Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(3): 3856-3859
Received: 10-03-2019
Accepted: 12-04-2019

Vikas Singh Sengar
Research Scholar, Deptt. of Agril. Economics NDUA&T Kumarganj Ayodhya, Uttar Pradesh, India

RR Verma
Asst. Prof. Deptt. of Agril. Economics NDUA&T Kumarganj Ayodhya, Uttar Pradesh, India

Riyaz Ahmad
Research Scholar, Deptt. of Agril. Economics NDUA&T Kumarganj Ayodhya, Uttar Pradesh, India

KK Singh
Asst. Prof. Deptt. of Agril. Economics NDUA&T Kumarganj Ayodhya, Uttar Pradesh, India

Ajay Singh
PG Student, Deptt. of Agril. Economics NDUA&T Kumarganj Ayodhya, Uttar Pradesh, India

Correspondence
Vikas Singh Sengar
Research Scholar, Deptt. of Agril. Economics NDUA&T Kumarganj Ayodhya, Uttar Pradesh, India

An economic study of farm structure, cropping pattern and cropping intensity of chickpea farms in Auraiya district of Uttar Pradesh

Vikas Singh Sengar, RR Verma, Riyaz Ahmad, KK Singh and Ajay Singh

Abstract
Chickpea is an important crop with a view of food and nutritional value and also income and employment generation ability, possibility to raise the cropping intensity due to its nature of best fit with food grain production system. Keeping in view the importance of the chickpea a study on An Economic study of farm structure, cropping pattern and cropping intensity of chickpea farms in Auraiya District of Uttar Pradesh was specifically carried out. District Auraiya was purposively selected and one block, namely, Auraiya having highest acreage under gram was selected purposively for the study, a List of the villages of selected block was prepared along with acreage under Chickpea cultivation and 5 villages were selected randomly for study. Ultimately 100 respondents were selected following proportionate random sampling. Finally 45 marginal (below 1 ha), 35 small (1-2 ha) and 20 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. The average size of holding of marginal, small, and medium, farms were found 0.64, 1.41, and 3.06 hectares, respectively with an overall average size of land holding was estimated as 1.39 hectare. Overall per farm investment was observed Rs. 211801.35 and per hectare investment rs. 190780.79 in the study area. Per farm investment revealed direct relationship with the farm size while per hetare investment gives in direct relationship with the farm size. Bajra, wheat and moong were the major crops of kharif, rabi and zaid season, respectively. The overall average cropping intensity on sample farms observed 210.79 per cent. Cropping intensity was found highest on marginal farms 215.63 per cent followed by small 211.35 per cent, and medium 206.53 per cent, respectively. Cropping intensity was inversely related with farm size. Investment per farm and per hectare on building and livestock were inversely related with farm size.

Keywords: Cropping pattern, cropping intensity, crop rotation, per-farm and per hectare investment

Introduction
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. 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. Pulses are grown across the country with highest share coming from Madhya Pradesh (24 per cent), Uttar Pradesh (16 per cent), Maharashtra (14 per cent), Andhra Pradesh (10 per cent), Karnataka (7 per cent) followed by Rajasthan (6 per cent), which together accounted about 77 per cent of the total pulse production, while the remaining 23 per cent contributed by Gujarat, Chhattisgarh, Bihar, Orissa and Jharkhand. Among Pulses, chickpea (45.1 per cent) occupies the major share, followed by pigeonpea (15.7 per cent), moong (9.9 per cent), urad (9.6 per cent) and lentil (7.3 per cent), altogether which together accounts for 87 per cent of the total

pulses production. Much of the pulses production has been slowly shifted from kharif to rabi and now the rabi share is increased to about 61.10 per cent of the total pulse production. Therefore, more emphasis is required to be given on rabi pulse crops as there production share is much higher and increasing in recent years.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. Chickpea flour (besan) is used in the preparation of various types of sweets. Chickpea considered having medicinal effects and it is used for blood purification. Chickpea contains 21.1 per cent protein, 35.5 per cent carbohydrate and 4.5 per cent fat. It is also rich in calcium, iron and niacin. Chickpea is a less labour intensive crop and it requires low inputs as compared to other high yielding cereals. Most of the people in the country satisfy their appetite requirements by consuming pulses and chickpea is the most dominating pulse in that list. Chickpea is one of the important pulse crops of Auraiya district of Uttar Pradesh. Chickpea occupied 3802 hectare of area and 1986 metric tonnes productions with 5.22 quintal per hectare productivity. (Art Evam Sankhyaki Prabhag, 2016). Chickpea seems to have lucrative pulse crop of Auraiya district of Uttar Pradesh. The study was carried out with the objective, **to work out farm asset structure, cropping pattern and cropping intensity on sample farms in study area.**

Methodology: Multistage stratified purposive cum random sampling procedure was used for the selection of district, block, villages and respondents.

Auraiya district of Uttar Pradesh was selected purposively seeing the convenience of investigator. A list of all 7 blocks of Auraiya district was prepared and one block, namely, Auraiya having highest acreage under chickpea crop was selected purposively for the study. A list of all the villages falling under selected block was prepared and five villages were selected randomly from the list. A separate list of all the chickpea growers of selected five villages was prepared along with their size of holdings, and were grouped into three categories; [1] Marginal (below 1ha.), [2] Small(1-2 ha.), and [3] Medium (2-4ha.). From this list, a sample of 100 respondents following proportionate random sampling was drawn. Ultimately (45 marginal, 35 small and 20 medium farmers) were selected.The primary data were collected by survey method through personal interview with use of pre-structured and pre-tested schedule, while secondary data were collected from block head quarter and district offices etc. The data was pertained to the agricultural year 2017-18. The data collected from the sample farmers were analyzed and estimated with certain statistical tools it evolves the simplest and important measures of average which have been used into statistical analysis i.e. weighted average and geometric mean.

Result and Discussion

Table 1: Average size of holding on different size group of sample farms (ha).

Sl. No.	Size groups of farmers	No. of farmers	Net cultivated area (ha)	Average size of farms (ha)
1.	Marginal	45	28.81 (20.68)	0.64
2.	Small	35	49.38 (35.44)	1.41
3.	Medium	20	61.13 (43.88)	3.06
Grand Total		100	139.31 (100)	1.39

(Figures in parentheses indicate percentage to total.)

Table-1 Depicted that distribution of cultivated land owned by different size group of sample farms revealed that 20.68 per cent of cultivated land was owned by 45.00 per cent of marginal size of farms. Where as 35.44 and 43.88 per cent of this area were owned by 35.00 and 20.00 per cent of small and medium size group of farms. It show that land and human labour combination on sample farm are not appropriate. The average size of holding of marginal, small, and medium, farms were found 0.64, 1.41, and 3.06 hectares, respectively with an overall average size of land holding was estimated as1.39 hectare.

Table 2: Per farm investment on different size group of sample farms (Rs.)

S. No.	Particulars	Size of farms			
		Marginal	Small	Medium	Overall average
1.	Buildings	100577.74 (61.07)	138595.70 (61.87)	178165 (60.11)	129401.48 (61.09)
I.	Residential	87444.43 (53.09)	123681.43 (55.21)	159800.00 (53.91)	114598.49 (54.11)
	a. Kachcha	11766.66 (7.14)	11824.27 (5.28)	14550.00 (4.91)	12343.49 (5.83)
	b. Pucca	75677.77 (45.95)	111857.16 (49.93)	145250.00 (49.00)	102255.00 (48.28)
II.	Cattle shed	11044.43 (6.70)	11100.00 (4.95)	11200.00 (3.78)	11094.99 (5.24)
	a. Kachcha	8655.55 (5.25)	7571.44 (3.38)	6200.00 (2.09)	7785.00 (3.68)
	b. Pucca	2388.88 (1.45)	3528.56 (1.57)	5000.00 (1.69)	3309.99 (1.56)
III.	Godown	2088.88 (1.26)	3814.29 (1.70)	7165.00 (2.42)	3707.99 (1.75)
	a. Kachch	0	0	440.00 (0.15)	88.00 (0.04)
	b. Pucca	2088.88 (1.26)	3814.29 (1.70)	6725.00 (2.27)	3619.99 (1.71)
2.	Milch Animals	52406.66 (31.82)	61037.15 (27.25)	69340 (23.39)	58814.00 (27.78)
a.	Cow	7315.55 (4.44)	11371.43 (5.08)	8300.00 (2.80)	8932.00 (4.22)
b.	Buffalo	36111.11 (21.93)	43142.86 (19.26)	53100.00 (17.91)	41970.00 (19.82)
c.	Goat	8980.00 (5.45)	6522.86 (2.91)	7940.00 (2.68)	7912.00 (3.74)
3.	Machinery and Implements	11707.56 (7.11)	24390.48 (10.89)	48904.00 (16.50)	23585.87 (11.14)
I.	Minor Implements	3741.95 (2.27)	9758.05 (4.36)	22013.95 (7.43)	9501.98 (4.49)
II.	Major Implements	7965.61 (4.84)	14632.43 (6.53)	26890.05 (9.07)	14083.89 (6.65)
	Grand total	164691.96 (100)	224023.30 (100)	296409.00 (100)	211801.35 (100)

(Figures in parenthesis indicate percentage to the total.)

Table 3: Per hectare investment on different size group of sample farms (Rs.)

S. No.	Particulars	Size of farms			
		Marginal	Small	Medium	Overall average
1.	Buildings	157152.72 (61.07)	98294.82 (61.87)	58223.86 (60.11)	116766.68 (61.21)
	Residential	136631.92 (53.09)	87717.33 (55.21)	52222.22 (53.91)	102629.87 (53.79)
	c. Kachcha	18385.41 (7.14)	8386.01 (5.28)	4754.90 (4.91)	12159.52 (6.37)
	d. Pucca	118246.51 (45.95)	79331.32 (49.93)	47467.32 (49.00)	90470.35 (47.42)
II	Cattle shed	17256.92 (6.70)	7872.34 (4.95)	3660.13 (3.78)	11252.96 (5.90)
	c. Kachcha	13524.30 (5.25)	5369.82 (3.38)	2026.14 (2.09)	8370.60 (4.39)
	d. Pucca	3732.62 (1.45)	2502.52 (1.57)	1633.99 (1.69)	2882.36 (1.51)
III.	Godown	3263.87 (6.70)	2705.17 (1.70)	2341.50 (2.42)	2883.85 (1.52)
	a. Kachcha	0	0	143.79 (0.15)	28.76 (0.02)
	b. Pucca	3263.87 (6.70)	2705.17 (1.70)	2197.71 (2.27)	2855.10 (1.50)
2.	Milch Animals	81885.41 (31.82)	43288.76 (27.25)	22660.13 (23.39)	56531.52 (29.63)
a.	Cow	11430.55 (4.44)	8064.85 (5.08)	2712.42 (2.80)	8508.93 (4.46)
b.	Buffalo	56423.61 (21.93)	30597.77 (19.26)	17352.94 (17.91)	39570.43 (20.74)
c.	Goat	14031.25 (5.45)	4626.14 (2.91)	2594.77 (2.68)	8452.17 (4.43)
3.	Machinery and Implements	18293.06 (7.11)	17298.21 (10.89)	15981.70 (16.50)	17482.59 (9.16)
III.	Minor Implements	5846.80 (2.27)	6920.60 (4.36)	7194.10 (7.43)	6492.09 (3.40)
IV.	Major Implements	12446.26 (4.84)	10377.61 (6.53)	8787.60 (9.07)	10990.50 (5.76)
	Grand total	257331.19 (100)	158881.79 (100)	96865.69 (100)	190780.79 (100)

(Figures in parenthesis indicate percentage to the total.)

Investment on different size group of farm on per hectare basis. On an overall average per hectare investment was found Rs. 190780.79, which was recorded higher on marginal farms Rs. 257331.19, followed by small Rs. 158881.79 and was lowest on medium farms i.e. Rs.96865.69, respectively. It may be concluded that per hectare investment on farm assets at different size group of farms had inverse relationship with holding size.

Table 4: Cropping pattern and cropping intensity on different size group of sample farms (ha)

Sl. No.	Crop	Average size of sample farm			Overall Average
		Marginal	Small	Medium	
A.	Kharif	0.64 (46.37)	1.41 (47.31)	3.06 (48.41)	1.39 (47.60)
1.	Paddy	0.26 (18.84)	0.58 (19.46)	0.24 (3.79)	0.37 (12.67)
2.	Maize	0.02 (1.44)	0.07 (2.34)	0.13 (2.05)	0.06 (2.05)
3.	Pigeon Pea	0.02 (1.44)	0.05 (1.67)	0.08 (1.26)	0.04 (1.37)
4.	Till	0.13 (9.42)	0.28 (9.39)	0.61 (9.65)	0.28(9.59)
5.	Bajra	0.19 (13.76)	0.41 (13.75)	1.92 (30.37)	0.61 (20.89)
6.	Chari	0.03 (2.17)	0.02 (0.67)	0.08 (1.26)	0.03 (1.03)
B.	Rabi	0.62 (44.92)	1.36 (45.63)	2.98 (47.15)	1.35 (46.23)
1.	Wheat	0.26 (18.84)	0.72 (24.16)	1.78 (28.16)	0.72 (24.66)
2.	Mustard	0.02 (1.44)	0.12 (4.03)	0.40 (6.32)	0.13 (4.45)
3.	Chick pea	0.27 (19.56)	0.35 (11.74)	0.46 (7.27)	0.34 (11.64)
4.	Barley	0.02 (1.44)	0.08 (2.68)	0.25 (3.95)	0.09 (3.08)
5.	Berseem	0.03 (2.17)	0.03 (1.01)	0.01 (0.16)	0.02 (0.68)
6.	Potato	0.02 (1.44)	0.06 (2.01)	0.08 (1.26)	0.05 (1.71)
C.	Zaid	0.12 (8.69)	0.21 (7.05)	0.28 (4.43)	0.18 (6.16)
1.	Moong	0.12 (8.69)	0.21 (7.05)	0.28 (4.43)	0.18 (6.16)
Total (a +b +c)		1.38 (100)	2.98 (100)	6.32 (100)	2.92 (100)
Cropping intensity		215.63	211.35	206.53	210.79

Intensity of cropping refers to the number of crops raised on a field during an agriculture year 2017-18. Overall average cropping intensity on sample farms having 210.79 per cent which was found highest on marginal farms 215.63 per cent followed by small 211.35 per cent, and medium 206.53 per cent respectively. Cropping intensity was inversely related to size of farms.

Table-4 depicted cropping pattern. Cropping pattern indicates the yearly sequence and arrangement of crops grown by farmer in a particular area. On an average, highest area was covered under wheat 24.66 per cent followed by bajra 20.89 per cent, paddy 12.67 per cent, chickpea 11.64 per cent, till 9.58 per cent, moong 6.16 per cent, mustard 4.45 per cent, barley 3.08 per cent, maize 2.05 per cent, potato 1.71 per cent, pigeon pea 1.37 per cent, chari 1.03 per cent and berseem 0.68 per cent of total cropped area on sample farm. Chickpea crop was grown on considerable area by the sample farmer after three major food grain crops i.e. wheat, bajra and paddy.The gross cultivated area was higher (47.60%) in the kharif followed by rabi season (46.23%) and less in the Zaid season (6.16%) on all farm situations.Table-1 revealed that Chickpea crop covered 11.64 per cent area in the rabi season of total cropped area. depicted the presents the per-farm asset structure on sample farms. It is evident from this table that major components of farm asset structure are buildings, milch animal and machinery & implements which constituted 61.09 per cent, 27.78 per cent and 11.14 per cent of total asset value, respectively on the basis of overall average per farm buildings, milch animal and machinery & implements came to Rs.129401.48, Rs. 58814.00 and Rs. 23585.87 respectively. It is revealed from the Table-2 that per farm investment on farm structure was highest on medium size group of farm i.e. Rs. 296409.00 followed by small and marginal size group of farms which found the money value of Rs. 224023.30 and Rs.

164691.96 respectively. It is concluded that per farm investment on sample farm were showed the direct relationship with size of holding, where as component wise investment on marginal, small and medium farm did not show any definite trend.

Summary and Conclusion

Chickpea is a major pulse crop of India. 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.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. The study was conducted in Auraiya block of Auraiya District of Uttar Pradesh. One hundred sample farmers for from marginal, small and medium categories of farm holding were selected from 5 selected villages of the block through purposive cum proportionate random sampling technique. Personal interview was conducted with pre structured schedule to collect the primary data. Secondary data were collected from official records of the block and district offices. The study is based on randomly selected respondents of marginal, small and medium categories with average size of land holding as 0.64, 1.41 and 3.06 hectare, respectively. Cropping pattern of the sample farms for chickpea per cent area to gross cultivated area shows decreasing trend with increasing size of farms. Per farm area for chickpea 19.56, 11.74 and 7.27 hectare under marginal, small and medium farm, respectively. Cropping intensity observed as 215.63, 211.35 and 206.53 per cent for marginal, small and medium farms, respectively, Intensity of cropping showed increasing trend with increasing size of farms except medium farms. On overall average per farm investment to total assets on farm building, milch animal and machinery implements accounted for 61.09, 27.78 and 11.14 per cent, respectively.

Reference

1. Patole SD, Shinde HR, Yadav DB. Chickpea production in Ahmednagar district of Maharashtra: a technological gap analysis. Journal of Food Legumes. 2008; 21(4):270-273.
2. Sankar GRM, Gupta GP, Dharmaraj PS, Yadav IPS, Ghajbiye KS, Autkar VN *et al*. Indian Journal of Dryland Agricultural Research and Development. 2005; 20(1):8-18.
3. Sinha, Neelam, Banafar KNS, Gouraha AK. Economics of chickpea production at different size of farms in Bemetara district of Chhattisgarh. Department of Agricultural Economics, IGKVV, Raipur (C.G.), India. 2014; 7(16):182-188.
4. Subhita Kumawat, Singh LP. Economic analysis of pulse crop rotations in Rajasthan. Environment and Ecology. 2016; 34(3):1458-1462.