Knowledge and Adoption Level of Recommended Production Technologies by Bengalgram Growers in Prakasam District of Andhra Pradesh

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ABSTRACT

The study was conducted during 2012-2013 in Prakasam District of Andhra Pradesh. The investigation included 120 Bengalgram farmers. An ex- post facto research design was used for the study .Majority of the Bengalgram farmers had medium level of knowledge and high level of adoption with respect to recommended cultivation practices. A large majority of Bengalgram farmers were fully adopting recommended spacing and control measures against borer infestation and a major portion of the farmers had correct knowledge regarding the land preparation(87.5%), recommended varieties(95.8%). The recommended seed rate, fertilizer dose and plant population are not adopted by the Bengalgram farmers.

Key words : Bengal gram growers, knowledge , adoption, content analysis

Chickpea (*Cicer arietinum* L.) is the largest produced food legume in South Asia and the third largest produced food legume globally. Chickpea is grown in more than 50 countries. Asia accounts 89.7 per cent of the area in chickpea production, followed by 4.3per cent in Africa, 2.6 per cent in Oceania, 2.9% in Americas and 0.4% in Europe (Gaur, MP. 2010). 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. Chickpea production has grown from 3.65 to 5.63 million tonnes between 1950-51 and 2004-05, registering a growth of 0.58 per cent annually. During the period, area has marginally declined from 7.57 to 6.67 million hectare and the productivity has steadily increased to 844kg/ha from 482 kg/ha (IIPR, 2009). Six states viz., Madhya Pradesh, Rajasthan, Uttar Pradesh, Maharashtra, Karnataka and Andhra Pradesh together contribute 91% of the production and 90% of the area under chickpea.

Andhra Pradesh is categorized among the states which show high growth rate of Bengalgram production in India. Since 1971 the state experienced steady growth rate in terms of production , area and yield. 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 realised 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, storability and less price fluctuations triggered the adoption of Bengalgram by farmers. The Extension System such as KVK's and field functionaries working under broad based Agriculture Extension System are actively engaged in dissemination of production technologies among the farming community in Prakasam district. Despite the efforts of research and extension, the expected results in crop productivity could not be achieved leaving a vast gap in productivity between the highest yield recorded at the research farm and the yields realised by the farmers.This is basically due to non-adoption of technologies by the farmers. Keeping this point in view, the study was conducted with following specific objectivists to find out the extent of knowledge and adoption of improved Bengalgram production technologies by the farmers.

1. To study the knowledge level of farmers on recommended technologies of Bengalgram.
2. To study the adoption level of farmers on recommended technologies of Bengalgram.

MATERIAL AND METHODS

The present investigation was carried out in Prakasam district in the state of Andhra Pradesh. Ex post-facto research design was followed for the study. Prakasam district was purposively selected because of its largest area, production and productivity under Bengalgram crop in coastal districts of Andhra Pradesh. Nagulauppalapadu and parchur mandals are purposively selected for the study as these are having the highest area in Bengalgram cultivation in prakasam district .Three villages from each mandal are selected by following simple random sampling technique thus a total of six villages namely Nagulapalem, Parchur, Veerannapalem, Pothavaram, Nagulauppalapadu and B.Nidamanuru .From each village twenty farmers were selected by random sampling method. Thus, a total number of 120 respondents were selected from 6 villages.   Keeping the objectives of the study in view, a well structured interview schedule was developed and pre-tested. This was administered to sample respondents through personal investigation. The data thus obtained were coded, classified, and tabulated. Frequency and percentage analysis were used to study the extent of knowledge of the respondents on Bengalgram production technology.

The level of knowledge and the level of adoption of the respondents were classified into three categories viz, low, medium and high on the basis of mean +S.D and content analysis on knowledge and adoption items was carried and presented in a tabular form.

RESULTS AND DISCUSSION
Knowledge level of the respondents on Bengal gram cultivation practices

The results of the table 1 indicated that majority (50.00%) of the respondents had medium knowledge followed by high (37.50%) and low (12.50%) knowledge levels respectively on Bengalgram production technologies. Similar findings were reported by Ganesh Kumar *et al* (2013).

To gain more insight on the knowledge of the respondents on Bengalgram cultivation technologies content analysis was carried out and the results are furnished in the table 2.

Knowledge of the Bengalgram growers about Bengalgram cultivation practices was analysed for sixteen practices of Bengalgram production technology namely, preferable soils, land preparation, Recommended varieties, seed rate, seed treatment, bio-fertilizers, method of seed sowing, recommended spacing, critical stage of irrigation, fertilizer, weed, pest and diseases management. The results furnished in the table 2 revealed that the respondent farmers had knowledge on the Bengalgram cultivation technologies in the following rank order recommended Bengalgram varieties(95.80%),weeding(91.60%),time of land preparation(87.50%),seed cum fertilizer drill(80.00%),medium and loamy soils are preferable for Bengal gram cultivation(75.80%),recommended dose of fertilizers(75.80%),critical stages for irrigation(71.60%),recommended seed rate (71.60%), method of land preparation(64.16%), recommended dosage of manure(60.80%), critical stages for irrigation (60.00%),recommended spacing(55.8%),optimum plant population per square meter (44.16%),seed treatment with Trichoderma for management of dry root rot(35.00%), recommended pre-emergence herbicide for Bengal gram(28.30%) and recommended bio-fertilizers(8.30%). the possible reason for their awareness regarding these technologies is might be due to extension activities performed in that area by the Dept of agriculture and state agricultural university. These findings are in line with the findings of Chaudhary *et al* (2014).

The results of the table 3 indicated that majority (72.60%) of the respondents had high level of adoption followed by medium (20.80%) and low (6.60%) level of adoption. These results are in accordance with the findings of Shakya *et al* (2008) and Ambedkar *et al* (2013).

Component wise adoption pattern of specific cultivation practices by Bengalgram farmers revealed that good percentage of Bengal gram farmers were fully adopting recommended spacing An overwhelming majority (100%) of the respondents had awareness about time of application of fertilizers followed by adopting of recommended variety(87.5%) and crop rotation (78.3 %).

Collection of soil samples was not adopted by 85 per cent. The reason for non adoption is lack of awareness among the farmers about soil testing and delay in delivering soil testing reports by the soil testing Labs. In addition to that none of the

Table 1. Distribution of the respondents according to their level of knowledge on Bengalgram
Cultivation Technologies.

S.No.	Category	Frequency	Percentage
1	Low5-8	15	12.50
2	Medium9-12	60	50.00
3	High13-16	45	37.50
	Total	120	100.0

Table 2. Content analysis of knowledge items on Bengal gram cultivation practices.

S.no	Knowledge items	n=120			
		Correct		Incorrect	
		F	%	F	%
1	Medium and loamy type soils are preferable for Bengalgram cultivation	91	75.8	29	24.16
2	Bengalgram does not come up well in and water logged soils	42	35.00	78	65.00
3	Time of land preparation in Rabi: Middle of October	105	87.50	15	12.5
4	Recommended Bengalgram varieties for your area (JG-11,KAK-2)	115	95.8	5	4.16
5	The recommended seed rate of Bengalgram is 40-50 kg/ac	86	71.6	34	28.3
6	Recommended method of land preparation is flat bed	77	64.16	43	35.8
7	Dibbling method of sowing is recommended	34	28.3	86	71.6
8	Use of seed cum fertilizer drill will save both time and money	96	80.0	24	20.0
9	The recommended spacing for Bengal gram is 30 x 10 cm	53	44.16	67	55.8
10	The optimum plant population /ac is 33 plants per sq. meter	53	44.16	67	55.8
11	Do you know when water stress should not be there(20 &40 days after sowing)	72	60.0	48	40.0
12	Moisture stress during the above critical stages will reduce the yield up to 40-50%	86	71.6	34	28.3
13	The rate of manure to be applied is 2-4 ton/ac	73	60.8	47	39.1
14	Recommended dose of fertilizer 20-50-0 kg/ha	91	75.8	29	24.16
15	In Bengalgram 1-2 hand weedings are recommended	110	91.6	10	8.3
16	Pod. Borer can be controlled by spraying Chloripyriphos	10	8.3	110	91.6

3 Adoption level of farmers on Bengal gram cultivation technologies

Table 3. Distribution of the respondents according to their level of adoption.

S.No.	Category	Frequency	Percentage
1	Low4-12	8	6.60
2	Medium13-20	25	20.80
3	High21-28	87	72.60
	Total	120	100.0

Table 4. Content analysis of Adoption items on Bengalgram cultivation technologies.

| S.No | Adoption items | n=120 | | | | | |
| | | FA | | PA | | NA | |
		F	%	F	%	F	%
1	Collection of soil samples	6	5.0	10	8.33	104	86.60
2	1-2 Ploughings for land Preparation	95	79.16	25	20.8	00	0
3	Time of land preparation	40	33.3	20	16.6	60	50.0
4	Recommended variety	105	87.5	15	12.5	0	0
5	Recommended Seed rate	0	0	0	0	120	100.0
6	Seed treatment with Fungicides	60	50.0	15	12.5	45	37.5
7	Seed treatment with Trichoderma viride	20	16.6	15	12.5	85	70.8
8	Recommended spacing	120	100.0	0	0	0	0
9	Thinning	0	0	0	0	120	100.0
10	Plant population/sq.meters	0	0	0	0	120	100.0
11	Irrigation at different critical stages	0	0	5	4.16	115	95.8
12	Application of Bio fertilizers	0	0	2	1.6	118	98.3
13	Application of sulphur	70	58.3	0	0	50	41.6
14	FYM application	0	0	5	4.16	115	95.8
15	Recommended dose of fertilizer	0	0	0	0	120	100.0
16	Time of fertilizer application	120	100.0	0	0	0	0
17	Application Herbicides	5	4.16	10	8.33	105	87.5
18	Intercropping	0	0	0	0	120	100.0
19	Crop rotation	94	78.3	0	0	26	21.6
20	Control of Pod borer	120	100.0	0	0	0	0

farmers in the sampled area was adopting recommended seed rate the causal reason is incidence of dry root rot and wilt is more prevalent in this district. To substitute the crop damage due to dry root rot and wilt the respondents were using more seed than the recommended.

A meagre portion of the respondents were adopting seed treatment with Trichoderma viride as few of them were aware about the bio control agents and another factor for non adoption is non availability of trichoderma in local market. No farmers in the sampled were adopting bio fertilizers the probable reason is lack of awareness regarding benifits of the bio fertilizers and another reason is non availability of Bio fertilizers at the local markets

Regarding the herbicide application 87.5 per cent of the farmers were not applying any herbicides for weed control in Bengal gram .The probable reason might be less incidence of the weeds and manual weeding is cheaper than the chemical weed control.

A high percentage of respondents were not adopting recommended plant population per sq metre , application of irrigation at critical stages, thinning of plants, recommended dose of fertilizer and intercropping. The possible reason for non adoption is non availability of water for irrigation in the area and there is greater chance of incidence of rot and wilt hence they are maintaining more plant population than recommended.

Regarding fertilizer application cent per cent of the farmers did not adopt the recommended fertilizer dosage .Majority of the farmers opined that the recommended fertilizers are not sufficient for getting higher yields in Bengal gram .

A formidable per cent of the respondents (120) adopted to control measures to control the pod borer damage as they are more cautious about the effects of the pod borer. FYM was not adopted by 95.8 per cent because of the non availability and many of the farmers reserve FYM for commercial crops. crop rotation with tobacco was

followed by 78.3 per cent many it might be due to the fact that many farmers knew the usefulness of the crop rotation hence they are adopting. similar findings were reported by Sarada and Sunil kumar (2013).

CONCLUSION

It may concluded that over all knowledge level was medium and adoption level was high . Hence there is need of filling this extension gap by providing need based training about technologies which are not adopted by majority of farmers. The agriculture officers also need to be trained to disseminate latest know-how about chickpea technologies, so that their knowledge could be increased and the adoption of technologies would ultimately be enhanced of Bengal gram crop.

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