

E-ISSN: 2278-4136

P-ISSN: 2349-8234

[www.phytojournal.com](http://www.phytojournal.com)

JPP 2022; Sp 11(1): 06-08

Received: 23-11-2021

Accepted: 05-12-2021

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## An economic analysis of production of sorghum in Kurnool district of Andhra Pradesh

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**Abstract**

The present study entitled “An Economic Analysis of Production of Sorghum in Kurnool District of Andhra Pradesh” was conducted in the year 2019-2020. The study made use of a multi-stage sampling and random sampling technique to select 100 farmers among the selected villages. Data for the selected study were collected with the aid of well-structured questionnaires. Data collected were analysed using the tabulation method along with the required statistical tool. The Production of Sorghum has increased in the area mediumly due to productivity increase and increase in the area under crop. Resource use structure in Sorghum was found to be varied among the size groups. The per cost of cultivation was varied among the size groups of Sorghum was highest on the large size (Rs. 33940) and lowest on the marginal size (Rs. 29740) and small (Rs. 32067) on the medium size the input-output ratio is highest on medium size farms and lowest on small size farms.

**Keywords:** Sorghum, cost and return, input-output ratio

**1. Introduction**

Sorghum, (*sorghum bicolor*) is an annual or perennial grass in the family poaceae grown primarily for its grain. Sorghum may also be referred to as broom corn in Ethiopia. Sorghum is also called as great millet, Indian millet, milo, durra, or shallu, cereal grain plant of the grass family and its edible starchy seeds. In India sorghum is known as jowar, cholam, or jonna. In west Africa as Guinea corn, and in China as Kaoliang.

**2. Research Methodology**

The study was conducted Sorghum in Kurnool District of Andhra Pradesh the farmers/respondents were growing Sorghum was obtained from the gram panchayat with the help of heads in all selected villages. Therefore, the farmers/respondents were arranged in ascending order on the basis of area under Sorghum cultivation and then farmers/respondents were classified into three groups on the basis of area under Sorghum cultivation in all the selected villages viz.

Then 5% farmer/respondents were selected randomly from which selected villages. Thus, all together 100 respondents/farmers were selected viz., marginal, small, medium respondents respectively. Different size groups from respective selects village.

A list of Sorghum growing villages of Kurnool district was obtained from the board of sorghum agriculture officer. All together (100) sorghum growing villages were available, out of them 5% villages were selected randomly from which selected villages for present study. Tabulation method is used for the analysis of data along with required statistical tools for the interpretation of the results for the objectives.

From table, the hired labour costs for marginal, small and medium sized farm families were found to be Rs. 4600, Rs. 4900 and Rs. 5250 with an average of Rs.

2066.66 respectively. The machinery labour charges for marginal, small and medium size farm families were Rs. 2500, Rs. 2600 and Rs. 2750 respectively with an average of Rs. 2616.66 respectively. The cost of seed was Rs. 1750, Rs. 1890 and Rs. 2000 respectively with an average of Rs. 1880 respectively. The cost of manures was 1500, 1650 and 1850 with an average of 1666.66 rupees respectively.

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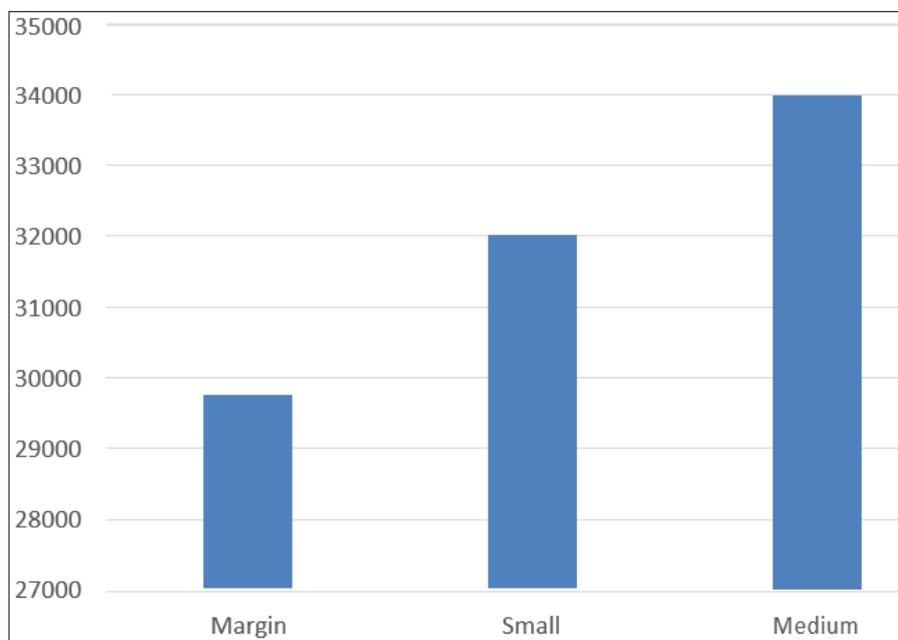
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**Table 1:** Resource use and Cost and Cultivation of Sorghum crop per hectare in different Size of Farms Group

S. No	Particulars	Marginal	Small	Medium	Sample Average
1	Hired Human Labour	4600 (15.47)	4900 (15.28)	5250 (15.47)	2066.66 (15.40)
2	Machinery charges	2500 (8.41)	2600 (8.11)	2750 (8.10)	2616.66 (8.22)
3	Cost of seed	1750 (5.88)	1890 (5.89)	2000 (5.90)	1880 (5.89)
4	Cost of FYM	1500 (5.04)	1650 (5.15)	1850 (5.45)	1666.66 (5.21)
5	Cost of Fertilizers	2480 (8.34)	2600 (8.10)	2750 (8.11)	2610 (8.18)
6	Cost of irrigation	1875 (6.30)	2175 (6.78)	2250 (6.63)	2100 (6.58)
7	Cost of Plant chemicals	1110 (3.73)	1250 (3.90)	1375 (4.05)	1245 (3.89)
8	Interest on working capital@8%	1750 (5.88)	2175 (6.78)	2550 (7.52)	2158.33 (6.72)
9	Depreciation on fixed capital	8000 (26.90)	8000 (24.95)	8000 (23.57)	8000 (25.14)
10	Land Revenue Paid to Govt	1575 (5.30)	1852 (5.78)	2015 (5.94)	1814 (5.67)
11	Rental Value of own land	2600 (8.75)	2975 (9.28)	3150 (9.29)	2908.33 (9.10)
12	Interest on Fixed Capital @11%	29740 (100)	32067 (100)	33940 (100)	31915.66 (100)
13	Family Labour charges	1500 (5.04)	1650 (5.15)	1850 (5.45)	1666.66 (5.21)
14	Total cost of cultivation	2480 (8.34)	2600 (8.10)	2750 (8.11)	2610 (8.18)

Meanwhile, the cost of fertilizers was found to be Rs. 2480, Rs. 2600 and Rs. 2750 for marginal, small and medium size farm families respectively with an average of Rs. 2610. Where the cost of plant protection for marginal, small and medium size farm families were found to be Rs. 1875, Rs. 2175 and Rs. 2250 respectively with an average of Rs. 2100. The interest on working capital was Rs. 1110, Rs. 1250 and Rs. 1375 for marginal, small and medium size farm families respectively with an average of Rs. 1245 respectively. Meanwhile, the depreciation on fixed capital for marginal, small and medium size farm families were Rs. 1750, Rs. 2175 and Rs. 2550 respectively with an average of Rs. 2158.33.

The rental value of owned for was 8000 rupees/ha for all the marginal, small and medium size farm families. Whereas, the interest on fixed capital was Rs. 1575, Rs. 1852 and Rs. 2015 for marginal, small and medium size farm families respectively with an average of Rs. 1814 rupees. Similarly, the family labour charges were found to be Rs. 2600 for marginal, Rs. 2975 for small and Rs. 3150 for medium sized farm families with an average of Rs. 2908.33 respectively. Eventually, the total cost of cultivation was Rs. 29740 for marginal, Rs. 32067 for small and Rs.33940 for medium sized farm families with an average of Rs. 31915.66 respectively.

**Fig 1:** Total cost of cultivation**Table 2:** Anova regarding size group and production

Source	df	Sum of squares	Mean sum of squares	Fcal	Ftab5%	Result	S. Ed. (±)	C. D. 5%
Size group	2	305665.388	10188.85	12.38	12.75	S	186.116	248.814
Particular	12	151071758.86	865717605.68	2098.67	12.75	S	186.11	248.814
Error	24	5976184.65	78965.48					
Total	38							

From Anova it can be understood that the size of the group was 2 with the degrees of freedom, particulars was 12 with an error value of 24, accounting to a total of 38. The sum of squares of the group size was 305665.388 which has mean sum of squares 10188.85. The Fcal was 12.38 whereas Ftab, at

5% level of significance was 12.75, it revealed that Fcal was greater than Ftab and depicts that it was significant with Standard deviation value of 186.116 and Critical difference at 5% was 248.814.

**Table 3:** Cost concepts of Sorghum per hectare in different size farm groups

S. No.	Cost concepts	Size of farm groups			Sample average
		Marginal	Small	Medium	
1	Cost A1	17565	19240	20775	19193.33
2	Cost A2	25565	27240	28775	27193.33
3	Cost B	27140	29092	30790	29007.33
4	Cost C	29740	32067	33940	31915.66

From table.3, it indicated that Cost A1 was highest in medium size farms (Rs.20775/ha), followed by small size farms (Rs.19240/ha) and marginal size farms (Rs.17565/ha) with an average of Rs.19193.33/ha respectively. The cost A2 was smallest in marginal size farms (Rs.25565/ha), followed by small size farm (Rs.27240/ha) and medium size farm (Rs.28775/ha) respectively with an average of Rs.27193.33/ha. Meanwhile, the cost B was highest for

medium size farms (Rs.30790/ha), followed by small size farms (Rs.29092/ha) and marginal size farms (Rs.27140/ha) respectively with an average of Rs.29007.33/ha respectively. Eventually, the cost C was highest for medium size families (Rs.33940/ha), followed by small size farm families (Rs.32067/ha) and marginal size farm families (Rs.29740/ha) respectively with an average of Rs.31915.66/ha.

**Table 4:** Cost and returns in Sorghum Per hectare in different size of farms.

S. No.	Particulars	Size of farm groups			Sample average
		Marginal	Small	Medium	
1	Total Cost of Cultivation	29740	32067	33940	31915.66
2	Yield in quintals per hectare	17.5	18.6	19.3	18.47
3	Gross Returns per hectare	44625	47430	49215	47090
4	Net Returns per hectare	14885	15363	15275	15174.33
5	Cost of Production per Quintal	1699.43	1752.30	1758.55	1736.76
6	Input –Output Ratio	1:1.5	1:1.48	1:1.45	1:1.47
7	Price Per Quintal	2550	2550	2550	2550

From table.4, revealed that the total cost of cultivation was high (Rs. 29740/ha) for medium sized farm families, followed by small (Rs.32067/ha) and marginal (Rs.33940/ha). The yield for marginal, small and medium sized farm families were 17.5 t/ha, 18.6 t/ha and 19.3 t/ha respectively with an average of 18.47 t/ha. While, the price per quintal of sorghum was Rs.2550/ha. The cost of production per quintal of sorghum was found to be Rs.1699.43/ha for marginal farm family, Rs.1752.30/ha for small farm family and Rs.1758.55/ha for medium size farm family with an average

of Rs.1736.76 /ha. The gross return for medium size farm family Rs.49215/ha, for small farm family Rs.47430/ha, for marginal farm family Rs.44625/ha respectively. Meanwhile, the net returns per hectare was found to be Rs.14885/ha for marginal farm family, Rs.15363/ha for small farm family and Rs.15275/ha for medium farm family with an average of Rs.15174.33/ha. The input- output ratio for marginal farm family was 1:1.5, for small farm family was 1:1.48 and for medium size farm family was 1:1.45 with an average of 1:1.47 respectively.

**Table 5:** Anova regarding cost and returns in sorghum per hectare in different size of farms

Source	df	Sum of squares	Mean sum of squares	Fcal	Ftab5%	Result	S. Ed. (±)	C. D. 5%
Size group	2	15861492.75	97354682.43	9.64	9.34	S	1593.78	3206.59
Particular	2	16794358719.45	68506717568.34	2916.5	9.34	S	1593.78	3206.59
Error	4	556481697.34	486475643.15					
TOTAL	8							

From table 5, it can be evident that the size of the group was 2 with the degrees of freedom, particulars was 2 with an error value of 4, accounting to a total of 8. The sum of squares of the group size was 15861492.75 which has mean sum of squares 97354682.43. The Fcal was 9.64 whereas Ftab, at 5% level of significance was 9.34, it revealed that Fcal was greater than Ftab and depicts that it was significant with Standard deviation value of 1593.78 Critical Difference at 5% was 3206.59.

### 3. Conclusion

Economics of sorghum production is more profitable in marginal farms as compared to small size farms and medium size farms cropping pattern on sample farms shows that on an average in season sorghum occupied highest area 64.20 percent followed by sorghum.

### 4. References

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