



Costs and returns on Different Size Groups of Paddy Farms in Guntur District of Andhra Pradesh

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ABSTRACT

Break-up cost of cultivation in *kharif* season is Rs.21878.72, Rs.23,845 and Rs.22,774 per hectare on small, large and average farms respectively. In *rabi* season, Rs.25,176, Rs.26,548 and Rs.25,789 on small, large and average farms observed respectively. The net income to the farmers in *kharif* season is less when compared to *rabi* season. Except for family labour income in *rabi* season, other farm business measures are more on large farms than small farms in both seasons.

Key words : Paddy farms

In the new millennium, the challenges to India's primary sector are quite different from those faced in the last century, the enormous pressure to produce more, food at lower cost, with less exploitation of natural resources, for a competitive global market is a tough task to the farmers. This calls for special efforts to manage the key inputs without eroding the ecological balance to face the challenges unmeeting the growing needs of the country. The emerging stagnation in production during the last decade (1990s) and in the wake of problems like monoculture in some areas of the country, creates further severe environmental problems, decline in water table, deteriorating soil fertility, perpetuation of pests etc. and some areas shifting over to an alternative cropping pattern, the food security of the country would be jeopardized. We have to produce more from the same area to feed the growing population.

The cost of production of the crop is useful for the purpose of modeling the response of agricultural production to changes in the price of outputs and inputs. However the cost of production of various items in relation to the total cost drive out more explicit conclusions.

MATERIAL AND METHODS

The data used in this study are based on the results of survey of agricultural production in Guntur district of Andhra Pradesh in India. The survey is on paddy farms for the year 2006-07. In a three-stage sampling, first top three mandals were selected by arranging all the mandals of the district in the descending order based on the major paddy producing areas. Secondly, two villages from each mandal were selected. Thirdly, a sample of 60

farmers each for *kharif* and *rabi* seasons were selected randomly from all the six villages. Thus, the total sample is 120. By interviewing the sample farmers using a pre-tested questionnaire, the necessary data was collected.

RESULTS AND DISCUSSION

Break-up cost of cultivation

The aggregate level analysis of costs and returns is attempted as the policy decisions are taken considering these results and to find out the major input factors in the production process. The break-up costs by farm size are presented in tables 1 and 2.

Among the operational costs, human labour constituted the major cost component both in *kharif* and *rabi* seasons. It was 27.18, 27.26 and 27.62 per cent on large, large and average farmers respectively in *kharif* season and was 27.69, 26.84 and 27.28 per cent of the total costs for the above three size farms respectively during *rabi* season.

Bullock labour cost is very low in *kharif* season which accounts for 0.23 and 0.11 percentages for both small and average farms and negligible for large farms. In *rabi* season also, the bullock labour cost is negligible for small, large and average farms as most of the farmers are using tractors for majority of the operations in paddy farms. Machine labour showed direct relationship with farm size both in *kharif* and *rabi* seasons. The data revealed that majority of the farmers were not using bullock labour intensively.

Machine power turned out to be the third cost component in *kharif* and seventh cost in *rabi* among the operational costs. The expenditure on this item on small, large and average farms was Rs. 852.56

(3.39%), Rs. 1030 (3.89%) and Rs. 941.28 (3.65%) during *rabi* and in *kharif* for the same groups, it was Rs. 1749.62 (8.00%), Rs. 2163 (9.07%) and Rs. 1956.31 (8.59%) respectively.

The cost component on Manures was found to be increased with increase in farm size and it was worked out to be Rs. 796, Rs. 864 and Rs. 830 for small, large and average farms of *kharif*. It occupied 3.66, 3.75 and 3.72 per cent of the total cost of cultivation for the corresponding three groups in the same season. The application of Manures is not in practice in *rabi* paddy crop in all the farms. The expenses towards the fertilizers formed the second important cost factor in both the seasons. It ranged from Rs. 2141 (9.78%), Rs. 2185 (9.16%) and Rs. 2163 (9.50%) for small, large and average size groups in *kharif* and Rs. 3849 (15.29%), Rs. 3935 (14.87%) and Rs. 3892 (15.09%) for the same size groups in *rabi* season. A direct relationship with farm size is observed in relation with the expenses towards fertilizers in both *kharif* and *rabi* seasons.

The cost on pesticides occupied third position in terms of percentage in *rabi* season and its use was less occupying fifth position in *kharif*. This input accounted for Rs. 848 (3.88%), Rs. 913 (3.83%) and Rs. 881 (3.87%) on small, large and average groups of *kharif* and Rs. 1398 (5.55%), Rs. 1495 (5.65%) and Rs. 1446.5 (5.61%) for the same size groups of *rabi* season. The plant protection chemicals exhibited direct relationship with farm size in both *kharif* and *rabi* seasons.

The investment pattern in money value on seeds revealed direct relationship with farm size in *kharif* seasons and also in *rabi* season. The costs on irrigation were included in land revenue as the farmers are not paying separate water charges. The interest on working capital showed direct relationship with farm size in both the seasons and it is observed high in *rabi* season.

Total operational costs were of the order of Rs. 14,813.57 (67.70%), Rs. 16,052.63 (67.32%) and Rs. 15,433.1 (67.76%) in *kharif* and Rs. 16,697.88 (66.33%), Rs. 17,282.25 (65.32%) and Rs. 16,990.07 (65.88%) in *rabi* for small, large and average farms respectively. Operational costs showed an increasing trend with increase in farm size in both *kharif* and *rabi* seasons. *Rabi* recorded higher operational costs over *kharif*.

A glance at total fixed costs showed a direct relationship with farm size in both the seasons. Among the fixed costs, rental value on owned land accounted for a lion share with Rs. 6,331.15

(28.94%), Rs. 6,658.37 (27.92%) and Rs. 6,407.48 (28.14%) on small, large and average farms respectively in *kharif* while in *rabi*, it was Rs. 7,862.88 (31.23%), Rs. 8,447.75 (31.93%) and Rs. 8127.33 (31.52%). Rental value of owned land and farm size were found to be directly proportional in both the seasons because large farms recorded higher gross returns per hectare. Depreciation exhibited increasing trend with farm size in both seasons and other fixed costs were resulted from land revenue, rent for leased-in-land and interest on fixed capital.

Total fixed costs thereby worked out to Rs. 7,065.15 (32.31%) Rs. 7,792.37 (32.68%) and Rs. 7,341.48 (32.24%) on small, large and average farms in *kharif* and Rs. 8,477.88 (33.67%), Rs. 9,175.75 (34.68%) and Rs. 8,798.83 (34.12%) for corresponding size groups in *rabi* season. Total costs of cultivation touched Rs. 21,879, Rs. 23,845 and Rs. 22,774 in *kharif* and Rs. 25,176, Rs. 26,458 and Rs. 25,789 in *rabi* for small, large and average farm situations. Total costs indicated direct relationship with the farm size in both the seasons thereby explaining with the economics of scale relationship.

Cost of cultivation according to cost concepts: The per hectare cost of cultivation according to cost concepts for the two seasons *i.e.* *kharif* and *rabi* is presented in table 3.

Cost A₁

According to cost A₁, the per the hectare cost of cultivation of *kharif* paddy was Rs. 12,855.57, Rs. 14,606.63 and Rs. 13,731.1 on small, large and average farms respectively. In *rabi* season cost A₁ worked out to Rs. 14,877.88, Rs. 15,907.25 and Rs. 15,392.57 for above three groups respectively. The cost exhibited an increasing trend in both *kharif* and *rabi* seasons.

Cost A₂

It was Rs. 13,002.57, Rs. 15,036.63 and Rs. 14,019.6 for small large and average farms in *kharif* season as against Rs. 14,969.88 Rs. 15,987.25 and Rs. 15,478.57 for the same size groups respectively in *rabi* season. Here also the same trend of costs as that of cost A₁ was observed in both the seasons.

Cost B

As per cost B, the cost of cultivation for *kharif* season was Rs. 19,495.72, Rs. 21,945 and Rs. 20,633.08 as against Rs. 23,005.76 Rs. 24,658 and

Rs. 23,803.9 for *rabi* season on small, large and average farms. The cost B was more on large farms in both the seasons due to the higher rental value of owned land.

Cost C

Cost C is the total cost of cultivation which varied from Rs. 21,879 to Rs. 23,845 for the small and large groups with Rs. 22,775 on average situations in *kharif* as against Rs. 25,176, Rs. 26,458 and Rs. 25,789 for the above three types of farms respectively in *rabi* season. Here the cost C showed direct relationship in both *kharif* and *rabi* seasons. This can be attributed to the higher operational costs particularly towards family labour on large farms in *rabi* season.

Farm business measures: To find out the profitability of farm business measures *viz.*, net income, family labour income, farm business income and farm investment income were worked out and presented in the table 4.

Gross output

Table 4 revealed that gross income ranged from Rs. 34,740 on small farms to Rs. 37,416 on large farms with an average of Rs. 36,078 in *kharif* season. It was Rs. 40,257, Rs. 41,728 and Rs. 40,992 respectively in *rabi* season. The Gross output increased with farm size because of higher productivity and it is more in *rabi*.

Net income

It varied from Rs. 12,861 to Rs. 13,571 on small and large farms with an average of Rs. 13,303 in *kharif* season and it was Rs. 15,081 Rs. 15,270 and Rs. 15,203 on small, large and average farms respectively in the *rabi* season. Net income too increased with farm size and it varied less with the season *i.e.* growing paddy in both the seasons are found to be beneficial.

Farm business income

Farm business income was also high on large farms in both seasons and it was Rs. 21,884.43, Rs. 22,809.37 and Rs. 22,346.9 in *kharif* season and Rs. 25,379.12, Rs. 25,820.75 and Rs. 25,599.43 in *rabi* season on small, large and average farms respectively. The farm business income was

also high for the farmers growing *rabi* paddy than for the farmers growing *kharif* paddy.

Family labour income

It was amounted to Rs. 15,244.28, Rs. 15,471 and Rs. 15,444.92 for small, large and average farms in *kharif* season and Rs. 17,251.24, Rs. 17,070 and Rs. 17,188.1 for the same three groups in *rabi* season. It also showed direct relationship with farm size in *kharif* season and inverse relationship in *rabi* season. The family labour income was high in *rabi* than in *kharif*.

Farm investment income

It varied directly with farm size and values worked out to Rs. 6,640, Rs. 7,338 and Rs. 6,901 on small, large and average farms in *kharif* season and Rs. 8,127, Rs. 8,750 and Rs. 8,411 for the same groups in *rabi* season. In both seasons, farm business measures showed direct relationship with farm size. The farm investment income too was greater for the *rabi* paddy farmers than the *kharif* paddy farmers.

Conclusions

It can be concluded from the cost of cultivation of paddy that the operational costs as well as fixed costs were on a higher plane in *rabi* over *kharif* as a result of higher inputs use like fertilizers, plant protection chemicals and also due to the higher per hectare yields. On the average situation, the cost of cultivation according to all four cost concepts was more in *rabi* season due to the use of more resources. On the whole, the family labour and money investment on *rabi* paddy gets more remuneration than in *kharif* paddy. From the above conclusions, it can be suggested that human labour component was high in both the seasons. This disguised unemployment can be better utilized by rural industrialization. Costs of the fertilizers should need to keep within reach of majority of resource poor farmers. The shortage and high cost of fertilizers associated with entry of India in a big international market should be avoided. The farmers should be motivated to use the credit for agricultural purposes only. Farmers' advisory services should be introduced through State Agriculture Department at village level.

Table 1. Break-up cost cultivation of paddy in *kharif* season, 2006-07 (Rs. ha⁻¹)

S. No	Item	Small	Large	Average
1	Human labour (total)	6083	6500	6291.5
	a. Family labour	2383	1900	2141.5
	b. Hired labour	3700	4600	4150
		(27.8)	(27.26)	(27.62)
2	Bullock labour	50	—	25
		(0.23)		(0.11)
3	Machine labour	1749.62	2163	1956.31
		(8.00)	(9.07)	(8.59)
4	Seeds	800	894	847
		(3.66)	(3.75)	(3.72)
5	Manures	796	864	830
		(3.64)	(3.62)	(3.64)
6	Fertilizers	2141	2185	2163
		(9.78)	(9.16)	(9.50)
7	Pesticides	848	913	880.5
		(3.88)	(3.83)	(3.87)
8	Irrigation	700	750	725
		(3.2)	(3.15)	(3.18)
9	Interest on working capital	1645.95	1783.63	1714.79
		(7.52)	(7.48)	(7.53)
	Total operational costs	14813.57	16052.63	15433.1
		(67.70)	(67.32)	(67.76)
10	Depreciation	100	150	125
		(0.46)	(0.63)	(0.55)
11	Land revenue and cess	325	304	314.5
		(1.49)	(1.28)	(1.38)
12	Rental value of owned land	6331.15	6658.37	6407.48
		(28.94)	(27.92)	(28.14)
13	Interest on fixed capital	162	250	206
		(0.74)	(1.05)	(0.90)
14	Rent for leased – in land	147	430	288.5
		(0.67)	(1.80)	(1.27)
	Total fixed costs	7065.15	7792.37	7341.48
		(32.30)	(32.68)	(32.24)
	Total costs	21878.72	23845	22774.58
		(100)	(100)	(100)

Note: Figures in parenthesis indicate the percentages to total.

Table 2. Break-up cost cultivation of paddy in *rabi* season, 2006-07 (Rs. ha⁻¹)

S. No	Item	Small	Large	Average
1	Human labour (total)	6970	7100	7035
	a. Family labour	2170	1800	1985
	b. Hired labour	4800	5300	5050
		(27.69)	(26.84)	(27.28)
2	Bullock labour	—	—	—
3	Machine labour	852.56	1030	941.28
		(3.39)	(3.89)	(3.65)
4	Seeds	893	896	894.5
		(3.55)	(3.39)	(3.47)
5	Manures	—	—	—
6	Fertilizers	3849	3935	3892
		(15.29)	(14.87)	(15.09)
7	Pesticides	1398	1495	1446.5
		(5.55)	(5.65)	(5.61)
8	Irrigation	880	906	893
		(3.49)	(3.42)	(3.46)
9	Interest on working capital	1855.32	1920.25	1887.79
		(7.37)	(7.26)	(7.32)
	Total operational costs	16697.88	17282.25	16990.07
		(66.33)	(65.32)	(65.88)
10	Depreciation	100	150	125
		(0.40)	(0.57)	(0.48)
11	Land revenue and cess	250	275	262.5
		(0.99)	(1.04)	(1.02)
12	Rental value of owned land	7862.88	8447.75	8127.33
		(31.23)	(31.93)	(31.52)
13	Interest on fixed capital	173	223	198
		(0.69)	(0.84)	(0.77)
14	Rent for leased – in land	92	80	86
		(0.37)	(0.30)	(0.33)
	Total fixed costs	8477.88	9175.75	8798.83
		(33.67)	(34.68)	(34.12)
	Total costs	25175.76	26458	25788.9
		(100)	(100)	(100)

Note: Figures in parenthesis indicate the percentages to total.

Table 3. Cost of cultivation according to cost concepts in *kharif* and *rabi* for the year 2006-07 (Rs. ha⁻¹)

Item	Small	Large	Average
<i>Kharif</i>			
Cost A ₁	12855.57	14606.63	13731.1
Cost A ₂	13002.57	15036.63	14019.6
Cost B	19495.72	21945	20633.08
Cost C	21878.72	23845	22774.58
<i>Rabi</i>			
Cost A ₁	14877.88	15907.25	15392.57
Cost A ₂	14969.88	15987.25	15478.57
Cost B	23005.76	24658	23803.9
Cost C	25175.76	26458	25788.9

Table 4. Farm income measures of paddy in *kharif* and *rabi*, 2006-07 (Rs. ha⁻¹)

	Small	Large	Average
<i>Kharif</i>			
Gross income	34740	37416	36078
Net income	12861.28	13571	13303.42
Farm business income	21884.43	22809.37	22346.9
Family labour income	15244.28	15471	15444.92
Farm investment income	6640.15	7338.3	6901.98
<i>Rabi</i>			
Gross income	40257	41728	40992
Net income	15081.24	15270	15203.10
Farm business income	25379.12	25820.75	25599.43
Family labour income	17251.24	17070	17188.1
Farm investment income	8127.88	8750.75	8411.33

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