



Constraints and Shifting of Area of Chickpea Cultivation in Tal Area of Patna District in Bihar

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ABSTRACT

Pulses in India have long been considered as the poor man's source of protein. India accounts for 33 per cent of the world's area and 22 per cent of its pulses' production. Bihar is one of the leading pulse growing states in India contributing about 6.5 per cent to the country's pulses production. The study was conducted in the Tal area of Patna District where pulses were grown on around 12301 ha area under chickpea, 28266 ha lentil and 3363 ha under pea and production was 7872.5t of chickpea, 2011.2t of lentil and 3524.8t Pea in the year 2000-01. In the year 2009-10 area under pulses declined and it was 6994 ha under chickpea, 29270 ha under lentil and 1040 ha under pea and production was 680.5t of chickpea, 3044t of lentil and 156.5t of pea. Based on findings of the study, it is concluded that the area under chickpea has declined by 16.64 per cent. However, the area of almost all other pulses like lentil, pea and Lathyrus increased by 15.48 , 6.14 and 3.4 per cent, respectively. Present study revealed the fact that declining area under chickpea was due to various constraints like low yield, low market price, time factor, late maturity, high infestation by insect, pest and diseases and use of local seed. By overcoming these constraints area under chickpea could be increased significantly.

Key Words: Chickpea, Lentil, Lathyrus, Pea, Pulses.

INTRODUCTION

Pulses constitute an essential part of the Indian diet for nutritional security and environmental sustainability. Pulses are important food crops due to their high protein content (20 to 25%), carbohydrates (55 to 60%), rich in calcium and iron. All pulses play a key role in improving of soil fertility through biological nitrogen fixation with the help of Rhizobium bacteria found in their root nodules. Pulses are the second most important group of crops after cereals. In 2009, the global pulses production was 61.5 million tons from an area of 70.6 million ha with an average yield of 871 kg/ha. Dry beans contributed about 32 per cent to global pulses production followed by dry pea (17%), chickpea (15.9%), broad bean (7.5%), lentil (5.7%), cowpea (6%) and pigeon pea (4.0%) (Basu, 2011). The major producers of pulses in the country are Madhya Pradesh (24%), Uttar Pradesh (16%), Maharashtra (14%), Rajasthan (6%), Andhra Pradesh (10%) followed

by Karnataka (7%) which together share about 77% of total pulse production while remaining 23 per cent is contributed by Gujarat, Chhattisgarh, Bihar, Orissa and Jharkhand. Due to stagnant production and increase in population, the net availability of pulses has come down from 60g/d/person in 1951 to 31 g/d/ in 2008. India is the largest producer and consumer of pulses in the world contributing around 25-28 per cent of the total global production (Basu, 2011). The expansion of irrigated agriculture in northern India has led to displacement of chickpea with wheat in large area. The present trend revealed that area under pulses declined from 10.12 million ha to 8.16 million ha (about 20%) in north India. On the other hand, area of pulses increased from 11.34 to 15.01 in central and southern India during the same three decades. Among pulses, chickpea area decreased more than 50 per cent from north India during 2006-10 considering the base year 1971-75 (Basu, 2011). This study was undertaken to note down various constraints faced by the farmers, as a

Table 1. Socio personnel attributes of the respondent.

Sr. No.	Age	Young (20-30yr)	Middle (30-45 yr)	Old (>45yr)	Total
		16	46	38	
1.	Education	Low Below Matric	Medium Up to Higher Secondary	High Above Graduation	100
		12	48	40	
2.	Social Structure	General	Backward	SC	100
		40	52	08	
3.	Family Size	Small Up to 5 member	Medium 5 to 10 Member	Large Above 10 members	100
		54	24	22	
4.	Family Type	Nuclear	Joint		100
		48	52		
5.	Govt. Beneficiaries	Govt. Beneficiary	Non Beneficiary		100
		10	90		
6.	Land Holding(ha)	Irrigated	Un-irrigated		519
		144	375		
7.	Livestock	Yes	No		100
		58	42		
8.	Farm Implement	Yes	No		100
		54	46		

result of which the area under chickpea cultivation has been shifted.

MATERIALS AND METHODS

The universe of the study was Tal area of Patna District. At the first stage of sampling, five potential blocks of the district was selected, viz., Mokama, Ghoswari, Pandarak, Bakhtiarapur and Khusrupur, respectively. Similarly, one village from each block was selected, namely: Maranchi of Mokama Block, Karra of Ghoswari Block, Kazichak of Pandarak Block, Sabani of Bakhtiarapur Block and Tilhar of Khushrupur Block. From each village, on the basis of survey, lists of pulse growing farmers were prepared. Twenty pulse growers from each village were randomly selected and finally data were collected with the help of structured schedule. Thus, the total sample size was of 100 pulse growers.

RESULTS AND DISCUSSION

Socio-economic status of farmers

The study revealed that per cent farmers were in the age group of young (16%), middle age (46%) and old (38%) involved in pulse cultivation in the area whereas 48, 40 and 12 per cent farmers were with medium, high and low level of education, respectively. The data about social structure revealed that 52 per cent belonged to other backward classes, 40 per cent to general category and only 8 per cent were of schedule castes. Fifty four per cent of pulse grower were having small family (up to 5 members), 24 per cent medium family (5-10 members) and 22 per cent were having large family size (>10 members). It was found that about 10 per cent of pulse growers were government beneficiaries while 90 per cent were non beneficiaries (Table 1). Likewise, 58 per cent of farmers were doing

Constraints and Shifting of Area of Chickpea

Table 2. Area, production and % change in pulse before and after 2012.

Sr. No.	Particulars	Area before 2012	Area after 2012	% Change
1.	Area under Lentil (in ha.)	218.78	258.88	+15.48
2.	Area under Chickpea (in ha.)	115.38	96.18	-16.64
3.	Production of Lentil (q/ha)	296.16	339.20	+12.68
4.	Production of Chickpea (q/ha)	269.20	291.60	+7.68

livestock production along with pulse cultivation and 54 per cent farmers were possessing modern implements for agricultural practices. Burman *et al* (2008) also supported that socio-economic constraints restrict growing of valuable pulse crop like chickpea.

Area and Production trend

In the present study, trend in major pulses was taken into consideration before and after 2012. The data (Table 2) revealed that the area under lentil after 2012 was 258.88 ha instead of 218.78 ha before 2012 and thus, increased by 15.48 per cent. Besides lentil, the area under pea, Lathyrus and dhanias also increased marginally about 6.14, 3.4 and 50 per cent. It was found that due to availability of high yielding varieties of lentil and chickpea, the production was increased by 12.68 and 7.68 per cent, respectively after 2012. Although, the area under chickpea declined from 115.8 ha to 96.18 ha and the percentage change was found to be (-)16.64 per cent. Kumar and Bourai (2012) also supported that chickpea growing farmers were negligible in number due to attack of pod borer (insect), wilt (disease), climatic conditions and other constraints.

Adoption behavior of different technologies

Table 3. Adoption behavior of different technologies in pulses cultivation area.

Sr. No.	Technology adopted	Adopted	Non-adopted
1.	Use of Recommended Seed rate	18	82
2.	Seed treatment	30	70
3.	Use of Bio-fertilizer	13	87
4.	Use of Recommended dose of fertilizer	18	82
5.	Use of Line Sowing	08	92
6.	Use of Insecticide-Pesticide	87	13

The adoption of different technologies in pulse cultivation was observed from 100 randomly selected pulse growers of different blocks of Patna district. The data (Table 3) revealed that 18 per cent farmers using recommended seed rate, 30 per cent adopted seed treatment, 13 per cent used bio-fertilizer, 18 per cent adopted recommended dose of fertilizers, 87 per cent used insecticide-pesticide and about 8 per cent adopted line sowing. Overall, pulse growers were poor in technology adoption.

The prime source of seed material was own seed (local varieties or farm produce seed) of farmer instead of government/ private high yielding varieties. Out of 100 farmers 86 farmers used own seed where as government/ private sector seed used was very low (14) in total pulse growing area and as per crop growing area farmer's point of view the Lentil stand first rank followed by pea, chickpea and Lathyrus. As per observation schedule chickpea was replaced by lentil, pea, Lathyrus and dhanias in 63, 17, 12 and 8 per cent area, respectively.

Constraints

The data (Table 4) revealed that 13 constraints were identified which affects directly or indirectly cultivation of chickpea in the study area as

B D Singh

1. Low market price: According to respondent, low market price was the first factor that stands at 1st rank and majority of farmers willing that low market price of chickpea was one of the reasons for declining the area of chickpea.
2. Social problem: Most of the farmer informed that human pickup the chickpea before physiological maturity therefore, yields decline. So the social factor was one of the major causes of decline pulse area in Patna district.
3. Low yield: Most of the farmers reported that low production of chickpea was one of the constraints for declining the area of chickpea at farmer stand second rank.
4. Late maturity: The farmers opined that the maturity period of chickpea was more than that of lentil, pea and lathyrus therefore, the sowing of next season crop was affected.
5. Higher infestation of insect-pest and diseases: According to farmers, attack of insect pest and diseases was the major cause of declined area and production of chickpea.
6. High cost of cultivation: High cost of seed and pest management was resulting in higher cost of production. Hence , lack of capital was one of the factor for decline in chickpea area.
7. Crop rotation: Because more than 60 per cent of area of chickpea was under rainfed and there is no irrigation facility. Due to this, there is no chance to rotate cereal crop.

Kumar and Bourai (2012) also supported that some of the above mention constraints restricts growing of pulses. The paper also focus on constraints of non-availability essential inputs i.e. quality seed, suitable variety, management of insect-pest and diseases, fertilizers and nutrients, price policy implication and marketing to be reoriented to bring it in tune with the emerging cultivation of chickpea pulse in Bihar. Narayan and Kumar (2015) also supported that above input were essential for increasing productivity of pulses.

CONCLUSION

On the basis of present study, it may be concluded that pulses grown in Tal area contributed significantly in state as well as national income. According to observation of this project, cultivation of chickpea as a field crop in Tal area was declined and replaced by lentil, pea, Lathyrus and dhania. Area under chickpea declined due to various factors such as low market price, socio-economic factor,

Table4. Ranking order of the constraints identified.

Sr. No.	Constraints Identified	Ranked by Farmers
1.	Low market price	I
2.	Low yield	II
3.	Time Factor	III
4.	Late Maturity	IV
5.	Social Problem	V
6.	High Infestation by Insect, Pest and Diseases	VI
7.	High cost of cultivation	VII
8.	Lack of Suitable Insecticide for Pod borer	VIII
9.	Lack of Suitable Varieties	IX
10.	Lack of Capital	X
11.	Crop Rotation	XI
12.	Lack of Rhizobium culture in local market	XII
13.	Wilting Problem	XIII

Constraints and Shifting of Area of Chickpea

time factor, late maturity, high infestation by insect, pest and diseases and use of local seed.

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