ECONOMIC ANALYSIS OF MAJOR FARMING SYSTEMS IN HYDERABAD-KARNATAKA

ABSTRACT

The study was undertaken in Hyderabad-Karnataka state to assess cost and returns under major farming systems, net income of the farmers from different sources and significant influence of area and dairy in major farming systems. Four major farming systems *viz.,* Crop+Dairy (C+D), Crop+Horticulture (C+H), Horticulture+Dairy (H+D) and Crop+Dairy+Horticulture (C+H+D) were identified based on preliminary survey in the area. The study is based on primary data of 160 farmers covering equal samples under major farming systems elicited through survey for 2016-17. The data was analyzed using descriptive statistics Tabular presentation with averages, ratios, percentages and Gini co-efficient. Results revealed that net annual income realized by farm household was higher in Crop+Dairy+Horticulture (Rs. 8,62,897.70) farming system of which 72.42 per cent was from horticulture. The least annual net income was observed in Crop+Dairy (Rs. 2,17,982.21) farming system of which 55.49 per cent was from livestock enterprise. The inequality was relatively lower in Crop+Dairy (0.45) farm households. The inequality was more in Crop+Dairy+Horticulture (0.53) farm households.

KEY WORDS: farming systems, income, livestock, inequality

1. INTRODUCTION

Indian agriculture is known for its multi-functionalities of providing employment, livelihood, food, nutrient and ecological securities. Agriculture and allied activities contribute about 18 per cent to the gross domestic product and the growth rate of agriculture is around 4.5 per cent (2016-17). Indian agriculture employs 50 per cent of the total work force and it is the major source of poverty alleviation, empowerment of the agrarian folk and it is the corner stone of development for India. As a result of sustained efforts food grain production has increased from 50.8 million tonnes in 1950-51 to 272 million tonnes in 2016-2017 (Ramesh chand, 2016).

> **Comment [G2]:** Not listed

Traditional farming system used by farmers in India are based on centuries of experiences characterized by mixed farming involving crop production with one or more enterprises like dairy, poultry, sericulture, piggery, sheep, goat, fisheries bee-keeping *etc.*, with a aim to achieve stability of production, provide subsistence for the family and guard against weather aberration and other environmental stresses. In the recent days, farming system approach gave scientific touch to the existing practices and found ways and means to make it sustainable in changing global scenario. At an aggregate level, it is appropriate to study the farming system in relatively homogeneous agro-climatic regions in keeping with natural endowments and factors, which are normally not subject to change.

> **Comment [G3]:** State the problem or research gap the study intends to fill. No methods of data collection and tools of analysis

2. RESULTS

Economics of major farming systems

Cost and return structure of principal crops and subsidiary enterprises practiced by farm households under major farming systems is worked out and is presented under the following headings.

> **Comment [G4]:** Results are not extensively discussed in line with the works of other scholars.

2.1. Relative economics of principal crops

The relative economics of both annual (paddy, jowar and maize) and perennial (pomegranate, banana, fig and mango) crops on hectare basis is presented in *Table 1*. Net returns as well as returns per rupee of investment were more in Crop+Dairy farms in all principal crops like paddy (Rs. 17,365), jowar (Rs. 9,114.67) and maize (Rs. 5,822) and returns per rupee of investment were 1.39, 1.45 and 1.13, respectively.

In case of Crop+Horticulture farms, Net returns was highest in paddy (Rs. 15,899) followed by jowar (Rs. 11,652.65) and maize (Rs. 8) and returns per rupee of investment were 1.34, 1.50 and 1.00, respectively. In perennial crops, net returns was higher in pomegranate (Rs. 3,89,552.98) followed by fig (Rs. 98,627.40) mango (Rs. 28,850) and banana (Rs. 16,858.25) and returns per rupee of investment were 2.18, 1.33, 1.42 and 1.05, respectively.

In case of Horticulture+Dairy farms, perennial crops *i.e.*, pomegranate, banana, fig and mango, the net returns was higher in pomegranate (Rs. 3,88,923.25) followed by fig (Rs. 1,33,475.95), mango (Rs. 43,987.43) and banana (Rs. 11,226.33) and returns per rupee were 2.16, 1.40, 1.47 and 1.03, respectively.

In case of Crop+Dairy+Horticulture system, the net returns was highest in paddy (Rs. 15,988) followed by jowar (Rs. 12,966.38) and maize (Rs. 5,096) and returns per rupee of investment were 1.34, 1.52 and 1.64, respectively. In perennial crops, the net return was highest in pomegranate (Rs. 3,90,155.95) followed by fig (Rs. 1,42,812.12), banana (Rs. 62,859.20) and mango (Rs. 61,582.40) and returns per rupee were 2.17, 1.42, 1.14 and 1.47, respectively.

2.2. Relative economics of subsidiary enterprises

The economics of major subsidiary enterprises under each farming system is presented in *Table 2*. Dairy is one of the major subsidiary enterprises practiced by Crop+Dairy, Horticulture+Dairy and Crop+Dairy+Horticulture households. The net returns per crossbreed cow was worked out on lactation basis which was maximum in Crop+Dairy (Rs. 86,391.10) farms followed by Horticulture+Dairy (Rs. 58,935.40) farms and Crop+Dairy+Horticulture (Rs. 50,324.70) farms. Similarly, the returns per rupee were 1.31, 1.34 and 1.36, respectively.

2.3. Annual farm household income

Farming system is aimed at the efficient use of resources to maximize the income. It also minimizes the production risk by spreading the risk to the various enterprises instead of one activity. The details of annual income of households derived from the major farming system are furnished in the *Table 3*. The Crop+Dairy+Horticulture (Rs. 8,62,897.70) households realized a maximum annual income of which 77.10 per cent was from horticulture enterprise followed by Horticulture+Dairy (Rs. 7,87,578.44) system of which 74.08 per cent was from horticulture enterprise, 18.71 per cent from dairy enterprise and 7.21 per cent from non-farm. With respect to Crop+Horticulture farm households the annual income was Rs. 5,90,946.38 and 90.08 per cent of total annual income was sourced from horticulture enterprise and 5.25 per cent from non-farm. Crop+Dairy farm households have realized least annual income of Rs. 2,17,982.21 of which 55.49 per cent was from dairy enterprise, 29.70 per cent from non-farm activities and only 14.82 per cent from crops.

2.4. Distribution of annual income among farm households

Here in *Table 4*. Zero correspond to perfect equality in distribution of income (*i.e.* everyone has the same income) and one corresponds to perfect inequality in distribution of income. Considering the inequality in distribution of benefits as indicated by Gini coefficients, the inequality was relatively lower in Crop+Dairy (0.45) farm households. The inequality was more in Crop+Dairy+Horticulture (0.53) farm households.

Table 1. **Relative economics of principal crops under major farming systems**

(Rs. / ha)

Sl. no.	Farming systems	Crop	Gross returns	Total cost	Net returns	Returns per rupee of expenditure
I.	C+D	Paddy	62,111.00	44,746.00	17,365.00	1.39
		Jowar	29,369.84	20,255.17	9,114.67	1.45
		Maize	50,622.00	44,800.00	5,822.00	1.13
II.	C+H	Paddy	63,122.00	47,223.00	15,899.00	1.34
		Jowar	34,747.58	23,094.93	11,652.65	1.50
		Maize	41,478.00	41,470.00	8.00	1.00
		Pomegranate	7,18,950.54	3,29,397.56	3,89,552.98	2.18
		Banana	3,77,710.00	3,60,851.75	16,858.25	1.05
		Fig	3,99,000.00	3,00,372.60	98,627.40	1.33
		Mango	68,825.00	97,675.00	28,850.00	1.42
III.	H+D	Pomegranate	7,23,553.38	3,34,630.13	3,88,923.25	2.16
		Banana	4,08,163.25	3,96,936.93	11,226.33	1.03
		Fig	4,65,393.60	3,31,917.65	1,33,475.95	1.40
		Mango	92,757.57	136745.00	43,987.43	1.47
IV.	C+D+H	Paddy	62,360.00	46,372.00	15,988.00	1.34
		Jowar	37,985.89	25,019.51	12,966.38	1.52
		Maize	13,469.00	8,373.00	5,096.00	1.64
		Pomegranate	7,22,804.63	3,32,648.68	3,90,155.95	2.17
		Banana	5,07,428.55	4,44,569.36	62,859.20	1.14
		Fig	4,82,790.00	339977.88	142812.12	1.42
		Mango	1,29,860.60	191443.00	61582.40	1.47

Note: C+D: Crop+Dairy,

C+H: Crop+Horticulture,

H+D: Horticulture+Dairy and

C+D+H: Crop+Dairy+Horticulture

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Table 2. **Relative economics of subsidiary enterprises under major farming systems**

(in Rupees)

Sl. no.	Farming Systems	Crops	Gross returns	Total cost	Net returns	Returns per rupee of expenditure
I.	C+D	Dairy (per crossbreed cow per Lactation)	365727.30	279336.20	86391.10	1.31
II.	H+D	Dairy (per crossbreed cow per Lactation)	230576.00	171640.60	58935.40	1.34
III.	C+D+H	Dairy (per crossbreed cow per Lactation)	189070.00	138745.30	50324.70	1.36

Note: C+D: Crop+Dairy,

C+H: Crop+Horticulture,

H+D: Horticulture+Dairy and

C+D+H: Crop+Dairy+Horticulture

Comment [G5]: See table 1

***Table 3*.** **Annual farm household net income of major farming systems from various sources**

(Rs./annum)

Sl. no.	Farming systems	Crops	Livestock	Horticulture	Non-farm income*	Total
I.	C+D	32,301.67 (14.82)	1,20,947.54 (55.49)	-	64,733.00 (29.70)	2,17,982.21 (100)
II.	C+H	27,559.65 (4.66)	-	5,32,353.73 (90.08)	31,033.00 (5.25)	5,90,946.38 (100)
III.	H+D	-	1,47,338.50 (18.71)	5,83,469.94 (74.08)	56,770.00 (7.21)	7,87,578.44(100)
IV.	C+D+H	34,050.38 (3.95)	1,25,811.75 (14.58)	6,65,285.57 (77.10)	37,750.00 (4.37)	8,62,897.70(100)
	All FS	23,477.93 (3.82)	98,524.45 (16.02)	4,45,277.31 (72.42)	47,571.50 (7.74)	6,14,851.18 (100.00)

Note: Figures in parentheses represent percentages to total

*Non-farm income includes income earned by working in others field for wages, working in Governmental organizations, working in private organizations or through own enterprises like kirana shops *etc.*

C+D: Crop+Dairy,

C+H: Crop+Horticulture,

H+D: Horticulture+Dairy

C+D+H: Crop+Dairy+Horticulture.

FS: Farming System

Comment [G6]: See table 1

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Table 4. **Gini coefficient for distribution of annual income among farm households in major farming systems**

Sl. no.	Farming Systems	Gini Coefficient
1	**C+D**	0.45
2	**C+H**	0.46
3	**H+D**	0.51
4	**C+D+H**	0.53

Note: C+D: Crop+Dairy,

C+H: Crop+Horticulture,

H+D: Horticulture+Dairy and

 C+D+H: Crop+Dairy+Horticulture

3. CONLUSION

The farming system has provided effective recycling of produce of one component as input on the other component/s. It also provided flow of cash to the farmers round the year by way of disposal of milk, meat, eggs and fruits. The dairy and the horticulture components contributed higher proportion to the total income in the existing farming systems. Dairy and horticulture enterprise are complementary to each other and found to sustain farm income. Cropping pattern of most of the farmers aimed at meeting their food grain needs and fodder requirement of livestock through their own farm production. Farmers generally choose one or two enterprise as their principal or main enterprise around which they develop their farming system – an enterprise that has high and sustained marginal returns.

4. REFERENCES

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Comment [G9]: See comment in G5

Comment [G10]: All authors under reference page not cited in the body of the work.