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## Technological gap in different practices of among chickpea growers in Satna district of Madhya Pradesh, India

Shailu Yadav, DP Rai and Uttam Kumar Tripathi

**Abstract**

Chickpea is one of the most important pulse crops in India and world, cultivated over an area of 12 million hectares with a production of about 9.2 million tones of grains. In India chickpea occupies an area of 8.22 million hectares with production of 7.24 million tones with productivity of 881 kg/ha. The higher percentage of chickpea growers 44.16 per cent were middle aged (36 to 55), higher percentage of them (36.66%) were educated middle level and higher percentage (38.66%) had small size (1.1 to 2 ha.) of land holding. The higher percentage of chickpea growers (44.17%) had low material possession, had low social participation (61.67%), had low farm power (86.66%), while (40.00%) of growers belonged to low (24001 to 50,000/-) annual income group, low socio-economic status (50.83%) and low mass media exposure (73.33%). The out of total chickpea growers had low contact with extension agencies (65.83%), had low extension participation (65.83%), had medium scientific orientation (71.67%) and had medium marketing orientation (40.83%), had medium knowledge level (40.83%), and had medium adoption package of practices (44.17%). The majority of growers (87.20%) had medium to low technological gap of chickpea cultivation practices. This may be due to non-availability of technical information and various constraints in adoption of the practices. Age, education, land holding, farm power, annual income, socio-economic status, scientific orientation, knowledge level of practices and adoption of growers had significant association with technological gap, while material possession, social participation, extension participation, mass media exposure marketing orientation and contact with extension agencies were found to be non-significant association with technological gap.

**Keywords:** Technological gap, extension participation, marketing orientation, chickpea

**Introduction**

The chickpea (*Cicerarietinum*) is also known as gram, Bengal gram and *Chana* in Hindi. It belongs to the family leguminous. It is the major pulse crop used in diet of vegetarians in India and is a good source of protein. Chickpea is one of the most important pulse crops in India and world, cultivated over an area of 12 million hectares with a production of about 9.2 million tones of grains. In India chickpea occupies an area of 8.22 million hectares with production of 7.24 million tones with productivity of 881 kg/ha. Chickpea occupies about 38 per cent of area under pulse and contributes about 50 per cent of the total pulse production in India. (Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation 2014-15). The chickpea growing states in India are Madhya Pradesh, Uttar Pradesh, Maharashtra, Andhra Pradesh, Rajasthan, Karnataka, Chhattisgarh, Bihar and Haryana. Madhya Pradesh is one of the leading pulses producing state (having first position among other states of India) contributing about 20.00 and 25.00 per cent pulse area and production of the country. Area, production and productivity of total pulses were more than 4500 thousand hectares with more than 3500 thousands tones production and more than 780 kg per hectare in the year 2014-15, against 3023.00 thousand hectare area, 1446.60 thousand tones production and 479 Kg per hectare productivity in the year 1969-70 respectively at the time of green revolution in India. Satna district is also leading chickpea growing district of the state which shared 7200 hectare area with production of 40461 Metric tons and productivity 561 kg/ha. The yield per hectare of chickpea crop is low through having high percentage of cropped area as compared to other districts of M.P. It also clearly observed from the available secondary data from Agricultural statistics that the area of production corresponding previous years of Satna district had continuously increased but productivity was decreased.

**Materials and Methods**

The study was undertaken in sohawal Block in Satna district comprises of eight blocks. Out of which Sohawal Block has been selected purposively for the study on account higher area and

low productivity of chickpea crop as compared to other blocks of district. Sohawal block is comprised of 93 grampanchayat. A list of chickpea growers of each selected grampanchayat growing chickpea was prepared with the help of RAEs, out of which 15 farmers from each gram panchayat were selected on the basis of random sampling method. Thus, total of 120 farmers (15 farmers from each of 8 villages) were considered as sample size of the study. The respondents were taken into confidence by establishing a rapport with them. Data were obtained by personal interview method and generally the respondents were interviewed at grampanchayat

office or at their home. It refers to the gap between recommended technology and technology actually adopted by an individual. It was measured on technological gap index (TGI). A total of eight chickpea production technology, namely, field preparation and management, seed and sowing management, fertilizer management, irrigation management, weed management, plant protection management, harvesting management and storage management of chickpea were considered for determining the technological gap. On the basis of technological gap index scores, the respondents were placed in three categories.

S.No.	Categories	Scores
1.	Low technological gap	(1 to 33.33)
2.	Medium technological gap	(33.34 to 66.66)
3.	High technological gap	(66.67 to 100)

#### Formula:

$$\text{Technological gap index (TGI)} = \frac{R - A}{R} \times 100$$

Where,

R = Maximum possible adoption score that a respondent could get

A = Scores obtained by a respondent by virtue of his adoption of given technology.

The structured schedule was used as an instrument of data collection, which was prepared on the basis of objectives and various variables considered in the present study. The

structured schedule was pre-tested before its application and was used with the help of interview method. The needed secondary data were collected from the research journals, theses, agricultural magazines, reports of state agriculture department, department of statistics and other related departments. The collected data were scores, classified, analyzed and presented in the form of frequency count and percentage in the tables. In order to ascertain the association between two variables, chi-square test was applied.

#### Results and Discussion

**Table: 1:** Profile of the Chickpea Growers

S.No.	Particulars	Categories	Frequency	Percentage
1	Age	Young age	38	31.67
		Middle age	53	44.16
		Old age	29	24.16
2	Education	Illiterate	14	11.67
		Primary education	27	22.5
		Middle education	44	36.66
		Higher secondary education	19	15.83
		College education	16	13.33
3	Land holding	Marginal land holding	18	15
		Small land holding	46	38.33
		Medium land holding	44	36.67
		Large land holding	12	10
4	Material Possession	Low	53	44.17
		Medium	49	40.83
		High	18	15
5	Social Participation	Low	74	61.67
		Medium	33	27.5
		High	13	10.83
6	Farm Power	Low	104	86.66
		Medium	16	13.33
		High	0	0
7	Annual income	Below Poverty Line	26	21.67
		Low annual income	48	40
		Medium annual income	32	26.67
		High annual income	14	11.67
8	Socio-economic status	Low	61	50.83
		Medium	50	41.66
		High	9	7.5
9	Mass media exposure	Low	88	73.33
		Medium	19	15.83
		High	13	10.83

10	Contact with extension agencies	Low	80	66.66
		Medium	31	25.83
		High	9	7.5
11	Extension Participation	Low	79	65.83
		Medium	35	29.17
		High	6	5
12	Scientific orientation	Low	15	12.5
		Medium	86	71.67
		High	19	15.83
13	Marketing orientation	Low	43	35.83
		Medium	49	40.83
		High	28	23.33
14	Knowledge level	Low	39	32.5
		Medium	49	40.83
		High	32	26.67

[Table-1], Reveals that out of the total chickpea growers, 44.16 per cent belonged to middle age group, 31.67 percent belonged to young age group and 24.16 percent belonged to old age group. In Education it may be inferred from the data that the 36.33 per cent received education up to middle level, followed by 22.50 per cent up to primary education level, 15.83 per cent to higher secondary level of education, 11.67 per cent to illiterate level, and only 13.33 per cent were having college level of education. The majority beneficiaries belong to the 53.33% growers were having marginal to small land holding. The majority of chickpea growers 85% were having low to medium level of material possession. Chickpea growers, 61.67 per cent had low participation, 27.50 per cent had medium level of participation and 10.83 per cent of

respondents had high level of participation in the activities of different social organizations. The majority 86.66% of chickpea growers possessed low farm power. The Higher per cent 66.67% of growers were observed in low annual income to medium annual income group. 50.83 % chick pea growers were observed in low socio-economic status group, 73.33% had low exposure with media, 66.66% of chickpea grower had low contact with extension agencies, 65.83% of chickpea growers had low extension participation 71.67% of chickpea growers had medium scientific orientation 40.83% of chickpea growers had medium marketing orientation and 40.83% had medium knowledge level of chickpea growers.

#### Adoption level

**Table 2:** Distribution of chickpea growers according to their Adoption level in chickpea cultivation

S. No.	Categories	Frequency	Percentage
1	Low(1 to 17 score)	39	32.5
2	Medium(18 to 34 score)	53	44.17
3	High (35 to 52 score)	28	23.33
	Total	120	100

The data of the table 2 reveals that out of total chickpea growers, 44.17 per cent chickpea growers had medium level of adoption, followed by 32.50 per cent had low adoption level and 23.33 per cent chickpea growers having high level of adoption. Thus, it may be concluded that majority of

growers (44.17%) of chickpea growers had medium level of adoption.

#### Technological gap in different practices of chickpea cultivation

**Table 3:** Technological gap of chickpea growers according to their different package of practices

S.No	Package of practices	Mean	Rank
1.	Field preparation	38.54	V
2.	Seed and sowing management	59.84	I
3.	Fertilizer management	54.12	II
4.	Irrigation management	33.75	VII
5.	Weed management	38.62	IV
6.	Plant protection management	42.19	III
7.	Harvesting	35.97	VI
8.	Storage management	33.74	VIII

The data of the table 3 shows the distribution of Growers according to the technological gap of different package of practices with their mean and order to rank. The important package of practices on which they were having high technological gap were precaution in using (59.84%) seed and sowing management followed by (54.12%) fertilizer management, (42.19%) plant protection management, (38.62%) weed management, (38.54%) field preparation, (35.97%)

harvesting management, (33.75%) irrigation management and (33.74%) storage management. Thus, it can be concluded that majority of the chickpea Growers were having high technological gap with respect to seed and sowing management (59.84%) followed by fertilizer management (54.12%) plant protection management (42.19%) and whereas less than fourth of gram growers (38.62%) were having low technological gap with respect to weed management.

**Table 4:** Distribution of chickpea growers according to their technological gap in chickpea cultivation

S.No.	Categories	Frequency	Percentage
1.	Low	35	29.17
2.	Medium	69	57.50
3.	High	16	13.33
	Total	120	100.00

The data of the table 4 reveals that out of total chickpea growers, 57.50 per cent had medium technological gap, followed by 29.17 per cent had low technological gap and 13.33 per cent had High technological gap in cultivation of

chickpea. Thus, it can be concluded that the majority (57.50%) of respondents were having medium technological gap.

**Table 5:** Association between attributes and technological gap among the chickpea growers

S.No.	Particulars	$\chi^2$ Value	Degree of freedom
1	age	6.885'S*	2
2	Education	21.80'S**	1
3	Land holding	6.88'S*	2
4	Material Possession	5.21'NS*	2
5	Social Participation	0.448'NS**	2
6	Farm Power	7.963'S*	2
7	Annual income	5.82'S*	1
8	Socio-economic status	0.55'NS*	2
9	Mass media exposure	1.89'NS*	2
10	Contact with extension agencies	1.83'NS*	2
11	Extension Participation	3.03'NS*	2
12	Scientific orientation	6.503'S*	1
13	Marketing orientation	3.89'NS*	2
14	Knowledge level	21.91'S**	2
15	Adoption level	7.21'S*	2

(\* 0.05%, \*\* 0.01% level of significance)

The results of chi-square test analysis in the above Table 5 revealed that characteristics namely education and knowledge level were positively and significantly (0.01% level) associated to technological gap of chick pea growers. On the other hand, characteristics namely age, land holding, farm power, annual income, scientific orientation and adoption level positively and significantly (0.05% level) associated to technological gap of chick pea growers. The socio-economic, Material Possession, Mass media exposure, Marketing orientation and psychological characteristics namely contact with extension agencies and extension participation of chick pea growers were found to be non-significantly associated.

### Conclusion

The personal-socio-economic attributes of chickpea growers were selected in the study and after reviewing the results on the basis of information gained, it can be summarized that the higher percentage of chickpea growers 44.16 per cent were middle aged (36 to 55), higher percentage of them (36.66%) were educated middle level and higher percentage (38.66%) had small size (1.1 to 2 ha.) of land holding. The higher percentage age of chickpea growers (44.17%) had low material possession, had low social participation (61.67%), had low farm power (86.66%), while (40.00%) of growers belonged to low (24001 to 50,000/-) annual income group, low socio-economic status (50.83%) and low mass media exposure (73.33%). The out of total chickpea growers had low contact with extension agencies (65.83%), had low extension participation (65.83%), had medium scientific orientation (71.67%) and had medium marketing orientation (40.83%), had medium knowledge level (40.83%), and had medium adoption package of practices (44.17%). The majority of growers (87.20%) had medium to low technological gap of chickpea cultivation practices. This may be due to non-

availability of technical information and various constraints in adoption of the practices. Age, education, land holding, farm power, annual income, socio-economic status, scientific orientation, knowledge level of practices and adoption of growers had significant association with technological gap, while material possession, social participation, extension participation, mass media exposure marketing orientation and contact with extension agencies were found to be non-significant association with technological gap.

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