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ECONOMIC ANALYSIS OF FOXTAIL MILLET CULTIVATION IN KURNOOL DISTRICT OF ANDHRA PRADESH

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ABSTRACT

The focus of the present study was on economic analysis of foxtail millet in Kurnool district of Andhra Pradesh. A sample size of 30 farmers cultivating foxtail millet was selected using random sampling method. Field level data was elicited for the agriculture year 2015-16 through personal interview method. The per hectare total cost of cultivation of foxtail millet was worked out to be ₹ 24,406.11. From the results it was evident that korra farmers were obtaining negative net returns. But the Gross margin was ₹ 3,767.60. In the short run, the farmers aim was to cover the variable costs. Hence the farmers are continuing the cultivation of korra crop under rainfed conditions.

KEYWORDS: Cost of cultivation, foxtail millet, cost concepts, income measures.

INTRODUCTION

Minor millets are small seeded annual cereals and forage grasses cultivated for food, feed, forage and other industrial uses. The term minor millets embraces at least 12 to 14 species of the grass family and those with potential to become important crops in semi-arid production systems are finger millet (Ragi, *Eleusine coracana*), foxtail millet (Navane, *Setaria italica*), proso millet (Baragu, *Panicum miliaceum*), barnyard millet (Oodahe, *Echinochloa frumentacea*), little millet (Savi, *Panicum miliare*) and kodo millet (Haraka, *Paspalum scrobiculatum*). They frequently possess unusual ability for adaptation like tolerance to drought and low soil fertility most often; they are grown with low inputs in emergencies following crop failure in traditional agricultural systems. Minor millets received very little attention despite their potential. There are many unique traits possessed by the minor millets that could make them important components of semi- arid production systems. In spite of all the extraordinary qualities and capacities of millet farming systems, the area under millet production has been shrinking over the last five decades and rapidly. Due to relentless promotion of other crops such as rice and wheat for intensive farming in select few resource rich areas under irrigated conditions (MINI, 2009). Another major threat that millets facing in the country is in the form of an unnatural promotion of maize, which is resulting in maize invasion in various parts of the country owing to the corporate-induced demand for bio-fuels and poultry feed (Michaelraj and Shanmugam, 2013).

Foxtail millet (*Setaria italica*) is one of the oldest crops cultivated for hay, pasture and food grain. Foxtail millet also known as Navane, Kangni, Tenai, Korra and Rala in various colloquial names in different Indian languages. Known for its drought tolerance, it was once an indispensable crop of vast rainfed areas in semi- arid regions in India.

Foxtail millet was recognised as diabetic food. The millet is rich in dietary fibre (6.7%), protein (11%) and low in fat (4%). Foxtail millet occupied an area of 0.40 lakh hectare producing 0.42 lakh tonnes with a yield of 1050 kg per hectare in Andhra Pradesh. 58.97 per cent of the states area under korra cultivation was from Kurnool district and 68.18 per cent of states production is also from Kurnool. The district yield is 1214 kg per hectare which was more than the states yield (Directorate of Economics and Statistics, 2015-16).

MATERIALS AND METHODS

Andhra Pradesh state was purposively selected for the study and Kurnool district which was having highest korra cultivating area was selected purposively. Out of the 54 mandals of Kurnool district, Peapully mandal which has maximum acreage under korra was selected. The selected villages were Kommemarri and

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Madhavaram. A complete list of all the farmers growing this crop in each selected village was prepared and fifteen farmers from each village were selected randomly. Therefore, the study was based on the findings from 30 sample farmers. The required primary data was collected from selected farmers on pre-structured schedule through personal interviewing method for the agricultural year 2015-16. Profitability, the cost of cultivation and returns were worked out on per hectare basis.

The formulae used for calculating cost concepts and farm efficiency measures were

Cost A_1 : All variable costs excluding family labour cost and including land revenue, depreciation and interest on working capital.

Cost A_2 : Cost A_1 + Rent paid for leased-in land.

Cost B_1 : Cost A_1 + Imputed interest on value of owned capital assets (excluding land)

Cost B_2 : Cost B_1 + Imputed rental value of owned land (net of land revenue) + Rent paid 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% of Cost C_2 on account of managerial functions performed by farmers.

Farm efficiency measures are

Farm business income = Gross income – Cost A_1

Family labour income = Gross income – Cost B_2

Net income = Gross income – Cost C_3

Farm investment income = Net income + rental value of owned land + interest on owned fixed capital

RESULTS AND DISCUSSION

In the study area it was observed that the average size of the family of selected respondents growing korra was 4.49 and the number of family members working on the farm was 1.90. The average size of land holding was 1.48 hectare. The composition and the value of farm assets reflect the economic status of farmers. The per hectare value of total assets was ₹ 2,56,304.05. Further, it was noticed that land, the basic resource of agricultural

Table 1. Cost of cultivation of korra crop in Kurnool district of Andhra Pradesh

(Rupees per hectare)

S. No.	Particulars	Korra farms
I	Operational costs	
a.	Human labour	8,122.50 (33.28)
i.	Owned labour	2,885.00 (11.82)
ii.	Hired labour	5,237.50 (21.46)
b.	Bullock labour	5,312.00 (21.76)
i.	Owned labour	1,904.00 (7.80)
ii.	Hired labour	3,408.00 (13.96)
c.	Machinery power	3,880.00 (15.90)
i.	Owned	695.00 (2.85)
ii.	Hired	3,185.00 (13.05)
d.	Seed	90.00 (0.37)
e.	Manures and fertilizers	
i.	Manures	-
ii.	Fertilizers	1,200.00 (4.92)
h.	Interest on working capital	627.9 (2.58)
	Total operational costs	19,232.4 (78.80)
II	Fixed costs	
b.	Rental value of owned land	5,000.00 (20.49)
c.	Depreciation	120.27 (0.49)
d.	Interest of fixed capital	53.44 (0.22)
	Total fixed costs	5173.71 (21.20)
	Total Costs	24,406.11 (100.00)

Note: Figures in parentheses indicate percentages to the total

production was the single most valuable asset on the sample farms.

Cost of Cultivation of Korra

The costs incurred in cultivation of korra by the sample farmers are presented in Table 1. Human labour accounted for 33.28 per cent of the total costs, followed by bullock labour (21.76%), machinery power (15.90%) and fertilizers (4.92%). Seeds accounted for 0.37 per cent of the total variable cost. The total variable costs accounted to be ₹ 19,232.40 per hectare.

It was found that rental value of owned land was ₹ 5,000 per hectare and accounted for 20.49 per cent of the total costs. The other components of fixed cost were depreciation and interest on fixed capital accounting for 0.49 and 0.22 per cent of the total costs. The total fixed costs worked out to be ₹ 5173.71 per hectare and the total costs in cultivation of korra worked out to be ₹ 24,406.11 per hectare.

Table 2. Various cost concepts in cultivation of korra

(Rupees per hectare)

S. No	Costs	Korra farms
1	Cost A_1/A_2	16,467.67 (67.47)
2	Cost B_1	16,521.11 (67.69)
3	Cost B_2	21,521.11 (88.18)
4	Cost C_1	19,406.11 (79.51)
5	Cost C_2	24,406.11 (100.00)
6	Cost C_3	26,846.72 (110.00)

Various cost concepts involved in the cultivation of korra are presented in Table 2. Cost A_1 which at least must be covered for viable and feasible farming was estimated at ₹ 16,467.67 per hectare. In this study area, there was no leasing activity among the selected farmers, hence cost A_1 and A_2 were the same. Cost B_1 which includes interest on fixed capital in addition to cost A_1 worked out to ₹ 16,521.11 and Cost B_2 which includes cost B_1 in addition to rental value of owned land was estimated at ₹ 21,521.11. On an average, the total cost of cultivation (Cost C_2) of korra per hectare was ₹ 24,406.11. If 10 per cent cost C_2 was added to cost C_2 on account of managerial functions performed by the farmer, then cost C_3 was ₹ 26,846.72.

The details of physical output and returns per hectare from the production of korra are presented in Table 3. It is observed that the yield of main product and by product was 10.00 quintals and 5.00 cartloads per hectare respectively. The gross returns and net returns from korra cultivation were ₹ 23,000 and ₹ -1406.11 per hectare respectively. From the results it was evident that korra farmers were incurring losses. The gross margin which is the difference between gross income and total variable cost was ₹ 3,767.60. This indicated the rationality of cultivating korra by the farmers inspite of losses. Farm business income, family labour income and farm invest income were of the order of ₹ 6,532.33, ₹ 1,478.89 and ₹ 1206.72 per hectare respectively.

Table 3. Returns and income measures in the cultivation of korra

(Rupees per hectare)

S. No.	Particulars	Unit	Korra farms
1.	**Yield in physical units**		
	a. Main product	Qtls	10.00
	b. By product		5.00
2.	**Yield in monetary units**		
	a. Main product	₹	18,000.00
	b. By product	₹	5,000.00
3.	Gross returns	₹	23,000.00
4.	Net returns over Cost C_2	₹	-1406.11
5.	Gross Margin	₹	3,767.6
6.	Farm business income	₹	6,532.33 (28.40)
7.	Family labour income	₹	1,478.89 (6.43)
8.	Farm investment income	₹	1206.72 (5.25)

SUMMARY AND CONCLUSIONS

On an average, the total cost of cultivation per hectare of korra was ₹ 24,406.11. The break-up of total costs into operational and fixed costs indicated that the operational costs were ₹ 19,232.40 (78.80%) while fixed costs were ₹ 5,173.71 (21.21%). It was observed that on an average, korra cultivators realized gross income of ₹ 23,000 per hectare. However the respondents incurred a loss of ₹ 1406.11 per hectare. Farm business income, family labour income and farm invest income were of the order of ₹ 6,532.33, ₹ 1,478.89 and ₹ 1206.72 per hectare respectively. In the last two decades importance of millets as food staples has been declining due to various factors that include rising income, growing urbanization and government policies favouring the production and consumption of fine cereals like rice and wheat. But keeping in view the nutritional qualities of millets, promotion of research on standardization of value added products from millets is

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