RESEARCH ARTICLE

COMPARATIVE ECONOMIC ANALYSIS OF RICE IN KHARIF AND RABI SEASON IN GUNTUR DISTRICT OF ANDHRA PRADESH

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Received-06.02.2020, Revised-24.02.2020

Abstract: Rice (Oryza sativa) is the second highest produced grain in the world after maize. World rice acreage is 161. 1 m ha with world production volume of milled rice is 484.1mt during 2016-2017. The present investigation was conducted in Guntur District of A.P. The study found that cost of cultivation of Kharif rice showed that on an average cost of cultivation per hectare of Kharif rice crop on overall basis was found to be cost A1 that was paid out cost Rs.31473.56 followed by Rs.32977.99 (cost B1), Rs.54791.26 (cost B2), Rs.35961.33 (cost C1), Rs.57774.59 (cost C2) and Rs.63552.43 (cost C3) respectively. While the cost of cultivation of Rabi rice showed that on an average cost of cultivation per hectare of Rabi rice crop was found to be Rs.28891.72 (cost A1) followed by Rs.30396.15 (cost B1), Rs.55213.45 (cost B2), Rs.32989.82 (cost C1), Rs.57807.17 (cost C2) and Rs.63588.10 (cost C3). The average yield in Kharif and rabi season were found to be 66.22 quintal and 73.20 quintal per hectare of total grain yield and 23.98 quintal and 25.73 per hectare of by-product yield. Data revealed that in kharif and rabi season the rice growers realized on an average of 1:2.05 and 1:2.30 as B.C. ratio in rice production in Guntur district of Andhra Pradesh.

Keywords: Cost, Production, Income, Profitability, Rice

INTRODUCTION

Rice (Oryza sativa) is the second highest produced grain in the world after maize. World rice acreage is 161. 1 m ha with world production volume of milled rice is 484.1mt during 2016-2017. The yield rate of paddy in Andhra Pradesh is higher than the average yield rate for India at 2178 kg/ha (Source:- Socio- Economic Survey of Andhra Pradesh, 2015-2016). Rice is grown in both kharif & rabi seasons in almost all the districts of Andhra Pradesh. The area under paddy in Kharif 2015-16 is estimated at 15.20 lakh hectares, the production of paddy in Kharif 2016-17 is estimated at 79.04 lakh tones. The estimated area under paddy in Rabi 2016-17 is expected to be 6.20 lakh hectares and production under paddy in Rabi 2016-17 is estimated at 41.29 lakh tones. (Source:-Socio-Economic Survey 2015-2016 & Agricultural Statistics at a Glance 2015-2016).

Objectives

• To work out the cost and return of rice in both seasons of study area.

• To identify the problems faced by rice growers in both the seasons and to overcome them.

MATERIALS AND METHODS

Selection of the study area

Andhra Pradesh state has 13 districts. Out of 13 districts of Andhra Pradesh, Guntur district is rice producing area. Therefore Guntur district was selected for the present study.

Selection of the blocks

Guntur district has 6 blocks. Among them one block that is Piduguralla was selected for the present study on the basis of acreage under rice crop.

Selection of villages and respondents

From selected block 3 villages were selected randomly. viz., Brahmanapalli, Veerapuram and Thummalacheruvu for the present study. From the list of rice growers, 20 rice growers from each village were selected randomly, thus total 60 rice growers were selected for this purpose of the study.

RESULT AND DISCUSSION

Cost of cultivation of rice in both Kharif and Rabi seasons

The total cost of cultivation of Kharif rice of sample farms has been observed on overall average basis as Rs.57774.59 per hectare, total variable cost was 55.27% and the share of material input cost was maximum and found to be 39.15% followed by labor cost 16.11%, interest on working capital 1.93% and fixed cost 44.73%.

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Table 1. Cost of cultivation of rice in Kharif season on different size of holding. (Rs./ha)

S.No.	Particulars		Size group			Average
			Small	Medium	Large	
A. Operational cost						
	Human labour	Family	2845 (5.07)	2610 (4.47)	3495 (5.92)	2983.33 (5.16)
		Hired	1859.27 (3.31)	2051.82 (3.51)	1450.88 (2.46)	1787.32 (3.09)
	Machine power + Bullock power		4704.27 (8.39)	4439.83 (7.61)	4474.84 (7.58)	4539.64 (7.85)
	Total labour cost		9408.54 (16.79)	9101.65 (15.60)	9420.72 (15.97)	9310.30 (16.11)
B. Material cost						
	Seed		2380 (4.24)	2390 (4.09)	2430 (4.12)	2400 (4.15)
	Fertilizer and manures		7641.99 (13.64)	8064.71 (13.82)	8080.14 (13.70)	7928.94 (13.720
	Plant protection measures		6569.05 (11.72)	6828.03 (11.70)	6903.91 (11.70)	6766.99 (11.71)
	Irrigation charges		2921.15 (5.21)	2956.42 (5.06)	3070.10 (5.20)	2982.55 (5.15)
	Other charges		2552.00 (4.55)	2614.00 (4.48)	2455.00 (4.16)	2540.33 (4.39)
	Total material cost		22064.19 (39.38)	22853.16 (39.17)	22939.15 (38.90)	22618.83 (39.15)
	Total operational cost		31472.73 (56.17)	31954.81 (54.77)	32359.87 (54.87)	31929.13 (55.27)
C. Fixed cost						
	Interest on working capital @10%		1101.54 (1.96)	1118.41 (1.91)	1132.59 (1.92)	1117.51 (1.93)
	Rental value of land ($1/6^{th}$ of gross income)		20224.50 (36.10)	22114.40 (37.90)	23100.90 (39.17)	21813.26 (37.72)
	Depreciation		1485.00 (2.65)	1455.00 (2.49)	1200.73 (2.03)	1380.24 (2.39)
	Revenue/ Tax		30 (0.05)	30 (0.05)	30 (0.05)	30 (0.05)
	Interest on fixed cost @5%		1707.50 (3.04)	1662.60 (2.85)	1143.20 (1.93)	1504.43 (2.60)
	Total fixed cost		24548.54 (43.82)	26380.41 (45.22)	26607.42 (45.12)	25845.46 (44.73)
	Total cost		56021.27 (100)	58335.22 (100)	58967.29 (100)	57774.59 (100)

(Figures in parentheses show percentage to total cost)

The data of the Table 1 revealed that the total cost of cultivation of Rabi rice of sample farms has been observed total variable cost was 49.34% and the share of material input cost was maximum found to be 32.42% followed by labour cost 16.92%, interest on working capital 1.72% and fixed cost 50.65%. Rental value of land 42.90% and interest on fixed capital 2.6%, respectively.

Table 2. Cost of cultivation ofrice in Rabi season on different size of holding. (Rs./ha)

S.No.	Particulars		Size group			Average
			Small	Medium	Large	
A. Operational cost						
	Human labour	Family	3475 (6.29)	2239 (3.84)	2067 (3.44)	2593.66 (4.48)
		Hired	1859.27 (3.31)	2051.82 (3.51)	1450.88 (2.46)	1787.32 (3.09)
	Machine power + Bullock power		1950.84 (3.35)	2084.77 (3.58)	3470.03 (5.77)	2501.88 (4.32)
	Total labour cost		10434.32 (18.9)	8271.56 (14.2)	10648.14 (17.72)	9784.67 (16.92)
B. Material cost						
	Seed		2340 (4.24)	2365 (4.06)	2390 (3.97)	2365 (4.09)
	Fertilizer and manures		6353.88 (11.51)	7363.90 (12.65)	7899.63 (13.15)	7205.80 (12.46)
	Plant protection measures		5070.34 (9.18)	6205.35 (10.66)	7458.05 (12.40)	6244.58 (10.80)
	Irrigation charges		3138.24 (5.68)	3301.40 (5.67)	2338.23 (3.89)	2925.95 (5.06)
	Total material cost		16902.46 (30.63)	19235.65 (33.06)	20085.91 (33.44)	18741.34 (32.42)
	Total operational cost		27336.78 (49.54)	27507.21 (47.27)	30734.05 (51.17)	28526.01 (49.34)
C. Fixed cost						
	Interest on working capital @ 10%		956.78 (1.73)	962.75 (1.65)	1075.69 (1.79)	998.40 (1.72)
	Rental value of land ($1/6^{th}$ of gross income)		22349.30 (40.5)	25455.10 (43.74)	26647.50 (44.36)	24817.30 (42.90)
	Revenue/ Tax		30 (0.05)	30 (0.05)	30 (0.05)	30 (0.05)
	Interest on fixed cost @5%		1707.50 (3.04)	1662.60 (2.85)	1143.20 (1.93)	1504.43 (2.60)
	Total fixed cost		27840.29 (50.45)	30675.95 (52.72)	29327.07 (48.82)	29281.10 (50.65)
	Total cost		55177.07 (100)	58183.16 (100)	60061.12 (100)	57807.12 (100)

(Figures in parentheses show percentage to total cost)

Aggregate cost of Kharif rice cultivation:

From the Table 2 it has been observed that the cost of cultivation of Kharif rice showed that on an average cost of cultivation per hectare of Kharif rice crop on overall basis was found to be cost A1 that was paid out cost Rs.31473.56 followed by Rs.32977.99 (cost B1), Rs.54791.26 (cost B2), Rs.35961.33 (cost C1), Rs.57774.59 (cost C2) and Rs.63552.43 (cost C3) respectively.

Table 3. Aggregate cost of rice in Kharif season on different size of holdings (Rs./ha)

S.No.	Particulars	Size group			Average
		Small	Medium	Large	
1	Cost A1	31244.27	31948.22	31228.19	31473.56
2	Cost B1	32951.77	33610.82	32371.39	32977.99
3	Cost B2	53176.27	55725.22	55472.29	54791.26
4	Cost C1	35796.77	36220.82	35866.39	35961.33
5	Cost C2	56021.27	58335.22	58967.29	57774.59
6	Cost C3	61623.95	64169.23	64864.11	63552.43

Aggregate cost of Rabi Rice cultivation:

From the Table 3 it is revealed that the cost of cultivation of Rabi rice showed that on an average cost of cultivation per hectare of Rabi rice crop was found to be Rs.28891.72 (cost A1) followed by Rs.30396.15 (cost B1), Rs.55213.45 (cost B2), Rs.32989.82 (cost C1), Rs.57807.17 (cost C2) and Rs.63588.10 (cost C3).

Table 4. Aggregate cost of rice in Rabi season on different size of holdings (Rs./ha)

S.No.	Particulars	Size group			Average
		Small	Medium	Large	
1	Cost A1	27645.27	28826.46	30203.42	28891.72
2	Cost B1	29352.77	30489.06	31346.62	30396.15
3	Cost B2	51702.07	55944.16	57994.12	55213.45
4	Cost C1	32827.77	32728.06	33413.62	32989.82
5	Cost C2	55177.07	58183.16	60061.12	57807.12
6	Cost C3	60694.91	64002.15	66067.25	63588.10

Productivity of rice production in Kharif and Rabi seasons:

Table 5. Productivity of rice in Kharif season on different size of holding (q/ha)

S.No.	Particulars	Size group			Average
		Small	Medium	Large	
1	Total grain yield (q/ha.) Kharif	62.48	66.45	69.73	66.22
2	Total by-product yield (q/ha.) Kharif	23.47	23.93	24.56	23.98
3	Total grain yield (q/ha.) Rabi	71.5	72.81	75.3	73.203
4	Total by-product yield (q/ha.) Rabi	23.09	26.85	27.25	25.73

From the Table 5 it has been observed that the average yield in Kharif season was found to be 66.22 quintal per hectare of total grain yield and 23.98 quintal per hectare of by-product yield. The average yield in rabi season was found to be 73.20 quintal per hectare of total grain yield and 25.73 quintal per hectare of by-product yield.

Profitability from rice cultivation in Kharif and Rabi seasons:

Table 6. Profitability of rice in Kharif season on different size of holding. (Rs./ha.)

S.No.	Particulars	Size group			Average
		Small	Medium	Large	
	Kharif season				
1	Gross income	121347	132686.50	138605.63	130879.43
2	Net income	59723.05	68517.27	73741.52	67327.28
3	Family labour income	68170.72	76961.27	83133.33	76088.44
4	Farm business income	90102.72	100738.27	107377..43	99406.14
5	Input-output ratio	1:1.96	1:2.06	1:2.13	1:2.05
	Rabi season				
1	Gross income	134096.00	152731.00	159884.76	148904
2	Net income	73401.10	88728.80	93817.46	85316
3	Family labour income	82393.93	96786.84	101890.64	93690
4	Farm business income	106450.73	123904.54	129681.34	120012
5	Input-output ratio	1:2.20	1:2.38	1:2.42	1:2.33

The overall gross income per hectare of Kharif and rabi rice were found to be Rs.130879.71 and Rs. 148904 per hectare. The net income were found to be an average of Rs.67327.28 and Rs. 85316 per hectare. The trend of net income revealed that it was increased with increasing size of holding. The other profitability measures reveal that on an average the rice growers realized that Rs.76088.44 and Rs. 93690 per farm as family labour income Rs.99406.14 and Rs. 120012 per farm as farm business income in Kharif and rabi season respectively. The B.C. ratio determines the return per rupee investment found in kharif and rabi season the rice growers realized on

an average of 1:2.05 and 1;2.33 as B.C. ratio in rice production respectively.

Comparative productivity and profitability of rice in Kharif and Rabi seasons:

The main aim of the study is to measure the relative productivity and profitability of rice cultivation on per hectare basis under Kharif and Rabi seasons.

Table 7. Average productivity and profitability of rice crop in both Kharif and Rabi seasons: (Rs./ha.)

S.No.	Particulars	Kharif	Rabi	Increased over kharif
1	Total grain yield (q/ha.)	66.22	73.20	6.98
2	Total by-product yield q/ha.)	23.98	25.73	1.75
3	Gross income	130879.70	148904.00	18024.29
4	Net income	67327.28	85316.00	17988.72
5	Family labour income	76088.44	93690.00	17601.56
6	Farm business income	99406.14	120012.00	20605.86
	Input-output ratio	1:2.05	1:2.33	1:0.28

Study revealed that the average rice growers realized additional total grain yield 6.98 quintal per hectare with total by-product yield 1.75 quintal per hectare in rabi over kharif season due to less cultural practices like, weeding, plant protection chemicals, fertilizers and manures in Rabi over Kharif season. On the other hand, the rice growers also realized additional net income of RS.17988.72 per hectare in rabi over kharif season. Although, the return over rupee investment was higher in rabi but it was very nominal. Hence, the study revealed that the rice growers could realize higher productivity and higher profitability in rabi over kharif season.

CONCLUSION

The cost of cultivation of kharif and rabi rice showed that on an average cost of cultivation per hectare of kharif rice crop on overall basis were found to be total Rs.63552.43 (cost C3) and Rs.63588.10 (cost C3) respectively. The overall gross income per hectare of kharif and rabi rice were found to be Rs.130879.71 and Rs. 1308789.71 per hectare. The net income was found to be an average of Rs.67327.28 and Rs. 67327.28 per hectare. The B.C. ratio determines the return per rupee investment found in kharif and rabi season the rice growers realized on an average of 1:2.05 and 1:2.33 as B.C. ratio in rice production.

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