The Andhra Agric. J 69 (3): 443-448, 2022

Extent Adoption and Spread of ANGRAU Blackgram and Greengram Production Technology by the Farmers of Guntur district

O Sarada and G V Suneel kumar

Principal Scientist (Extension), RARS, Lam and Senior Scientist (Entomology),
Administrative office, ANGRAU, Lam, Guntur.

ABSTRACT

The study was conducted in Guntur District of Andhra Pradesh state during the year 2021. A total of hundred Blackgram farmers and 50 Greengram farmers were selected randomly for the study. Majority of the farmers were cultivating LBG 752 variety in Blackgram and LGG 460 variety in Greengram. Majority of the Blackgram and Greengram farmers adopted recommended soils (100%), recommended variety (85.33%), sowing distance (70.67%), sowing time (66.00%), seed rate (58.00%) and weed management (56.67%). Majority of the farmers were not adopting seed treatment (77.33%), pest management (60.00%), fertilizer management (58.00%), irrigation management (54.00%) and disease management (52.00%). Education, extension contact, training undergone of the farmers were highly correlated with their extent adoption of recommended production technology. Major constraints in Blackgram and Greengram production as perceived by the farmers were more sucking pests incidence (71.33%), followed by non-remunerative price (65.33%), price fluctuations (62.67%), untimely heavy rains (58.00%), YMV incidence (52.67%) and labour shortage at the time of harvesting (51.00%), respectively.

India is leading in production, consumption and imports of pulses in the world, with 25.00% of global production and 27.00% of world's consumption and 14.00% imports. In India 20.00 per cent of the food grain area is under pulses contributing for 7.00-10.00 per cent of total food grain production. Major producing states were Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and Karnataka. Productivity of pulses is 764 kg/ha. India is the world's largest producer as well as consumer of blackgram. It produces about 23.4 lakh tonnes of blackgram annually from 46.7 lakh hectares of area, with an average productivity of 501Kg per hectare in 2020-21. Blackgram area accounts for about 15.7 per cent of India's total pulse acreage and contributes 9.09 per cent of total pulse production. In *Kharif* 2021-22, blackgram production was 20.5 lakh tonnes (1st advance estimates) in an area of 39.43 lakh hectares. Andhra Pradesh produced 3.65 lakh tonnes of blackgram in an area of 3.93 lakh ha during 2020-21. According to 2nd advance estimates during 2021-22, blackgram was grown in 3.93 lakh hectares with a production of 3.65 lakh tonnes and productivity was 929 kg/ha. Blackgram being the best source of protein, fat and carbohydrates, also contains iron, folic acid, calcium, magnesium, potassium and vitamin B which are necessary for our body. It has two types of fibers: soluble and insoluble. Insoluble fiber helps to prevent constipation and soluble fiber helps in our digestion system. It also helps to reduce cholesterol which ultimately improves cardiovascular health. High amount of magnesium and folate of Blackgram supports blood circulation. Blackgram has medical properties which help to Rheumatic pains, stiff shoulder and contracted knees. Green gram (*Vigna radiata* L.) commonly known as 'Mung', mungbean', or golden gram is one of the most important short duration pulse crop of India, is the third important pulse crop after chickpea and pigeonpea. It contains about 25 per cent protein which is almost three times that of cereals. Greengram also plays important role in sustaining soil fertility by improving soil physical properties and leaves nitrogen effect for succeeding crops. It is the most important pulse crop of India occupying an area of 6.3 million hectares with production of 5.1 million tonnes. India alone has nearly 52.5 per cent of the world average and production of Greengram. Moong occupies about 38 per cent of

area under pulses and contributes about 50 per cent of the total pulse production of India.

The lower production and productivity are mostly due to several problems with the Blackgram and Greengram growing farmer's particularly improper knowledge on package of practices. Therefore, it is necessary to assess the technological gap in production and also to know the problems and constraints in adopting improved Blackgram and Greengram production technologies (Islam *et al.*, 2011). In Guntur district Blackgram is cultivated in 51,599 ha out of which 44445 ha under rabi season and 7154 ha in Kharif season (Department of Agriculture, 2022). Greengram crop is cultivated in 26, 383 ha in Guntur district, predominantly cultivated in rabi season with 23, 343 ha. and 3040 ha. in kharif season. Considering the importance of Blackgram and Greengram being the major pulse crops of the Guntur district the present investigation was taken up with the following objectives.

1.To study the spread of Blackgram and Greengram varieties in Guntur district of Andhra Pradesh.

2. To analyse the adoption of ANGRAU recommended Blackgram and Greengram production technology by the farmers of Guntur district.

3. To study the reasons for non-adoption of ANGRAU recommended Blackgram and Greengram production technology

4. To find out the relationship between profile of Blackgram and Greengram farmers with their adoption.

5. To elicit the constraints in Blackgram and Greengram production.

MATERIAL AND METHODS

The present investigation was conducted in Guntur district of Andhra Pradesh during the year 2021. For the study ten mandals with highest area of Blackgram and Greengram were selected. They were viz., Amaravathi, Amarthaluru, Cherakupalli, Durgi, Ipuru, Nagaram, Tadikonda, Pedakakani, Thulluru and Vinukonda mandals. From each mandal 10 Blackgram farmers and 5 Greengram farmers were randomly selected. Thus the total sample size for this study was 100 blackgram farmers and 50 Greengram farmers. The data were collected through personnel interview, tabulated and analyzed to find out the results and draw the conclusions. The statistical tool like frequency, percentage and Pearson correlation were employed to analyze the data.

Spread of the varieties was studied using secondary data from State Department of Agriculture. Extent of adoption of the respondents about recommended cultivation practices of Blackgram and Greengram was measured considering the ANGRAU recommended Blackgram and Greengram production technology. Adoption was studied with respect to recommended variety, sowing time, soils, seed rate, sowing distance, seed treatment, irrigation management, fertilizer management, weed management, pest management, disease management and post-harvest management. Where ever considerable deviation was observed with respect to adoption of recommended practices, respondents were asked for reasons for non-adoption and they were tabulated using frequencies and percentages. Correlation analysis was carried out to understand the relationship between farmers' selective personal, socio economic and psychological characteristics with their adoption of recommended package of practices. To know the prominent constraints in Blackgram anad Greengram cultivation open ended question was posed to farmers and based on their response constraints were categorized and tabulated using frequency and percentage.

RESULTS AND DISCUSSION

Spread of ANGRAU Blackgram and Greengram varieties in Guntur district

Among the Blackgram varieties LBG 752 is the predominant variety with almost eighty per cent area (79.77%) cultivated followed by TBG 104 with 8.70 per cent, GBG 1 with 3.32per cent, LBG 645 with 2.77 per cent and LBG 648 2.68 per cent area. Major reasons for LBG 752 predominance was its high yielding potential, polish character and market preference. With respect to Greengram varieties LGG 460 was the top most preferred variety by the farmers in an area of 74.52 per cent, followed by LGG 462 with 23.31 per cent area and LGG 407 2.17 per cent area. Farmers were satisfied with the performance of LGG 460 variety with high yielding nature and suitability to all seasons.

Adoption of Blackgram and Greengram technology recommended by ANGRAU

It could be noticed from table 2 that majority of the Blackgram and Greengram farmers adopted recommended soils (100%), recommended variety (85.33%), sowing distance (70.67%), sowing time (66.00%), seed rate (58.00%) and weed management (56.67%). Major reasons for adopting ANGRAU Blackgram and Greengram varieties were their high yielding potential, suitability to all seasons and market preference. Farmers are adopting sowing distance, sowing time, seed rate and weed management as per the recommendation as these the major factors for good and consistent yields. Raju (2019) reported that 100 per cent of the blackgram farmers adopted the good land preparation and timely sowing for maintaining optimum plant density. The similar findings were reported by Shani Kumar Singh *et al*. (2017). Majority of the farmers were not adopting seed treatment (77.33%), pest management (60.00%), fertilizers management (58.00%), irrigation management (54.00%) and disease management (52.00%).

Reasons for non-adoption of ANGRAU recommended Blackgram and Greengram production technology

From table 3 it could be inferred that the major reasons for non-adoption of ANGRAU recommended package of practices were consulting private dealers was the major reason for deviation in pest management, fertilizer management and disease management as perceived by 82 per cent of farmers. lack of awareness (68.00%) was the major reason for non- adoption of seed treatment and fertilizer management. More than half of the respondents (56.00%) felt that lack of demonstrations on recent technologies was the major reason for their non-adoption. Further 45.33 per cent of the farmers expressed that lack of input availability locally was the reason for non-adoption of technology. Lack of irrigation water due to rainfed situation was the major reason for deviation from recommended irrigation management as perceived by 40 per cent of the farmers. Kadam *et al.* (2014) reported that majority of the greengram farmers were not adopting seed treatment and partially adopting chemical fertilizer application. Similar results were reported by Patil *et al.* (2020) with respect to fertilizer use, seed treatment and plant protection measures.

Relationship between profile of Blackgram and Greengram Farmers with their Adoption

A result pertaining to relationship between selected personal, socio-economic and psychological characteristics of Blackgram and Greengram farmers with their adoption of recommended package of practices was presented in Table 4. Correlation coefficient values were vividly indicating that educations at 5% level of and extension contact, training undergone at 1% level of significance are highly correlated with their adoption. Education as a crucial factor not only motivates but facilitates farmers to get aware of latest innovations in the field of farming. Extension contact and trainings undergone by the farmers create awareness on recent technologies and convince farmers to adopt technologies with the exposure to the results of latest technologies. Hence enhancing the opportunities for better extension contact and ensuring participation in training programmes definitely boost the adoption by the farmers ultimately leading to achieve optimum sustainable production. Kadam *et al.* (2014) in their study on Adoption of recommended package of practices by green gram growers confirmed that education and extension contact had significant positive relationship with the adoption of greengram farmers. Patil *et al.* (2020) also reported similar results.

Constraints in Blackgram and Greengram cultivation

Constraints in Blackgram and Greengram cultivation as expressed by the respondents were presented in Table 5. It is evident from the results that great majority of the farmers felt more sucking pests incidence (71.33) was the major constraint followed by non-remunerative price (65.33%), price fluctuations (62.67%), untimely heavy rains (58.00%), YMV incidence (52.67%) and labour shortage at the time of harvesting (51.33%). Below fifty per cent of the farmers expressed bud necrosis (44.00%), weed management (30.67%), insufficient rains (30.00%) and rat problem (25.33%) were the other constraints faced by them in Blackgram and Greengram cultivation. In order to address these constraints expressed by the majority of the farmers creating awareness on IPM for sucking pest management and YMV management is the need of the hour. Providing

remunerative price, stabilizing price fluctuations and promoting varieties suitable for mechanical harvesting may help the farmers to cope up with constraints and facilitate farmers in achieving optimum net returns. Behera and Malik (2019) reported major problems in pulse production are agro-climatic factors like area under rain fed situation, erratic rain fall, infertile soil condition and sensitiveness of pulses to alkali, acidic and water logging conditions. The other factor was that pulses were not that remunerative as compared to high yielding cereals. The factors of low productivity of pulses were reported to be non-availability of high yielding varieties, poor crop management, short supply of rhizobium culture, delayed sowing, inadequate seed rate, infestation of weeds and poor attention of the pulse growers compared to cereals.

It could be concluded from the study that LBG 752 in Blackgram and LGG 460 in Greengram were the prominent varieties cultivated by the farmers of Guntur District due to their high yield potential and suitability to all seasons. Majority of the Blackgram and Greengram farmers adopted recommended soils, recommended variety, sowing distance, sowing time, seed rate and weed management. Majority of the farmers were not adopting seed treatment, pest management, fertilizer management, irrigation management and disease management. Major reasons for non-adoption of recommended production technology were consulting private dealers, lack of awareness, lack of demonstrations on recent technologies and lack of input availability. Hence it is the need of the hour that awareness need to be created to farmers by organising location specific need based training programmes and demonstrations along with provision for timely supply of critical inputs at farmers door step to improve the adoption ultimately to achieve sustainable yields. Education, extension contact, training undergone of the farmers were highly correlated with their extent adoption of recommended production technology. In this regard to improve the adoption of recommended production technology by the farmers they need to be mobilized to have more extension contact and participation in more number of capacity building programmes from time to time. Major constraints in Blackgram and Greengram production as perceived by the farmers were more sucking pests incidence, followed by non-remunerative price, price fluctuations, untimely heavy rains, YMV incidence and labour shortage at the time of harvesting. Constraints expressed by the farmers were majorly emphasizing non-remunerative price and price fluctuations, these constraints need to be addressed by the policy makers to stabilize the price fluctuations by providing reasonable Minimum Support Price.

LITERATURE CITED

Behera N K and Malik G K 2019. Adoption of Pulse Technology: An Effective Way to Meet Protein Deficiency of Rural People, *International Journal of Recent Technology and Engineering (IJRTE)*, 8 (4):7573-7578

Islam M, Mohanty A K and Kumar S 2011. Correlation growth yield and adoption of urdbean technologies. *Indian Research Journal of Extension Education*; 11(2):20-24

Kadam R P, Umate S M, Pawar G S and Lad A S 2014. Adoption of recommended package of practices by greengram growers, *Agriculture Update* 9(3):418-422

Patil R G, Gawande S A, Katole R T, Suryawanshi S N and Todasam P M 2020. Extent of adoption of recommended cultivation practices of blackgram (Vigna mungo L.) *Journal of Pharmacognosy and Phytochemistry* 9(6): 181-184.

Raju M 2019. Study on constraints and adoption of blackgram seed production technologies by the farmers of Cauvery delta zone of Tamil Nadu, *Journal of Pharmacognosy and Phytochemistry* 8(4): 1031-1035.

Shani Kumar Singh, Arun Kumar Singh and Kailash Jakhar 2017. Study on Constraints and Adoption of Blackgram Production Technology by the Farmers in Mirzapur District of Uttar Pradesh, India. *International Journal of Current Microbiology and Applied Sciences*. 6(10):174-178.

Table 1. Spread of ANGRAU Blackgram and Greengram varieties in Guntur district

S.No	Blackgram			Greengram		
	Variety	Area(ha)	%	Variety	Area (ha)	%
1.	LBG-752	35,735	79.77	LGG 460	32,434	74.52
2	TBG 104	3,901	8.7	LGG 462	10,144	23.31
3	GBG-1	1,486	3.32	LGG 407	946	2.17
4	LBG 645	1,239	2.77			
5	LBG 648	1,200	2.68			
6	LBG 787	566	1.27			
7	LBG 746	427	0.95			
8	GBG-45	241	0.54			
Total		**44795**	**100.00**	Total	43524	100.00

Table 2. Extent of adoption of Blackgram and Greengram technology recommended by ANGRAU.

n=150

Technology recommended	Adopted		Not-adopted	
	Fre.	%	Fre.	%
Variety	128	85.33	22	14.67
Sowing time	99	66.00	51	34.00
Soils	150	100.00	0	0.00
Seed rate	87	58.00	63	42.00
Sowing distance	106	70.67	44	29.33
Seed treatment	34	22.67	116	77.33
Irrigation	69	46.00	81	54.00
Fertilizer management	63	42.00	87	58.00
Weed management	85	56.67	65	43.33
Pest management	60	40.00	90	60.00
Disease management	72	48.00	78	52.00

Table 3. Reasons for non-adoption of ANGRAU recommended package of practices

n=150

S.No	Reason	Frequency	Percentage
1	Consulting private dealers	123	82.00
2	Lack of awareness	102	68.00
3	Lack of demonstrations on recent technologies	84	56.00
4	Lack of input availability	68	45.33
5	In order to maintain optimum plant population	60	40.00

Table 4. Relationship between profile of Blackgram and Greengram Farmers with their extent of Adoption

S.No	Independent variable	Correlation co-efficient ('r')
1.	Education	0.199*
2.	Land holding	0.125NS
3	Farming experience	0.156NS
4	Economic motivation	0.132NS
5	Social participation	0.165NS
6	Extension contact	0.312**
7	Risk orientation	0.092NS
8 .	Trainings undergone	0.463**

* and ** indicate significance of values at P=0.05 and 0.01 respectively
NS = Non -significant

Table 5. Constraints faced by the farmers in Blackgram and Greengram cultivation

n=150

S.No	Constraint	Frequency	Percentage
1	More sucking pests incidence	107	71.33
2	Non remunerative price	98	65.33
3	Price fluctuations	94	62.67
4	Untimely heavy rains	87	58.00
5	YMV incidence	79	52.67
6	Labour shortage at the time of harvesting	77	51.33
7	Bud necrosis	66	44.00
8	Weed management	46	30.67
9	Insufficient rains	45	30.00
10	Rat problem	38	25.33

Received on 18.06.2022 and Revised on 30.08.2022