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Cost and Returns of Bengalgram in Prakasam District of Andhra Pradesh

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ABSTRACT

Bengalgram is the highest consumed pulse crop of India. It is widely appreciated as healthy food. It is a protein rich supplement to cereal based diets, especially to the poor in developing countries, where people are vegetarians or cannot afford animal protein. Three stage stratified random sampling procedure was adopted for the purpose of selection of primary sampling unit (i.e respondents). Simple tabular analysis was employed for estimating the costs, return, and cost concepts and the various farm income measures are used to assess the profitability of crop. The average total cost per hectare was Rs.50819.93 and increased with the farm size. Machine labour (Rs.8169.91) was the major cost component in Bengal gram production occupying on an average about 16.08 per cent of total cost. Both gross returns (Rs.60334.5) and net returns (Rs.4432.57) increased with the increase in farm size. The per hectare productivity ranged from 20.34 quintal on the Group I farm to 22.46 quintals on Group II farms with 21.17 quintals on pooled farms, the study revealed that productivity increased with the increase in farm size Cost of production per quintal decreased with increase in farm size. On an average cost of production per quintal was Rs.2400.56.

Key words : Bengalgram, Costs, Farm income, Farm size, Returns

Bengalgram is the highest consumed pulse crop of India. It is a protein rich supplement to cereal based diets, especially to the poor in developing countries, where people are vegetarians or cannot afford animal protein. India is the largest chickpea producing country with a share of 64 per cent in world production. Bengalgram is a cool season crop, it requires cooler and longer winter season and more suited to northern India. In southern region of India, Maharashtra, Andhra Pradesh, Karnataka are the major Bengal gram producing states. Andhra Pradesh has secured the highest chickpea yield (1065 kg ha^{-1}) in the country and it is almost double than the national average (569 kg ha^{-1}). The total Bengalgram cultivated area in Andhra Pradesh was 5.29 lakh ha with a production of 6.28 lakh tonnes. In the state of Andhra Pradesh, Kurnool, Prakasam and Anantapur are the major Bengalgram cultivating districts of Andhra Pradesh.

The Prakasam district occupies second place in Bengalgram cultivation in the state both in area (1.04 Lakh hectares) and production (2.03 Lakh tonnes).The major objective of the present study is to estimate the cost and returns of Bengalgram on different groups of farms.

MATERIAL AND METHODS

Three stage stratified random sampling procedure was adopted for the purpose of selection of primary sampling unit (i.e respondents). Prakasam district was purposively selected for the study, as Bengalgram occupies a pride place in area and production of the state. All the Bengal gram growing mandals of Prakasam district were arranged in descending order based on area and top three mandals viz., Naguluppalapadu, Parchur, Inkollu were selected. All the villages had maximum area under Bengalgram cultivation were arranged in the descending order and top two from each mandal were selected to make the total six villages. The Bengalgram growers of the selected villages were listed along with their operational holdings in the descending order. Then they were stratified into two groups *i.e.,* less than 2 ha (Group I farms) 2 and above 2 ha (Group II farms), by following probability proportional to number 60 from Group I and 60 from Group II, to make the total size of the sample 120 for the study. The data pertaining to cost and returns of Bengalgram was obtained through survey method and enquiries were made with the help of pre-tested schedules. Simple tabular analysis was employed

Table 1. Cost of cultivation of bengalgram according to farm size item wise (Rs. /ha)

S.No.	Particulars	Size of the farm					
		Group I	%Total cost	Group II	%Total cost	Pooled	%Total cost
I	**Operational costs**						
1	Human labour	4009.48	8.06	3898.32	7.37	4013.62	7.90
	a) Family labour	964.46	1.94	65.93	0.12	67.01	0.13
	b) Hired labour	3045.02	6.12	3832.39	7.25	3946.61	7.77
2.	Machine labour	8106.54	16.29	9419.17	17.82	8169.91	16.08
3.	Seed	2939.47	5.91	3057.12	5.78	2954.69	5.81
4.	Seed treatment	42.83	0.09	21.27	0.04	38.52	0.08
5.	Manures	708.69	1.42	232.85	0.44	320.28	0.63
6.	Fertilizers	2246.64	4.51	2958.12	5.60	2985.96	5.88
7.	Plan protection chemicals	1970.32	3.96	2251.73	4.26	2200.02	4.33
8.	Interest on working capital	475.57	0.96	518.67	0.98	491.22	0.97
9.	Total operational costs	20499.54	41.19	22357.24	42.29	21174.24	41.67
II	**Fixed costs**						
1.	Land revenue	494.00	0.99	494.00	0.93	494.00	0.97
2.	Depreciation	722.48	1.45	1199.56	2.27	921.02	1.81
3.	Rental value of owned land	23465.00	47.15	23465.00	44.39	23465.00	46.17
4.	Interest on fixed capital	4582.71	9.21	5348.66	10.12	4765.68	9.38
	Total fixed costs	29264.19	58.81	30507.22	57.71	29645.70	58.33
	Total cost	49763.73	100	52864.46	100	50819.94	100

for estimating the costs and returns and various farm income measures were employed to assess the profitability of Bengalgram cultivation. Calculation of the rental value of the owned land, the existing rate in the study area was taken into consideration. It was accounted for Rs.23465 per hectare. The existing leased in amount was taken into consideration for calculation of rental value of owned land.

RESULTS AND DISCUSSION

A perusal of Table 1 revealed that the total cost of cultivation of Bengal gram per hectare was Rs.49763.73, Rs.52864.46 and Rs.50819.94 for Group I, Group II and pooled farms respectively. Cost of cultivation per hectare was increased with increasing size of the farm. This trend could be largely due to intensive use of monetary inputs by Group II farmers. The breakup of cost of cultivation indicated that the total variable cost per hectare were Rs. 20499.54(41.19 per cent) for Group I, Rs. 22357.24 (42.29 per cent) for group II with pooled Rs. 21174.24 (41.67 per cent). Thus a direct relationship was observed between variable cost and the farm size. Among variable cost, the machine labour found to be a major item of cost in all the size groups, which formed 16.29 percent, 17.28 per cent and 16.08 per cent in Group I group II and over all farms respectively. Next major item of cost incurred by the farmers were human labour (Rs. 4009.48), and seed (Rs.2939.47)

The total fixed cost was Rs. 29264.19 (58.81 percent) for Group I, Rs. 30507.22 (57.71 per cent) for group II with pooled farm Rs. 29645.70 (58.33 per cent) per hectare. It has indicated a direct relationship with the farm size. Among the fixed cost, the rental value of owned land followed by interest on fixed capital, depreciation and land revenue respectively in both the size groups. This is in collaboration with the study conducted by Srivastava *et al.* (2007) and Pawar N D (2006).

Cost of cultivation according to cost concepts:

Cost concepts were worked out for two different size groups and presented in Table 2

Form the table it was clear that Cost A_1, B_1, B_2, C_1, C_2 and C_3 had direct relationship with the

Table 2. Cost of cultivation of Bengalgram as per cost concepts, (Rs. ha^{-1})

Particulars	Group I	Group II	Pooled
Cost A1	20751.55	23984.86	22522.24
Cost A2	20751.55	23984.86	22522.24
Cost B1	25334.27	29333.53	27287.92
Cost B2	48799.27	52798.53	50752.92
Cost C1	26298.73	29399.46	27354.93
Cost C2	49763.73	52864.46	50819.93
Cost C3	54740.10	58150.90	55901.93

Table 3. Unit cost of production, productivity and gross returns in Bengalgram

Particulars	Physical returns (q ha^{-1})	Total cost of cultivation (Rs. ha^{-1})	Cost of production (Rs.qtl^{-1})	Gross returns (Rs. ha^{-1})
Group I	20.34	49763.73	2446.59	59758.92
Group II	22.46	52864.46	2353.72	63449.50
Pooled	21.17	50819.93	2400.56	60334.50

farm size. The respective costs per hectare Rs.20751.55, Rs.25334.27, Rs.48799.27, Rs.26298.73, Rs.49763.73 and Rs.54740.10 was cost A_1, cost B_1, cost B_2, cost C_1, cost C_2 and cost C_3 on Group I farm and In Group II cost A1, B_1, B_2, C_1, C_2, C_3 were Rs.23984.86, Rs.29333.53, Rs.52798.53, Rs.29399.46, Rs.52864.46 and Rs.58150.90, respectively. Similarly in pooled farms, Rs.22522.24, Rs.27287.92 and Rs.50752.92, Rs.27354.93, Rs.50819.93 and Rs.55901.93 was cost A_1, cost B_1, cost B_2, cost C_1, cost C_2 and cost C_3, respectively.

Productivity and per unit cost of production:

From the Table 3, it was observed that the productivity of the Bengalgram has a direct relationship with the farm size. The productivity per hectare was 20.34 quintals for Group I, 22.46 quintals for Group II and 21.17 quintals for pooled farms. The cost of production per quintal was worked out to be Rs.2446.59, Rs.2353.72 and Rs.2400.56 on Group I, Group II and pooled farms respectively. The low cost of production per quintal on Group II was due to higher physical returns.

Farm business analysis

The various income measures of farm business analysis were calculated and presented in Table 4. In addition to this the input-output ratio and cost benefit ratio have also been worked out. It was observed from the table that the per hectare net income was increased with increase in farm size. The net income per hectare was Rs.5018.81, Rs.5298.60 and Rs.4432.57 on Group I, Group II and pooled farms respectively. Benefit cost ratio at net income level in different size groups of farms also indicated direct relationship between benefits derived from every rupee of investment and the farm size. Family labour income, farm business income and farm investment income were showed a positive relationship with the farm size.

Conclusions:

The per hectare total cost of cultivation of Bengal gram indicated a direct relationship with the farm size. It varied from Rs.49763.73 on Group I farms and Rs.52864.46 on Group II farms with Rs.50819.94

Table 4. Farm business analysis of Bengalgram.

Particulars	Group I	Group II	Pooled
Farm business income	39007.37	39464.64	37812.26
Family labour income	10958.65	10650.97	9581.58
Farm investment income	33066.53	34112.26	32663.25
Net income	5018.81	5298.60	4432.57
Input-output ratio	1:1.20	1:1.20	1:1.18
Benefit cost ratio	1:0.10	1:0.10	1:0.08

on pooled farms. Among various inputs, machine labour had maximum share in the total cost of cultivation followed by human labour, seed, fertilizers and plant protection chemicals in operational costs. Among fixed costs rental value of owned land had maximum shared in total cost of cultivation followed by interest on fixed capital, depreciation. Cost of cultivation according to cost concepts showed direct relationship with size of the farm.

The per hectare productivity ranged from 20.34 quintal on the Group I farm to 22.46 quintals on Group II farms with 21.17 quintals on pooled farms, the study revealed that productivity increased with the increase in farm size Cost of production per quintal decreased with increase in farm size. The cost of production per quintal ranged from Rs.2353.72 on Group II farms to Rs.2446.59 on Group I farms with Rs.2400.56 on pooled farms.

Farm business analysis revealed that the net income per hectare was from Rs.5018.81 on Group I farms to Rs.5298.60 on Group II farms with Rs.4432.57 on pooled farms. Gross return showed a positive relationship with the size of the farm with maximum on Group II(Rs. 63449.50) and minimum on Group I farms(Rs. 59758.92).Farm investment income increased with the increase in farm size.

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