. i.e. ₹.265815.65.
5. The B:C ratio of the Crop+ dairy+ hort integrated farming system is highest. i.e.1.67 followed by Crop+ goatery+ hort integrated farming system.i.e.1.48, Crop+ dairy +poultry integrated farming system.i.e.1.46 and Crop+ dairy integrated farming system. i.e. 1.34., Hence it is concluded that the Crop+ dairy+ hort integrated farming system is more profitable in the Dharashiv district of Maharashtra state.

References

1. Barman S, Malhotra R, Chaudhary U, Sen B, Mondal I. A comparative economic analysis of the identified integrated farming systems in the coastal West Bengal. Journal of Indian Social Coastal Agricultural Research. 2024;42(2):151-326.
2. Chakranarayan AD, Torane SR, Kshirsagar PJ, Torane SS, Bhosale RA. Economic analysis of impact assessment of production technology of paddy cultivation in North Konkan of Maharashtra, India. International Journal of Agriculture Extension and Social Development. 2024;7(1):28-33.
3. Deshmukh AS, Khobarkar VK, Vaidkar RD, Gavande SA, Deshmukh JP. Economics of integrated farming system in Amravati district. International Journal of Statistics and Applied Mathematics. 2024;9(5):119-122.
4. Hile RB, Sale YC, Sanap DJ. Economics of diversification of existing farming systems in Pune district of Maharashtra. Journal of Crop & Weed. 2016;12(3):41-46.
5. Kamble AS, Yogesh LN, Prashant SM, Peer PS, Desai BK. Integrated farming system: Profitable farming to small farmers. International Journal of Current Microbiology and Applied Sciences. 2017;6(10):2819-2824.
6. Kharche PP, Surve US, Tumbare AD, Raut VG. Economics of different integrated farming system models under irrigated conditions of Western Maharashtra. Journal of Soils and Crops. 2022;32(1):200-207.
7. Nikam MB, Burark SS, Deorukhkar AC, Chavan BR, Mhadik RP. Integrated farming systems for sustainable agriculture in Raigad district of Maharashtra. International Journal of Agriculture, Environment and Biotechnology. 2020;13(2):185-192.
8. Patil A, Khobarkar V, Raut M, Vaidkar RD. Economics of farming system in Washim District. Journal of Pharmacognosy & Phytochemistry. 2020;9(5):498-500.
9. Porkodi G, Kannan S. Impact of integrated farming system approach on sustainable production for farming community. International Journal of Current Microbiology and Applied Sciences. 2020;9(4):2345-2350.
10. Sakshi G, Bagde NT, Rathod VJ, Kayarwar AB, Ansari RA, Bhajan S. Economic evaluation of integrated farming system in eastern Vidarbha zone. International Journal of Research in Agronomy. 2024;7(9):675-680.
11. Torane SR, Naik BK, Kulkarni VS, Talati JM. Farming systems diversification in North Kokan region of Maharashtra - An economic analysis. Agricultural Economics Research Review. 2011;24:91-98.