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Chickpea: Study on cost of cultivation and profit measures in Auraiya Dist. of western UP

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Abstract
Chickpea is one of the important crop in U.P. as well as, in India. World-wide India ranks 1st in production of chickpea. In India, the total food production in 2013-14 was about 257.4 million tones out of these only 19.3 million tones was contributed by pulses. The production of cereals increase by 460 per cent since 1950-51 to give the year but the production of pulses in the country has increased only 178 per cent. There is acute shortage of pulses in the country. The prices have increased considerably and the consumer is hard hit to buy his pulse requirements. Thus the availability of pulse per capita per day has proportionately decline from 71g (1955) to 36.9g (1998) against the minimum requirement of 70g per capita per day. District Auraiya was purposively selected and the block Auraiya Sadar having highest acreage under chickpea was selected purposively for the study. List of the villages from selected block were prepared along with acreage under Chickpea cultivation and 5 villages were selected randomly for study. In all 100 number of farmers were selected proportionally from each category of farmers and classified into three categories i.e. marginal (below 1 ha), small (1-2 ha) and medium (2-4 ha & above). The data were collected by personal interview technique with the help of pre-tested structured schedule. The period of enquiry pertain to the agricultural year 2017-18. Overall average, cost of cultivation was estimated rupees 27819.43, in the study area. Per hectare cost of cultivation shows positive relation with size of holding as it was found maximum on medium farms (Rs. 29536.05). Overall average, cost of production was estimated Rs. 2467.42 in the study area. Overall average, input-output ratio came to 1:2.46 to 1:1.53 on the basis of cost-A and cost-C. Overall average, net income and gross income found Rs. 14760.57 and Rs.42580.00 in the study area. It is inferred that chickpea cultivation is suitable for upgrading food security mission of India, as well as, suitable for doubling the income of farmers in the study area.

Keywords: Net income, input-output ratio, gross income

Introduction
India is the largest producer of pulses in the world with 25 per cent share in the global production. The major chickpea producing counties which contributed to about 90% of global chickpea production during 2013-India (67.4%), Australiya (6.21%), Pakistan (2.13%), Turkey (3.86%), Myanmar (3.74%), Iran (2.25%). In India, the total food production in 2013-14 was about 257.4 million tones, out of which only 19.3 million tones was contributed by pulses. The production of cereals increase by 460 per cent since 1950-51 but the production of pulses in the country has increased only 178 per cent. There is acute shortage of pulses in the country. The prices have increased considerably and the consumer is hard hit to buy his pulse requirements. Thus the availability of pulse per capita per day has proportionately decline from 71g, 1955 to 36.9g 1998 against the minimum recommended requirement of 70g per capita per day. There is not much possibility of the import of pulses in the country. The production of pulses has to be increased internally to meet the demand. India is the largest producer of chickpea in the world sharing 65.25 and 65.49 per cent (FAO STAT, 2013) of the total area (11.97 m ha) and production (9.53mt), respectively. In India, Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra, Gujarat, Andhra Pradesh and Karnataka are the major chickpea producing states sharing over 95 per cent area. During last five decades, chickpea has registered significant increase in production (3.53 average annual growth rate for 1950-2012), which is primarily due to introduction of high yielding and diseases resistant varieties and adoption of improved production technologies. During last ten years, the productivity of chickpea has increased @ 1.74 per cent but the gross Chickpea production has gone up by 6.32 per cent, besides the growth in area @ 4.43 per cent. With accelerated growth rate and steps taken by the government under National Food Security Mission, the target of 10.22 mt chickpea production by 2030 can be achieved, successfully. Gram, commonly known as "Chickpea" or 'Bengal gram' is the most important pulse crop of India. India alone covers

nearly 52.5 per cent of the world acreage and production of gram. Chickpea occupies about 38 per cent of area under pulses and contributes about 50 per cent of total pulse production of India. It is used for human consumption, as well as, for feeding to animals. It is eaten both whole fried or boiled and salted, or more generally in the form of the split pulse which is cooked and eaten. In Auraiya district of U.P., no scientific and economic study has been so far conducted, hence this study entitled Chickpea: Study on Cost of Cultivation and Profit measures in Auraiya Distt. Of western U.P. assumes special importance and was carried out with objective: to workout cost of cultivation and profit measures of chickpea cultivation in Auraiya district of U.P.

Materials and Methods

Auraiya district of Uttar Pradesh was selected purposively to avoid the operational inconvenience of the investigator. A list of all 7 blocks of Auraiya district was prepared and one block namely Auraiya having highest are coverage under chickpea crop was selected. A list of villages growing chickpea was prepared from selected block and five villages were selected for study. A list of all chickpea growers of each selected village was prepared along with their size of holding. The cultivators were stratified into 3 categories, marginal (below1 ha), small (1-2 ha) and medium (more than 2 ha).Finally 100 farmers were selected randomly according to their proportion under various categories viz; marginal (45), small (35) and medium (20). The primary data were collected by survey method, while secondary data were collected from journals, reports and records of districts and block head quarter. The study covers the agriculture year 2017-18. Simple tabular statistical analysis was applied for arriving the result. Weighted average and percentages were drawn out for various measures of interest for presenting in more effective manner.

Result and Discussion

Table-1 revealed that, overall average cost A_1/A_2, cost B_1, cost B_2, cost C_1, cost C_2 and cost C_3 came to Rs.17327.55, Rs.17967.76, Rs. 22976.76, Rs. 20290.39, Rs.25290.38 and Rs. 27819.43, respectively.

On an average, gross income was recorded Rs. 42580.00 and net income came to Rs.14760.57. On medium farms, gross income was highest (Rs.14554.86), followed by small farms (Rs. 14514.59) and lowest on marginal farms i.e. (Rs.15157.32), respectively.

The net income was highest on marginal farms Rs. 15157.32 followed by small farms Rs. 14514.59 and medium farms Rs. 14554.86. On an average family labour income, farm business income and farm investment income were observed to be Rs. 19603.24, Rs. 25252.45 and Rs. 22938.82, respectively. Family labour income was highest on marginal farms followed by small and medium farms & farm investment income was highest on marginal farms followed by small farm and medium farms and farm business income was highest on marginal farms, followed by small farms and medium farms. On an average, cost of production per quintal and yield per hectare were estimated to Rs. 2467.42 per quintal and 10.29 quintal, respectively.

On an average input output ratio regarding costs C_3, C_2, C_1, B_2, B_1, and A_2/A_1 were recorded 1:1.53, 1:1.68, 1:2.10, 1:1.85, 1:2.37 and 1:2.46, respectively. On the basis of cost C_3 input output ratio was highest on marginal farms (1:1.58), followed by small (1:1.50) and medium (1:1.49), respectively. It may be concluded that the costs of cultivation on different size group of farm increases with an increase in farm size. But net return per hectare was found negative trend with farm size. It was because of less increase in yield against the increased input factors at increasing size of farm. Chickpea is an important pulse crop of India.

Table 1: Per hectare costs and income measures of chickpea on various size group of farms in Auraiya district of U.P. (Rs.)

S N.	Particulars	Size group of farms			
		Marginal	Small	Medium	Overall average,
1.	Cost A1/A2	14247.46	19530.22	20403.04	17327.55
2.	Cost B1	14832.14	20222.28	21122.45	17967.76
3.	Cost B2	19832.14	25222.28	26122.45	22976.76
4.	Cost C1	18704.25	21282.08	22123.68	20290.39
5.	Cost C2	23704.25	26282.08	27123.68	25290.38
6.	Cost C3	26074.68	28910.29	29536.05	27819.43
7.	Yield q/ha.				
a.	Main Product	9.96	10.50	10.65	10.29
b.	By Product	6.96	7.11	7.42	7.10
8.	Grass Income (Rs/ha)	41232.00	43424.88	44090.91	42580.00
a.	M.P	39840.00	42003.22	42606.79	41150.49
b.	B.P.	1392.00	1421.64	1484.12	1429.51
9.	Net return over cost C3	15157.32	14514.59	14554.86	14760.57
10.	Family Income	21399.86	18202.60	17968.46	19603.24
11.	Farm Business income	26984.54	23894.66	23687.87	25252.45
12.	Farm investment income	23112.43	22834.86	22686.64	22938.82
13.	Cost of production (Rs/qt)	2388.90	2513.52	2530.91	2467.42
14.	Input-Output ratio				
a.	On the basis of cost A1	1:2.89	1:2.22	1:2.16	1:2.46
b.	On the basis of cost B1	1:2.78	1:2.15	1:2.09	1:2.37
c.	On the basis of cost B2	1:2.08	1:1.72	1:1.69	1:1.85
d.	On the basis of cost C1	1:2.20	1:2.04	1:1.99	1:2.10
e.	On the basis of cost C2	1:1.74	1:1.65	1:1.63	1:1.68
f.	On the basis of cost C3	1:1.58	1:1.50	1:1.49	1:1.53

Summary and Conclusions

Chickpea is one of the important crop in U.P. as well as, in India. World-wide India ranks 1st in production of chickpea. In India, the total food production in 2013-14 was about 257.4 million tones out of these only 19.3 million tones was contributed by pulses. The production of cereals increase by

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