



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2019; 7(3): 2703-2706

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Received: 01-03-2019

Accepted: 03-04-2019

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## An economic analysis of production of red gram in Nalgonda district of Telangana

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**Abstract**

Red gram plays important role in economy and human diet. Pulses are basic ingredients in the Diets of an Agriculture is the mainstay of economics. An attempt has been made in this study to examine the economic analysis of cost and return per hectare and input output ratio of red gram in Nalgonda district of Telangana. The study made use of a multistage sampling and random sampling technique to select 120 respondents among those selected villages. Data for the study were collected with the aid of a well-structured questionnaires. Data collected were analysed using tabulation method along with required statistical tool. The production of red gram has increased largely due to productivity increase and increase in the area under the crop. The acreages under red gram not influenced by improvement in the productivity but it largely depended on the other factors like rainfall and price of this crop. Resource use structure in red gram was found to be varied among the size groups. Production cost of red gram was varied according to size groups of holding. The per hectare cost of cultivation of red gram was highest in small size farms and lowest on large size farms. The cost of cultivation was varied among the size groups of red gram growers. The input output ratio is highest on large size farms and lowest on small size farms.

**Keywords:** Red gram, cost and return, input output ratio, Nalgonda

**Introduction**

Red gram Botanical Name is *Cajanus cajan* (L.) Millsp, origin in Africa and Red gram is an important pulse crop in India. It is also known as Pigeon pea, Arhar and Tur. Red gram is mainly cultivated and consumed in developing countries of the world. This crop is widely grown in India. India is the largest producer and consumer of Red gram in the world. Red gram accounted for about 90 percent of the total production of pulses in the country during the year 2018-2019.

The progressive decline in per capita availability of pulses (51.1 g in 1971 to 52.9g in 2017 as against WHO recommendation 80gm/day) in India. This is attributed to steady marginalization of their cultivation in the wake of "Green Revolution" and growing population with assured supply of cereals at an affordable price. To make up this shortfall in supply and unprecedented population growth, about 22 million tones of pulses are required by 2012, which is expected to touch 28 million tons by 2020 and pulses consumption increased by year by year and this can be realized only by adopting more productive technologies along with aggressive developmental efforts and favorable Government policies. At present, In India, red gram was grown in 43 lakh.ha, with annual production of 4.25million tons and average productivity of 875 kg/ha during the year 2018-2019. Similarly in Telangana during the year 2018-19 area under red gram cultivation was 2.95 lakh ha with annual production 1.99 lakh tons and productivity up to 676 kg/ha (Division of Agriculture statistics, 2018-19)

**Research Methodology**

The study was conducted in Nalgonda district of Telangana which is one of the 31 districts of Telangana. Nalgonda district comprises of 31 blocks among that 2 blocks i.e, Nakrekal and Chityalablocks were selected for this study. From that 2 blocks 5% villages viz., nakrekal, nellibanda, chinnakaparthi, pittampalle were selected. A list of all red gram farmers/respondents is prepared with the help of head of the village pradhan or head of each selected villages in both block, there after farmers/respondents is categorized in 3 size groups on the basis of their land holding and then from each village 10% farmers were selected randomly from all the different size of farm groups.

Data for the study was collected from 120 farmers randomly (i.e) 40 small farmers and 40 medium farmers and 40 large farmers. Tabulation method is used for analysis of data along with required statistical tool for the interpretation of the result.

## Results and Discussion

The study was conducted in Nalgonda district of Telangana. The necessary data were collected from the sample farmers spread over two blocks in above mentioned district. The present chapter is going to tell about the results and discussion

for various objectives. The chapter is arranged in different sub-sections according to objectives of the study.

- To study cost and return per hectare and input output ratio of different size of farm groups.

### Resource use and Cost of cultivation of Red gram crop per hectare in different size of farm groups

The economic aspects of red gram such as cost of cultivation, returns per hectare, input and output ratio of small size, medium and large size farm groups are given below

**Table 1:** Resource use and Cost of cultivation of Red gram crop per hectare in different size of farm groups

S. No	Particulars	Small	Medium	Large	Sample average
1	Hired labour	5000(15.98)	5300(17.40)	5400(17.89)	5233.33(17.07)
2	Bullock labour	2200(7.03)	1900(6.23)	2150(7.12)	2083.33(6.79)
3	Machinery cost	1500(4.79)	1400(4.59)	1600(5.30)	1500(4.89)
4	Cost of seed	625(1.99)	620(2.03)	600(1.98)	615(2.00)
5	Cost of manure	5400(17.26)	5200(17.07)	4800(15.90)	5133.33(16.74)
6	Cost of fertilizer	2000(6.39)	1800(5.91)	1800(5.96)	1866.66(6.08)
7	cost of plant protection	1200(3.83)	1200(3.94)	1050(3.47)	1150(3.75)
8	Cost of irrigation	0(0)	0(0)	0(0)	0(0)
9	Interest on working capital@8%	1434(4.58)	1393.6(4.57)	1392(4.61)	1406.53(4.58)
10	Depreciation on fixed capital	450(1.43)	470(1.54)	475(1.57)	465(1.51)
11	Land revenue paid to Govt.	0(0)	0(0)	0(0)	0(0)
12	Rental value of land	5000(15.98)	5000(16.42)	5000(16.56)	5000(16.31)
13	Interest on fixed capital@11%	1971.75(6.30)	1916.2(6.29)	1914(6.34)	1933.98(6.30)
14	Family labour income	4500(14.38)	4250(13.95)	4000(13.25)	4250(13.86)
15	Total cost of cultivation	31280.75(100)	30449.8(100)	30181(100)	30653.85(100)

(Figures in Parenthesis are the percentage)

Table no 1 reveals that sample average respondent is per hectare cultivation using 615 rupees investment on seed and its consist of 2.00 percentage of total cost of cultivation and 5233.33 rupees investment on hired labour charges and its consists of 17.07 percentage of total cost of cultivation and 1500 rupees invested on machinery and its consist of 4.89 percentage of total cost of cultivation and 2083.33 rupees invested on bullock labour and its consist of 6.79 percent of total cost of cultivation. 5133.33 rupees invested on manures and its consist of 16.74 percentage of total cost of cultivation and 1866.66 rupees invested on fertilizer and its consist of 6.08 percent in total cost of cultivation and 1150 rupees invested on plant protection and its consist of 3.47 percent in

total cost of cultivation and 1406.53 rupees invested on working capital interest and its consist of 4.58 percentage of total cost of cultivation and govt. not taking land revenue from farmers and 465 rupees invested on depreciation of fixed capital and its consist of 1.51 percent in total cost of cultivation and 5000 rupees invested on rental value of land and its consist of 16.31 percentage of total cost of cultivation and 1933.98 rupees invested on fixed capital interest and its consist of 6.30 percentage of total cost of cultivation and 4250 rupees invested on family labour and its consist of 13.86 percent in total cost of cultivation and total expenditure of large farm respondent is 30653.85

ANOVA:								
Source	d. f.	S.S.	M.S.S.	F. Cal.	F. Tab. 5%	Result	S. Ed. (±)	C.D. at 5%
Size group	2	175313.59	87656.80	2.4598363	3.34	NS	154.132	318.129
Particular	14	2408539126.93	172038509.07	4827.7667	2.06	S	68.930	142.272
Error	28	997786.04	35635.22	-	-	-	-	-
TOTAL	44	-	-	-	-	-	-	-

In the above anova table, in due to size group degrees of freedom is 2, sum of squares is 175313.59, mean sum of squares is 87656.80, F. Calculated value is 2.4598363, F. tabulated value @ 5% is 3.34, result is non-significant, standard deviation is 154.132 and critical difference @ 5% is 318.129. In due to particulars, degrees of freedom is 14, sum of squares is 2408539126.93, mean sum of squares is 172038509.07, F. Calculated value is 4827.7667, F. tabulated value is 2.06, result is significant, standard deviation is 68.930

and critical difference @ 5% is 142.272. In error, degrees of freedom is 28, sum of squares is 997786.04 and mean sum of squares is 35635.22.

### Cost of cultivation in Red gram crop per hectare in different size of farm groups:

Below table explains about cost of cultivation in Red gram crop per hectare in different size of farm groups with cost A1 and cost A2 and cost B and cost C.

**Table 2:** Cost of cultivation in Red gram crop per hectare in different size of farm groups:

S. No	Cost concepts	Small	Medium	Large	Sample Average
1	Cost A1	19809	19283.6	19287	19459.86
2	Cost A2	24809	24283.6	24287	24859.66
3	Cost B	26780.75	26199.8	26181	26387.66
4	Cost C	31280.75	30449.8	30181	30637.18

In above table 2 explains about return and output of small size respondents cost A1 is 19809 and cost A2 is 24809 and cost B is 26780.75 and cost C is 31280.75. Medium size respondents cost A1 is 19283.6 and cost A2 is 24283.6 and cost B is 26199.8 and cost C is 30449.8. Large size respondents cost A1 is 19287 and cost A2 is 24287 and cost B is 26181 and cost C is 30181. Average sample respondents cost A1 is 19459.86 and cost A2 is 24459.66 and cost B is 26387.18 and

cost 30637.18.

### Cost and returns in Red gram crop per hectare in different size of farm groups

Belowtable explains about cost of cultivation per quintal, returns per quintal and hectare of main product and by product, gross return, net return, family labour, farm business income and benefit cost ratio

**Table 3:** Cost and returns in Red gram crop per hectare in different size of farm groups

S. No	Particulars	Size of farm groups			Sample Average	
		Small	Medium	Large		
1	Cost of cultivation(Rs./ha)	31280.75	30449.8	30181	30637.18	
2	Yield(Qtl/ha)	Main product	8	8.4	9	8.46
		By product	10	10.5	11	10.5
3	Cost of production (Rs./Qtl)	3910.09	3624.97	3353.44	3626.5	
4	Return(Rs./Qtl)	Main product	5675.00	5675.00	5675.00	5675.00
		By product	90.00	90.00	90.00	90.00
5	Return(Rs./ha)	Main product	45400	47670	51075	48010.5
		By product	900.00	945.00	990.00	945.00
6	Gross return	46300	48615	52065	48955.5	
7	Net return	15019.25	18165.2	21884	18318.32	
8	Family labour income	4500	4250	4000	4250	
9	Farm business income	21491	24331.4	27778	24533.46	
10	Input output ratio	1:1.48	1:1.59	1:1.72	1:1.59	

In above table 3 explains about small size respondents cost of cultivation per quintal 3910.09, yield of main product is 8 quintals, yield of byproduct 10 quintals, gross return is 46300 and net return in small size respondents is 15019.25 and family labour income is 4500 in small respondents and farm business income is 21491 and benefit cost ratio is 1:1.48.

Medium size respondents cost of cultivation per quintal 3624.97, yield of main product is 8.4 quintals, yield of byproduct 10.5 quintals, gross return is 48615 and net return in medium size respondents is 18165.2 and family labour income is 4250 in medium respondents and farm business income is 24331.4 and benefit cost ratio is 1:1.59.

Large size respondents cost of cultivation per quintal 3353.44, yield of main product is 9 quintals, yield of byproduct 11 quintals, gross return is 52065 and net return in large size respondents is 21884 and family labour income is 4000 in large respondents and farm business income is 27778 and benefit cost ratio is 1:1.72.

Average sample of small, medium and large size respondents are cost of cultivation per quintal 3626.5, yield of main product is 8.46 quintals, yield of by product 10.5 quintals, gross return is 48955.5 and net return is 18318.32 and family labour income is 4250 in large respondents and farm business income is 24533.46 and benefit cost ratio is 1:1.59.

**Table 4:** Anova

Source	d. f.	S.S.	M.S.S.	F. Cal.	F. Tab. 5%	Result	S. Ed. (±)	C.D. at 5%
Size group	2	42620202.88	21310101.44	7.1918129	5.14	S	1405.491	2900.933
Particular	3	3140587265.08	1046862421.69	353.29905	4.76	S	1217.191	2512.281
Error	6	17778633.83	2963105.64	-	-	-	-	-
Total	11		-	-	-	-	-	-

In the above anova table, in due to size group degrees of freedom is 2, sum of squares is 42620202.88, mean sum of squares is 21310101.44, F. Calculated value is 7.1981129, F. tabulated value @ 5% is 5.14, result is significant, standard deviation is 1405.491 and critical difference @ 5% is 2900.933. In due to particulars, degrees of freedom is 3, sum of squares is 3140587265.08, mean sum of squares is 1046862421.69, F. Calculated value is 353.29905, F. tabulated value is 4.76, result is significant, standard deviation is 1217.191 and critical difference @ 5% is 2512.281. In error, degrees of freedom is 6, sum of squares is 17778633.83 and mean sum of squares is 2963105.83.

### Conclusion

The production of red gram has increased largely due to productivity increase and increase in the area under the crop. The acreages under red gram not influenced by improvement in the productivity but it largely depended on the other factors like rainfall and price of this crop. The cropping pattern was

dominated by red gram crop followed by groundnut, sugarcane and green gram. Resource use structure in red gram was found to be varied among the size groups. Production cost of red gram was varied according to size groups of holding. Theper hectare cost of cultivation of red gram was the highest on small size farms and lowest on large size farm. Among which rental value of land, hired human labour, fertilizers, manures, seeds were the major items of cost. The cost of cultivation varied among the size groups of red gram growers.

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