International Journal of Tropical Agriculture
Volume 39, Number (4) • 2021 : pp. 461-465
ISSN: 0254-8755

COMPARATIVE ANALYSIS OF COST, RETURNS AND LABOUR HOURS IMPACT ON PRODUCTION OF PADDY & WHEAT CROPS IN HARYANA WITH HIGHEST PRODUCING STATE IN INDIA

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Abstract: The analysis of cost of cultivation data collected from secondary sources reveals that in overall view the CAGR of Bullock labour is decreasing in Haryana then its competitive producing states. As we compare paddy and wheat crops with highest producing states and found that most of the inputs like machine labour, irrigation, insecticides were higher in Haryana. The CAGR found in Paddy crop in Haryana for Human Labour, Machine Labour, Seed, Fertlizers & manures, Insecticides and Irrigation Charges was 8.82, 8.10, 7.73, 4.74, 7.75 and 7.52 percent respectively and for the same crop in Punjab was 9.84, 6.12, 8.52, 3.92, 9.50 and 2.10 respectively. For Wheat crop it was found 8.72 & 5.52, 8.81 & 8.06, 6.87 & 7.73, 5.09 & 5.14, 4.94 & 4.85 and 8.64 & 3.07 in Haryana and Punjab respectively. So, Haryana should adopt cultivation practice from these states for those inputs which were higher side in Haryana. The cost analysis shows that the CAGR in total cost of Paddy and Wheat crop was higher in Haryana. The production of paddy and wheat crops compare with highest producing state shows that human labour observed negative significant in paddy. Non-significant found in wheat. Similarly in animal labour found negative significant in paddy and non-significant in wheat. The major yield gaps are due to lack of proper management practices.

Keywords: Cost of Cultivation, CAGR, Comparative analysis, costs, returns, Inputs, labour etc

INTRODUCTION

In recent years, cultivators are becoming more and more conscious about the costs and returns from agriculture in general and enterprises on one farm in particular. Cultivator relates the price, which he receives for the produce in the market with his cost of production. Government takes into account the cost of production in deciding the price policy and for declaring the minimum support prices for selected important crops. The commission which recommends the minimum support prices to government is aptly named as the 'Agricultural' Costs and Prices Commission. In view of the rapid spread of technology in agriculture, farmers are required to face a severe competition, particularly when the farm produce is to be exported. One of the ways to survive in the competition as also to gain better profit is to have a lower cost of production. For this farm costing or working out the cost of production of crops/enterprises, is necessary. The farm costing is also useful to the formers to keep watch on the expenditure which is increasing in the modern farming. The world be interested in knowing which item is becoming expensive. He can think of reducing the costs on such items. He can work out the cost per unit of a particular product. Of course for this, he has

Article History: Received: 9 December 2021; Revised: 18 December 2021; Accepted: 22 December 2021

to maintain regular farm records and accounts. At the end of the season/ year, he can analyse it. Farmer can compare the profitability of different crops and enterprises (Subsidiary occupations) on the farm. This would help him in deciding his farm plan for the next year.

OBJECTIVES OF THE STUDY

1. Comparison of input use pattern of major crops in Haryana along with major producing state.
2. To analysis the growth in costs and returns of major crops in Haryana viz a viz major producing state.
3. To study the pattern of labour hours used in the production of major crops in Haryana and highest producing state.

RESULTS

1. Comparison of input use pattern of major crops in Haryana along with highest producing state.

The compound growth rate was calculated for all the paddy and wheat crops of Haryana State along with highest producing state. In overall the CAGR of Bullock labour is decreasing in Haryana then its competitive producing states. It was The CAGR of Haryana state is higher for machine labour and fertilizer & manure then Punjab for Paddy & Wheat.

Table 1: Comparison of Haryana's average input use pattern of Paddy & Wheat crop with highest producing states

		CAGR (%)	
Inputs	*States*	*Paddy*	*Wheat*
Human Labour	**HRY**	8.82	8.72
	PUN	9.84	5.52
Bullock Labour	**HRY**	-	-
	PUN	2.38	-1.68
Machine labour	**HRY**	8.10	8.81
	PUN	6.12	8.06
Seed	**HRY**	7.73	6.87
	PUN	8.52	7.73
Fertilizer & Manure	**HRY**	4.74	5.09
	PUN	3.92	5.14
Insecticides	**HRY**	7.75	4.94
	PUN	9.50	4.85
Irrigation Charges	**HRY**	7.52	8.64
	PUN	2.10	3.07

Table 1 (i): Comparison of quinquennium average input use patter of paddy crop with Punjab

	Years	*1998-99 to 2002-03*	*2003-04 to 2007-08*	*2008-09 to 2012-13*	*2013-14 to 2017-18*	*CAGR (%)*
Haryana	Human Labour	6447.68	8211.46	15245.16	22215.09	**8.82**
Punjab		4108.77	4987.06	10868.32	15493.29	**9.84**
Haryana	Bullock Labour	74.43	94.30	126.04	36.69	**-**
Punjab		40.27	66.25	117.38	37.21	**2.38**
Haryana	Machine labour	1711.54	2866.58	3785.18	5802.55	**8.10**
Punjab		2620.30	3270.01	4698.56	6295.31	**6.12**
Haryana	Seed	461.36	583.29	958.85	1322.40	**7.73**
Punjab		524.20	639.73	1222.38	1702.77	**8.52**
Haryana	Fertilizer & Manure	2248.56	2708.22	3067.62	4655.12	**4.74**
Punjab		2138.96	2495.04	3305.26	3748.68	**3.92**
Haryana	Insecticides	798.07	1424.16	1729.67	2601.38	**7.75**
Punjab		1054.03	1415.94	2438.66	4135.14	**9.50**
Haryana	Irrigation Charges	2354.95	2997.93	4820.43	6528.90	**7.52**
Punjab		1969.76	2483.90	1904.16	2612.96	2.10

The use of inputs in Paddy as Human labour, bullock labour, seed and insectisides are more in Punjab then of Haryana but Machine labour, fertilizers and irrigation are used in Haryana at higher side.

Table 1 (ii): Comparison of quinquennium average input use patter of wheat crop with Punjab

	Years	*1998-99 to 2002-03*	*2003-04 to 2007-08*	*2008-09 to 2012-13*	*2013-14 to 2017-18*	*CAGR (%)*
Haryana	Human Labour	3648.73	4504.94	8897.56	12191.05	**8.72**
Punjab		2771.60	2654.50	4602.67	5704.97	**5.52**
Haryana	Bullock Labour	205.80	313.39	205.74	67.88	**-**
Punjab		76.38	76.60	76.05	48.41	**-1.68**
Haryana	Machine labour	2584.18	4071.53	6143.61	9042.33	**8.81**
Punjab		2867.76	4205.93	6235.42	8844.37	**8.06**
Haryana	Seed	915.70	1177.25	1784.46	2438.62	**6.87**
Punjab		736.09	984.31	1689.08	2179.65	**7.73**
Haryana	Fertilizer & Manure	2072.88	2500.41	3203.31	4351.78	**5.09**
Punjab		2467.55	2863.82	3786.71	5199.86	**5.14**
Haryana	Insecticides	498.63	663.82	684.87	1035.81	**4.94**
Punjab		846.94	1087.18	1317.03	1693.68	**4.85**
Haryana	Irrigation Charges	1328.73	1890.28	3104.25	4303.83	**8.64**
Punjab		350.66	500.59	403.32	527.95	3.07

The use of inputs in Wheat as seed and fertilizers is more in Punjab then of Haryana but Human labour, Machine labour, insectiside and irrigation are used in Haryana at higher side.

II. To analysis the growth in costs and returns of major crops in Haryana viz a viz highest producing state

The CAGR in total cost of Paddy & Wheat crop is higher in Haryana then Punjab.

Table 2: Growth in costs and returns of Paddy & Wheat.

		CAGR (%)	
Inputs		*Paddy*	*Wheat*
Total Cost (Rs./ha)	**HRY**	8.55	8.22
	PUN	8.37	7.04
Cost of Production (Rs./qtl)	**HRY**	6.74	7.16
	PUN	6.92	6.48
Value of Main Production (Rs./ha)	**HRY**	10.02	7.60
	PUN	9.21	7.42
Value of By-Product (Rs./ha)	**HRY**	10.59	9.85
	PUN	9.40	7.23

The CAGR in total cost for paddy crop is higher in Haryana then Punjab state {Table-2 (i)}.

Table 2 (i): Growth in costs and returns of paddy crop in Haryana and Punjab

	Years	*1998-99 to 2002-03*	*2003-04 to 2007-08*	*2008-09 to 2012-13*	*2013-14 to 2017-18*	*CAGR (%)*
Haryana	Total Cost (Rs./ha)	23184.65	32172.23	51937.00	78935.48	**8.55**
Punjab		23095.50	31173.88	53155.59	74743.28	**8.37**
Haryana	Cost of Production (Rs./qtl)	589.55	660.35	1195.10	1498.88	**6.74**
Punjab		413.94	472.36	825.70	1074.18	**6.92**
Haryana	Value of Main Production (Rs./ha)	26260.06	41965.99	70371.66	110226.52	**10.02**
Punjab		29417.96	43174.19	72743.96	108086.89	**9.21**
Haryana	Value of By-Product (Rs./ha)	425.05	708.59	1072.36	1933.76	**10.59**
Punjab		188.94	313.89	751.88	615.97	9.40

The CAGR in total cost for Wheat crop is higher in Haryana then Punjab state {Table-2 (ii)}.

Table 2(ii): Growth in costs and returns of wheat crop in Haryana and Punjab

	Years	*1998-99 to 2002-03*	*2003-04 to 2007-08*	*2008-09 to 2012-13*	*2013-14 to 2017-18*	*CAGR (%)*
Haryana	Total Cost (Rs./ha)	20876.87	27180.06	45269.61	66112.21	**8.22**
Punjab		21851.30	27217.20	43011.88	58217.55	**7.04**
Haryana	Cost of Production (Rs./qtl)	434.15	573.83	842.70	1211.71	**7.16**
Punjab		435.24	563.98	870.85	1080.31	**6.48**
Haryana	Value of Main Production (Rs./ha)	24901.94	30671.05	53695.52	70126.36	**7.60**
Punjab		26879.96	32836.91	53022.83	74429.16	**7.42**
Haryana	Value of By-Product (Rs./ha)	3862.62	5587.10	10756.75	14968.73	**9.85**
Punjab		3175.71	4078.30	6401.24	8882.12	7.23

11. To study the impact of labour hours to the production of major crops in Haryana and highest producing state

The impact of labour hours to the production of major crops in Haryana and highest producing state presented in Table 3. The production of paddy and wheat crops compare with highest producing state i.e. Punjab, shows negative and significant behavior in paddy crop with human labour (-0.044 and -0.12) in both the state and animal labour also shows negative and significant behavior in Haryana but positive and significant in Punjab, which indicating 2.975 per cent increase in labour hour increases one per cent in production. Almost 36 per cent and 48.19 per cent variation could be explained by these variables in Haryana and Punjab state in paddy crop, respectively. In wheat crop human and animal labour shows negative and non-significant behavior in both the states.

Table 3: Impact of labour hours to the production of Paddy, Wheat and Cotton in Haryana with highest producing states

Variables	PADDY				WHEAT			
	HRY		PUN		HRY		PUN	
	Coefficients	t-value	Coefficients	t-value	Coefficients	t-value	Coefficients	t-value
Constant	72.427		108.679		50.402		47.966	
Human Labour (Man hours)	-0.044* (0.02)	-2.604	-0.12* (0.03)	-4.193	-0.021^{NS} (0.02)	-853	-0.006^{NS} (0.02)	-383
Animal Labour (Pair Hours)	-0.57* (0.29)	-1.953	2.975* (1.49)	2.001	-0.278^{NS} (0.16)	-1.724	-1.614^{NS} (1.32)	-1.219
R^2	0.3561		0.4819		0.3410		0.2063	

Note: * denote significance at 5 per cent levels, respectively.

NS means non-significant. Figures within the parentheses indicate the standard error.

SUGGESTIONS FOR SUSTAINABILITY IN PRODUCTION OF MAJOR CROPS IN HARYANA

The major yield gaps are due to lack of proper management practices. These shall be narrowed down by undertaking appropriate interventions and evolving strategic Road Map as we move forward to implement this agriculture policy. In this context, some action points are proposed as under: Action Points

- To follow scientific land use planning taking into account competing uses, climate change, cropping system, soil health, water availability, declining TFP, etc.
- Production, testing and distribution/ sale of improved seeds, tools, small farm implements and machinery, by involving private sector for greater participation through creation of enabling environment.
- Support for viable units of integrated farming systems (IFS), with emphasis on greater diversification. Also to promote

inter-cropping/ multiple cropping to harness spatial and temporal advantages of different crops and to encourage organic agriculture in selected areas to reduce and stabilize cost of cultivation.

- Promoting lab to land and land to lab activities at quick pace and Organize farmer field schools (with emphasis on women farmers) and impart training on various aspects of IFS, value addition, in the use of best production practices involving champion farmers. Organize exposure visits of farmers and development workers for cross learning to the sites of success stories.
- Strengthening of research on climate smart agriculture would increase the productivity of agriculture in the state.

CONCLUSION

On analysis of data collected from cost of cultivation scheme from secondary sources in overall view the CAGR of Bullock labour is decreasing in Haryana then its competitive producing states. As we compare paddy and wheat crops with highest producing states and found that most of the inputs like machine labour, irrigation, insecticides were higher in Haryana. So, Haryana should adopt cultivation practice from these states for those inputs which were higher side in Haryana. The cost analysis shows that the CAGR in total cost of Paddy and Wheat crop was higher in Haryana. The production of paddy and wheat crops compare with highest producing state shows that human labour observed negative significant in paddy. Non-significant found in wheat. Similarly in animal labour found negative significant in paddy and non-significant in wheat. The major yield gaps are due to lack of proper management practices.

References

Chatterjee S. (2017). State-wise comparative analysis of different cost components and factor productivity of paddy in India during last decade. RASHI 2 (1) : 83-97

Pushpa et. al.(2017). Comparative study on cost of cultivation and economic returns from major crops in eastern region of Uttar Pradesh. IJAEB,10(3): 387-399

Erenstein Olaf (2010). A comparative analysis of rice–wheat systems in Indian Haryana and Pakistan Punjab. Land Use Policy 27(3):869-879

https://www.indiaagronet.com/indiaagronet/farm_management/CONTENTS/cost_concepts.htm