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## Comparative economics of chickpea production in Rajasthan with reference to Gangour variety

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### Abstract

The Comparative Economics of the chickpea production in Rajasthan with reference to the Gangour variety was evaluated in this study. The evaluation was based on a household survey of Bengal gram grower in 4 villages of Bikaner District of Rajasthan. The estimated cost of cultivation was ₹32068.10, Net Income ₹44599.90 in case of the Gangour variety while cost of cultivation ₹30535.43, Net Income ₹15494.07 was in case of local cultivar. The gross income from the Gangour variety was greater than local variety that is ₹76668 and ₹46029.50 per hectare, respectively because of higher yield and low cost of production of former as compared to latter one and their yield was of 17.70q and 10.65q, respectively and the cost of production was ₹1811.75 and ₹2867.18 respectively. The Output- Input Ratio for the Gangour variety was 2.39 and for local variety was 1.51. Cultivation of Gangour variety are profitable than local varieties.

**Keywords:** comparative economics, cost of cultivation, cost of production, net income, output-input ratio

### Introduction

Chickpea (*Cicer arietinum* L.), is also known as garbanzo bean or Bengal gram, is an old growing pulse and one of the seventh Neolithic founder crops in the Fertile Crescent of the Near East (Lev-Yadun, *et al.* 2000) [8]. Globally, it is the third most important pulse crop in area and production, next to dry beans and field pea (FAO, 2011) [6]. Chickpea is an important legume that plays prerequisite role in terms of food and nutritional security of people in the developing countries like India, contributing to protein intake, mainly for the vegetarian population. It is a good source of carbohydrates and protein, together constituting about 80% of the total dry seed mass in comparison to other pulses (Chibbar, *et al.* 2010, Geevani, 1989) [4]. It is cholesterol free and is a good source of dietary fibres, vitamins and minerals (Wood and Grusak, 2007) [15]. It contains 23 percent protein, 64 percent carbohydrates, 47 percent starch, 5 percent fat, 6 percent crude fibre, 6 percent soluble sugar and 3 percent ash (Aykroyd and Doughty, 1982) [3]. Being a leguminous crop, it contributes in improving soil fertility by nitrogen fixation into the soil. This property has an added benefit to farmers by reducing external applications of nitrogenous fertilizers and in turn cuts cost of production and thus is environment friendly crop.

South and Southeast Asia contributes about 81 percent to the chickpea production in globe, with India as the principal chickpea producing nation (84% share in the region). The chickpea area marginally expanded from 6.4 million ha to 9.93 million ha during the period 2000-01 to 2013-14. However, the production expanded substantially from 5.47 to 9.53 million tonnes due to the rise in grain yields from 853 kg/ha to 960 kg/ha (Reddy and Reddy, 2010, Indian Institute of Pulses Research, 2013-14). In spite of large area and production there are many constraints of acreage, production and productivity in India as well as in Rajasthan. Area of pulses does not expand incredibly as compared to wheat and rice. It includes various constraints such as unavailability of high yielding seeds, insufficient knowledge of package and practice, less input use, insufficient irrigation facilities and it mostly depends on rains, insufficient fertilizers and minerals use. Usage of improved seeds is one of the important factors for accelerating productivity when compared with other yield attributing inputs. Its genetic potential for higher yield is still under estimation process as a result of strong and dominating effects of economy. The fact is that the ultimate aim of chickpea growers is to get higher remunerative income through use of superior varieties, disease and insect resistance and other characteristics (Umretiya, 2015) [14]. So, there is need to develop a high yielding variety which can grow in rain fed condition and give more profitability to farmers.

ARS, Shree Ganganagar of SKRAU, Bikaner has developed the ‘Gangour’ variety of chickpea under AICRP (All India Coordinated Research Project) which is very popular in the chickpea growing area and gradually replacing all existing (Local/Traditional) varieties. Under the present circumstances, this study is aimed to address such issues.

**Material and Method**

The study is based on primary data as well as on secondary data. The primary data was collected through well structured, pretested and comprehensive schedules from 120 chickpea growers in Rajasthan. Secondary data was collected from different government agencies like RSSOCA and area, production and yield was collected from different secondary sources like Rajasthan statistical abstract, therefore Rajasthan state purposively selected, due to higher production, Bikaner district of Rajasthan was selected. Then, two tehsils were selected on the basis of production. From each selected tehsil,

two villages were chosen randomly. From each of the village, 15 farmers were interviewed who were growing the Gangour variety and other 15 who were growing local/traditional variety. Total of 120 farmers were interviewed for this study. Cost of cultivation was calculated by cost concept given by CACP (Commission on agriculture cost and price). The different income measurements were also used for estimating different income level.

**Results and Discussions**

Cost of cultivation of different variety of chickpea It could be observed from table 1 that on Gangour variety and local variety of chickpea cultivation farmers incurred a total cost of ₹32068.10 and ₹30535.43, respectively.

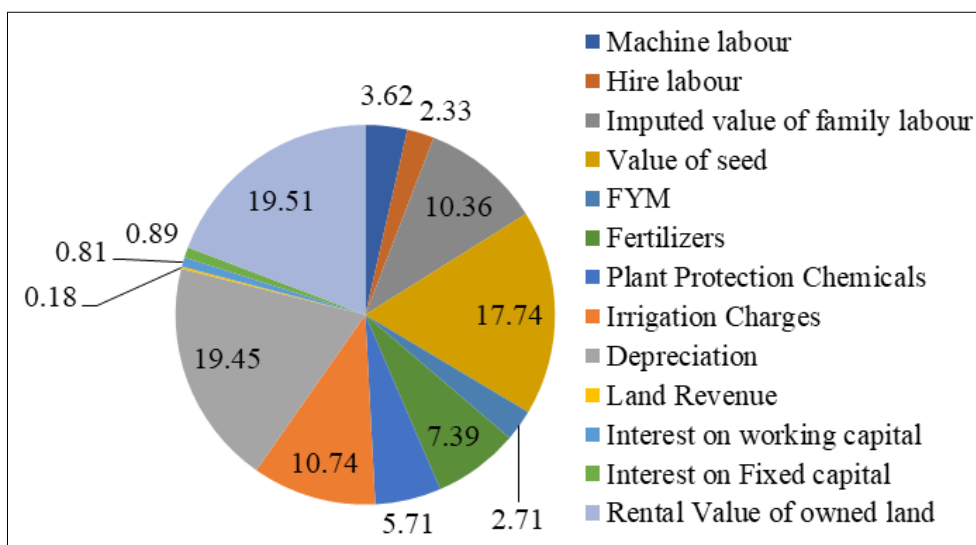
The cost of cultivation on the Gangour variety farms was higher than the cost incurred for the local variety farms due to higher cost incurred towards plant protection, seed and irrigation.

**Table 1:** Breakup of cost of cultivation of Chickpea

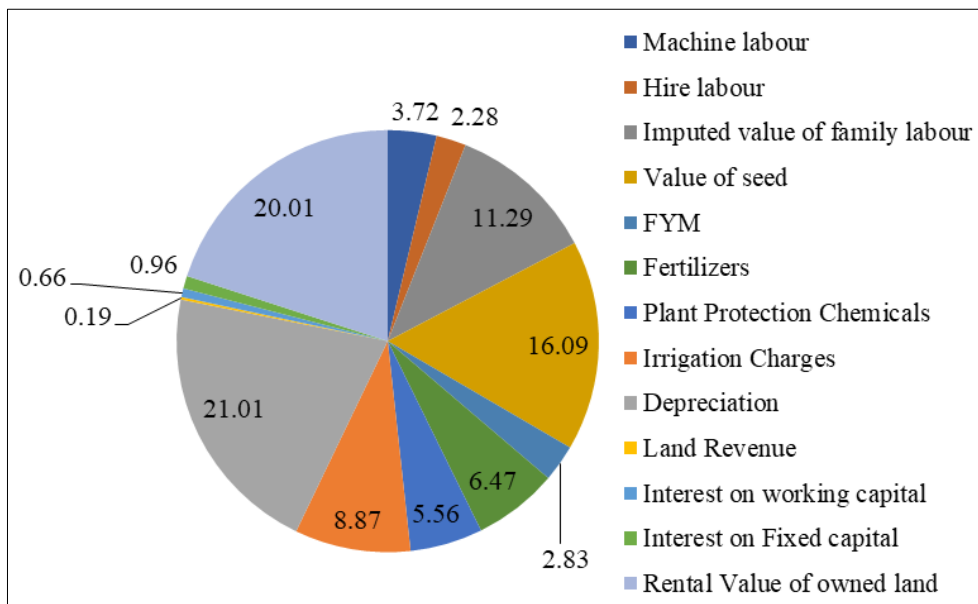
Input	Gangour (/ha)	Local (/ha)	% Change
Machine labour	1162.50	1137.50	2.20
Hire labour	750.00	697.50	7.53
Imputed value of family Labour	3322.50	3450.00	-3.70
Value of seed	5691.30	4915.60	15.78
FYM	870.00	865.25	0.55
Fertilizers	2371.90	1976.29	20.02
Plant Protection Chemicals	1831.88	1698.00	7.88
Irrigation Charges	3445.00	2710.00	27.12
Depreciation	6239.86	6416.49	-2.75
Land Revenue	60.00	60.00	0.00
Interest on working capital	261.80	203.68	28.53
Interest on Fixed capital	286.87	295.99	-3.08
Rental Value of owned Land	6257.63	6109.13	2.43
Total	32068.10	30535.43	5.02

Results showed that the Rental value of the land accounts higher cost in local variety compared to the Gangour. The depreciation is second most dominant cost. Value of seed is higher in case of the Gangour variety because of the seed of the Gangour variety is costly than that of local variety. The

irrigation charge is higher in case of the Gangour variety because of it needed more water requirement. Fertilizer and plant protection chemical charges are also higher in case of the Gangour variety because it required more input than the local variety.



**Fig 1:** Different costs in production of chickpea with reference to Gangour variety (%)



**Fig 2:** Different costs in production of chickpea with reference to local variety (%).

Figure 1 and 2 shows the percentage contribution of different elements of cost of cultivation for both local or traditional variety and for the Gangour variety. The cost concepts were measured. These costs included Cost A1, Cost A2, Cost B1, Cost B2, Cost C1 and Cost C2. The comparative estimates of different costs incurred in chickpea cultivation for two different varieties of farms i.e. Gangour and Local are explained in this section. The estimates of different costs incurred in chickpea cultivation for Gangour and Local variety are given in table 2.

**Table 2:** Cost of cultivation of chickpea on different cost concepts basis

Cost	Gangour (/ha)	Local (/ha)	% change
Cost A1	22201.11	20206.06	9.87
Cost A2	22201.11	20206.06	9.87
Cost B1	22487.98	20502.05	9.69
Cost B2	28745.60	26611.18	8.02
Cost C1	25810.48	23952.05	7.76
Cost C2	32068.10	30535.43	5.02

The table 2 reveals that Cost A1 was ₹22201.11 and ₹20206.06 for Gangour and local variety, respectively. Cost A1 and cost A2 were the same because no chickpea growers had leased-in land. Cost B1 was worked out to be ₹22487.98 and ₹20502.05, respectively.

The Cost B2 was worked out to be ₹28745.60 and ₹26611.18, respectively. The Cost C1 was worked out to be ₹25810.48 and ₹23952.05, respectively. The Cost C2 was worked out to be ₹32068.10 and ₹30535.43 respectively. The cost of cultivation of Gangour variety was higher than cost of local variety.

**Profitability of the Gangour variety cultivation  
Productivity of chickpea**

The productivity of chickpea and gross returns on sample farms are given in table 3. The table reveals that yield of Gangour and local variety is 17.70 and 10.65q/ha, respectively. The yield was higher on Gangour variety grower than the local variety grower. Similar result was found by Selvaraj, *et al.* (2010) <sup>[10]</sup> in his study.

**Table 3:** Gross income from of chickpea cultivation

Category	Yield (q/ha)		Price /q		Income (/ha)		Gross income (/ha)
	Main product	By product	Main product	By product	Main product	By product	
Gangour	17.70	26.33	4030.00	198.25	71455.00	5213.00	76668.00
Local	10.65	15.00	4035.00	196.25	43087.50	2942.00	46029.50

Table 3 shows that the yield of Gangour variety is greater than local variety that is 17.70q and 10.65q, respectively. Similar result was found by Aggarwal, *et al.* (2018) and Shiyani, *et al.* (2002) <sup>[12]</sup> in his study. The gross income from Gangour variety is greater than local variety that is ₹76668 and ₹46029.50 per hectare, respectively. Gross income from Gangour variety is higher because of its higher yield. Similar result was found by Singh, A. in his study. Additional income from Gangour variety is ₹30638.50/ha. Similar result was found by Tripathi and Das (2002) <sup>[13]</sup> in his study.

**Income measures**

This includes farm business income, which indicates returns over variable cost. The family labour income, which is

residual of gross income over cost B2, explains the returns to family labour and has lot of relevance under Indian conditions. A comparison of incomes estimated for two different varieties of sample farms of chickpea growers is shown in table 4.

**Table 4:** Returns from cultivation of Chickpea on sample farms.

Particulars	Gangour (/ha)	Local (/ha)
Gross income	76668.00	46029.50
Farm business income	54466.89	25823.44
Net income	44599.90	15494.07
Family labour income	47922.40	19418.32
Output-Input Ratio	2.39	1.51

It is evident from the table 4 that gross income from the Gangour variety is more than Local variety. Gross income from the Gangour variety is ₹76668.00 per hectare and from local variety is ₹46029.50 per hectare which is very low as compared to Gangour variety. The farm business income from Gangour variety grower and local variety is ₹54466.89 and ₹25823.44, respectively. The higher farm business income from Gangour variety is because of its higher yield. Per hectare net income from Gangour variety grower and local variety is ₹50857.52 and ₹15494.07, respectively. Net income from Gangour variety is more than local variety because of its higher yield. Output- Input Ratio from the cultivation of Gangour variety and local variety is 2.39 and 1.51, respectively. Output- Input ratio is high in case of Gangour variety which mean that per rupee output from the Gangour is higher than the local variety.

### Cost of production

The costs of production per quintal on different cost concept basis for Gangour and local variety are given in table 5.

**Table 5:** Cost of Production of chickpea different on the basis of cost concepts

Particular	Gangour	Local
Cost (/ha)	32068.10	30535.43
Production (q/ha)	17.70	10.65
Cost of Production (/q)	1811.75	2867.18

It is evident from the table 5 that the cost of production for the Gangour variety is less than the cost of production of local variety that is ₹1811.75 and ₹2867.18 per quintal, respectively. The cost of production is lower in case of Gangour variety because of its higher yield. It indicates the superiority of Gangour variety over local variety. The similar results were found by Shiyani, *et al.* (2001) <sup>[11]</sup> and Deb., *et al.* (2005) <sup>[5]</sup> in their study.

### Conclusion

The Comparative Economics of chickpea production in Rajasthan with reference to Gangour variety was evaluated in this study We found that the Gangour variety has more cost of cultivation than local varieties due to high value of seed. But Gangour variety has low cost of production than local variety. The study also shows that the productivity, input output ratio and net income of Gangour variety higher than the local varieties.

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