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TECHNOLOGICAL GAP IN RECOMMENDED CHICKPEA PRODUCTION TECHNOLOGY IN PRAKASHAM DIST. OF ANDHRA PRADESH

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ABSTRACT

Majority of the chickpea farmers (58.33%) belonged to medium category of technological gap. Wide technological gap was observed with respect to seed treatment (75.83%), seed rate (66.67%), using manures (62.08%), 'P' management (58.75%), spacing (57.08%) and disease management (50.42%). Education, extension participation and mass media use were negatively and significantly correlated with technological gap. Majority of the farmers expressed constraints like non availability of quality seed of improved cultivar (88.33%), wilt problem (81.66%), terminal moisture stress (70.83%) and low yields due to delayed sowings (64.16%).

KEYWORDS: Chickpea, constraints, technological gap

INTRODUCTION

Pulses are major sources of proteins among the vegetarians in India, and complement the staple cereals in the diets with proteins, essential amino acids, vitamins and minerals. Pulses can be grown on range of soil and climatic conditions and play important role in crop rotation, mixed and inter-cropping, maintaining soil fertility through nitrogen fixation, release of soil-bound phosphorus, and thus contribute significantly to sustainability of the farming systems. Among various pulse crops, chickpea dominates with over 45 per cent share of total pulse production followed by pigeonpea (18-20%), mungbean (11%), urdbean (10-12%), lentil (8-9%) and other legumes (20%) (IIPR, 2011). India ranked first in terms of chickpea production and consumption in the world. About 65 per cent of global area with 68 per cent of global production of chickpea is contributed by India (Amarenderreddy and Devrajmishra, 2010). In India, it is grown in 7.37 m. ha producing 5.89 m. ton annually with productivity of 799 kg ha^{-1}. Andhra Pradesh is categorized among the states which show high growth rate of chickpea production in India. In Andhra Pradesh, it is grown in an area of 6.3 lakh ha with annual production of 9.12 lakh tons and productivity of 1448 kg ha^{-1} (Agropedia, 2011). Chickpea is emerging as a cash crop in black cotton soils of Andhra Pradesh replacing different crops like cotton, sorghum, bajra, sugarcane, groundnut and tobacco. Having realized that crops like cotton are prone to pests and diseases and prices being subjected to high fluctuations, chickpea a low risk crop, is found to be a suitable alternate to varied dry land agro climatic conditions of the state. Low pest and disease attack compared to other crops and storability triggered the adoption of chickpea by farmers.

Prakasam district of Andhra Pradesh has highest acreage (0.95 lakh ha.) under chick pea and is rapidly increasing for the last three to four years by replacing tobacco and other commercial crops in view of their eroding profitability when compared to chickpea. In order to get highest yields from the crop, farmers are using chemical inputs indiscriminately which has led to increased cost of cultivation, pest resistance and environmental pollution. In spite of increase in yield of chickpea, technological gap existed as many of the farmers do not adopt the recommended cultivation practices. Hence a need was felt to assess the technological gap in chickpea production and to reduce the gap with extension interventions. Therefore, this investigation was carried out with the following objectives.

1. To assess the technology gap in chickpea cultivation
2. To assess the relationship between profile characteristics and technological gap
3. To elicit constraints in chickpea cultivation.

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MATERIAL AND METHODS

Ex-post facto research design was adopted for the study. The study was conducted in Prakasam district of Andhra Pradesh during the year 2014-15. One hundred and twenty farmers' from six villages viz., Uppalapadu, Pothavaram villages of NG padu mandal, Narsayapalem and Doddavaram villages of Maddipadu mandal, N. Agraharam village of Ongole mandal and Guravareddy palem of SN padu mandal were purposively selected for the study as these mandals occupy major share of the chickpea area. All the Chickpea recommended package of practices included in the schedule were administered to the respondents after pre-testing and the responses were obtained on a three point continuum as fully adopted, partially adopted and not adopted and scores of 2, 1 and 0 were assigned, respectively. Any remarkable deviation from adoption of normal recommendation was treated as partial adoption. The maximum score that a respondent could obtain was 26 and minimum was zero. The actual score was deducted from maximum score of the respondents to find out the technology gap of recommended practice of individual. Technology gap has been defined as the proportion of gap in the adoption of practices recommended and it expressed in percentage. The package of practices recommended by ANGR Agricultural University, Andhra Pradesh was considered as standard for calculating gaps.

The technological gap of a particular practice expressed in percentage was:

Technological gap =

$$\frac{\text{Maximum possible score} - \text{Actual score obtained}}{\text{Maximum possible score}} \times 100$$

The data on adoption levels of chickpea farmers were collected by using pre tested schedule employing personal interview method. The respondents were divided into three categories *viz.,* low, medium and high based on their mean technological gap and standard deviation. The responses were scored, quantified, categorized, tabulated and analyzed using mean, standard deviation, frequencies and percentage. Correlation analysis was carried out to assess the relationship between profile characteristics of farmers and their technological gap. Each chickpea farmer was also interviewed by posing open ended questions so as to unearth constraints he/she has experienced and analyzed by calculating frequencies and percentages.

RESULTS AND DISCUSSION

Technological gap in chickpea production technology

It is evident from table 1 that, fifty eight per cent of chickpea farmers belonged to medium category of technological gap followed by low technological gap of 21.67 per cent and twenty per cent of farmers belonged to high technological gap category. The reason for medium and high technological gap was due to partial adoption of seed rate, seed treatment, 'N', 'P' management and weed management.

Table 1. Distribution of respondents according to their overall technological gap

(n=120)

Category	Frequency	Percentage
Low (<10.16)	26	21.67
Medium (10.16 – 17.52)	70	58.33
High (>17.52)	24	20.00
	120	100.00
	Mean = 13.84	**SD = 3.68**

From Table 2 it could be inferred that there was no technological gap with respect to varieties and land preparation. Gaur *et al.* (2012) confirmed that more than 80% of the chickpea area in Andhra Pradesh is occupied with improved short-duration cultivars (JG 11, KAK 2, JAKI 9218, and Vihar) .Whereas seventy six per cent gap was recorded with respect to seed treatment due to lack of awareness and non availability of *Trichoderma viridi* locally at the time of sowings. There was a wide gap in seed rate (66.67%), because chickpea farmers felt that to maintain optimum plant population in wilt affected fields using increased seed rate is the only alternate. Using increased seed rate ultimately resulted in measurable spacing technological gap (57.08%). Huge gap (62.08%) was recorded with respect to manure application in chickpea due to non availability and increased cost of manures. Farmers used more than recommended 'N' and 'P' fertilizers ultimately resulting to a gap of 43.33 % and 58.75% respectively. This is mainly because of the competition among the farmers for higher production. Further, chickpea farmers had a wide technological gap in pest (43.75%) and disease management (50.42%) and weed management (40.00%) due to lack of awareness on integrated pest and disease management and pre emergence herbicides, farmers were unable to adopt the recommended herbicides.

Table 2. Technological gap in adoption of recommended chickpea cultivation practices

(n = 120)

S. No.	Recommended practices	Technological gap
1.	Varieties	0.00
2.	Land preparation	0.00
3	Sowing time	41.66
4	Seed rate	66.67
5	Seed treatment	75.83
6	Spacing	57.08
7	Method of sowing	15.42
8	Manures	62.08
9	N management	43.33
10	P management	58.75
11	Weed management	40.00
12	Pest management	43.75
13	Disease management	50.42

Relationship between personal and socio – economic characteristic of chickpea farmers and their technological gap

Perusal of table 3 revealed that education was negatively correlated with technological gap significantly at 0.01 level, whereas variables like extension participation and mass media use were found to be negative and significant relation at 0.05 level. It is known that extension contact and mass media use expose farmers to latest technologies and leads to higher adoption. This ultimately leads to reduced technological gap. It was found that age, land holding, farming experience, innovativeness, social participation and economic motivation were not significantly related with technological gap in chickpea cultivation which indicated that there was no association between them.

Constraints of chickpea farmers in adopting recommended cultivation practices

From table 4 it could be observed that great majority (88.33%) of the chickpea farmers expressed non availability of quality seed of improved cultivar as a major constraint, followed by wilt problem (81.66%), terminal moisture stress (70.83%), low yields due to delayed sowings (64.16%), low market price (60.83%) and increased cost of cultivation (55.00%) as major constraints in chickpea cultivation. The principal biotic constraints, which limit chickpea production in hot and dry environment are wilt and root rots among major diseases and pod borer and leaf minor among insects (Ali *et al*., 1997).

Table 3. Correlation of personal and socio-economic characteristic of chickpea farmers with technological gap (n = 120)

S. No.	Independent variable	"r" value
1	Age	0.123
2	Education	-0.253*
3	Land holding	0.111
4	Farming experience	0.026
5	Mass media use	-0.368**
6	Innovativeness	0.057
7	Social participation	0.102
8	Economic motivation	0.081
9	Extension contact	-0.658**

* : Significant at 5 per cent

** : Significant at 1 per cent

Table 4. Constraints of chickpea farmers in adopting recommended cultivation practices

(n = 120)

S. No	Constraints	Frequency	Per cent
1	Non-availability of quality seed of improved cultivars	106	88.33
2	Wilt problem	98	81.66
3	Terminal moisture stress	85	70.83
4	Low yields due to delayed sowings	77	64.16
5	Low market price	73	60.83
6	Susceptibility to storage pests	69	57.50
7	Increased cost of cultivation	66	55.00

CONCLUSION

High technological gap was observed in case of seed treatment, seed rate, P management, manures, spacing and disease management aspects of chickpea cultivation. The basic reason for this gap was lack of awareness among the farming community, so there is ample scope to reduce technological gap in terms of above mentioned practices

by organizing need based extension activities like training programmes, skill teaching, awareness programmes and demonstrations. Mass media need to be tapped to the possible extent to reduce the technological gap.

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