Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(3): 3672-3674
Received: 10-03-2019
Accepted: 12-04-2019

Jahnavi M
SMS (Crop Protection), KrishiVigyan Kendra, Darsi, Prakasam, Andhra Pradesh, India

Prasada Rao GMV
Programme Coordinator, KrishiVigyan Kendra, Darsi, Prakasam, Andhra Pradesh, India

Varaprasada Rao Ch
Senior scientist, DAATTC, Darsi, Prakasam, Andhra Pradesh, India

Rajesh Chowdary L
Scientist (Entomology), Agriculture Research Station, Darsi, Andhra Pradesh, India

Correspondence
Jahnavi M
SMS (Crop Protection), KrishiVigyan Kendra, Darsi, Prakasam, Andhra Pradesh, India

Evaluation of IPM module for the management of viral diseases of blackgram in Prakasam district

Jahnavi M, Prasada Rao GMV, Varaprasada Rao Ch and Rajesh Chowdary L

Abstract
The study on evaluation of IPM module for the management of viral disease of blackgram in Prakasam district was carried out during *Rabi*, 2017-18 and *Rabi*, 2018-19 in blackgram farmers fields of Prakasam district. The experiment was carried out in 2.0 ha each year with active participation of farmers with an objective to assess the integrated management module for the management of viral diseases in blackgram. Mean of YMV incidence in IPM module and farmer practice was 2.62 and 20.35 percent respectively. Mean yield of IPM module was 10.25q ha^{-1} with net returns and C: B ratio of 25817 Rs ha^{-1} and 1:2.1, respectively. Whereas, farmer practice recorded mean yield of 9.00 q ha^{-1} with net returns and C: B ratio of 18275Rs ha^{-1} and 1:1.7, respectively.

Keywords: Blackgram, viral diseases, integrated management

Introduction
Blackgram, *Vigna mungo* (L.) Hepper, is the fourth important short-duration pulse crop grown in India due to its nutritional value, as it contains high level of protein (25g/100g). India is the largest producer and consumer of blackgram in the world. In Andhra pradesh, during 2017-18, blackgram was grown in 5 lakhs ha area and production was 3.29 lakh tonnes with an average productivity of 657 kg ha^{-1}(www.indiastat.com). In Prakasam district, during 2017-18, blackgram was grown in 20.1 thousand ha area and production was 7.3 thousand tonnes with an average productivity of 362.2 kg ha^{-1}. Low productivity of blackgram (0.425 ton ha^{-1}) in India can be attributed to biotic stresses including viruses. Blackgram is subjected to attack by as many as 64 species of insect pests (Lal, 1987) [3]. Plant viral diseases cause serious economic losses in many pulse crops by reducing seed yield and quality (Schreinemaher *et al*., 2015) [4]. As the disease spread through vectors and this virus survives in the weed host and other legume crops and also increasing the cost of cultivation towards the plant protection chemicals. To manage this, generally farmers use huge amount of pesticides indiscriminately without any proper diagnosis which results into development of resistance and resurgence of the pests as well as environment pollution. The potential solution is to manage the viral diseases by integrated management approach.Keeping the above problem in view the on farm trial on evaluation of IPM module for the management of viral diseases of blackgram in Prakasam district was conducted during 2017-18 and 2018-19.

Materials and Method
- Place of study: Veligandla mandal during 2017-18
- Gavinivaripalem village, Chirala mandal during 2018-19
- Area- 2.0 ha each year
- No. of farmers- 05 each year
- Design Onfarm trial in farmers' fields in 2 ha each year
- Treatments:

TO1-Farmers practice:
a) Variety: LBG 752- moderately tolerant to YMV and bold seeded variety
b) Indiscriminate spraying of different Insecticide mixtures like imidacloprid 17.8SL (100ml/ac), triazophos 40% EC (500ml/ac), diafenthuiron 50% WP (350g/ac), fipronil 5%EC (500ml/ac), acephate 50%SP (400g/ac), profenophos 50% EC (500ml/ac) at different crop stages.

TO2- IPM module:

a) Using of resistant variety (TBG-104),
b) Seed treatment with imidacloprid 600FS@ 5.0ml/kg
c) Growing four thick rows of bajra/jowar as border crop
d) Recommended dose of N fertilizer
e) Installation of yellow sticky traps (20traps/acre) and blue sticky traps (20 traps/acre)
f) Spraying with acetamaprid 20% SP @ 40 ml/acre against whiteflies and spraying with spinosad 45% SC @ 60 ml/acre against thrips.

Plot wise data was recorded in IPM module and farmers practice. The percentage of disease incidence was calculated on the basis of total number of healthy plants and infested ones. Information of yield and economic evaluation in terms of net profit earned and cost benefit ratio was recorded.

Results and Discussion

Table 1: Per cent disease incidence in blackgram

Year	IPM module			Farmer practice		
	Per cent of YMV incidence	Per cent of LCV incidence	Per cent of LCRV incidence	Per cent of YMV incidence	Per cent of LCV incidence	Per cent of LCRV incidence
2017-18	0	-	-	25	-	-
2018-19	5.25	-	-	15.7	-	-
Mean	2.6	-	-	20.4	-	-

During the period under report incidence of YMV was observed and incidence of leaf curl virus and leaf crinkle virus was not observed (Fig 1). Per cent YMV incidence was presented in the table 1. Mean incidence of 2.6 was recorded in IPM module over 20.4 per cent in farmers practice.

Archana *et al.,* 2018 reported seed treatment with imidacloprid 600 FS @ 5.0 ml/ kg and 2 sprays of imidacloprid 17.8 SL (@ 0.5 ml/l, 30 and 45 DAS had significantly less YMV incidence (13.33%) and whitefly population (1.86/ plant).

Similarly, seed treatment and spraying with imidacloprid at different intervals during crop growth was found effective in reducing the incidence of YMD and its vector (Jayappa *et al.,* 2017) [2].

The data on yield and economics of IPM module and farmers practice was recorded and presented in the table 2.

Table 2: Impact of on farm trial on yield and economics of blackgram

Year	Yield (q ha^{-1})		Cost of cultivation (Rs ha^{-1})		Gross returns (Rs ha^{-1})		Net returns (Rs ha^{-1})		C: B ratio	
	IPM module	Farmer practice	IPM module	Farmer practice	IPM module	Farmer practice	IPM module	Farmer practice	IPM module	Farmer practice
2017-18	12	11	23166	26000	54000	49500	30834	23500	1:2.3	1:1.9
2018-19	8.5	7	21700	21950	42500	35000	20800	13050	1:1.9	1:1.5
Mean	10.25	9	22433	23975	48250	42250	25817	18275	1:2.1	1:1.7

Yield

Data presented in Table 2 revealed that under IPM module, yield was found to be higher than farmers practice during the years 2017-2018 and 2018-19. The IPM module recorded yield of 12.0 and 8.5q ha^{-1} during 2017-18 and 2018-19, respectively with mean of 10.25 q ha^{-1}. Whereas, farmer practice recorded yield of 11.0 and 7.0 q ha^{-1} during 2017-18 and 2018-19, respectively with mean of 9.00 q ha^{-1}.

Economics

Perusal of the data presented in the table 2 revealed that gross returns, net returns and C: B ratio were higher in IPM module over farmers practice. Gross returns of IPM module were 54000 and 42500 Rs ha^{-1} during 2017-18 and 2018-19, respectively with mean of 48250 Rs ha^{-1}. Whereas, in farmer practice, gross returns were 49500 and 35000 Rs ha^{-1} during 2017-18 and 2018-19, respectively with mean of 42250Rs ha^{-1}. Net returns of IPM module were 30834 and 20800 Rs ha^{-1} during 2017-18 and 2018-19, respectively with mean of 25817 Rs ha^{-1}. C: B ratio of IPM module was 1:2.3 and 1:1.9 during 2017-18 and 2018-19, respectively with mean of 1:2.1. Net returns in farmer practice were 23500 and 13050 Rs ha^{-1} during 2017-18 and 2018-19, respectively with mean of 18275 Rs ha^{-1} and C: B ratio were 1:1.9 and 1:1.5 during 2017-18 and 2018-19, respectively with mean of 1:1.7. Thus, favorable cost benefit ratio and higher net returns in IPM module proved the economic viability of the assessed technology and convinced the farmers on the utility of technology provided at real farming situation.

(a) TBG 104 variety (b) LBG 752 variety

Fig 1: Blackgram fields infected with yellow mosaic disease in Prakasam district

Conclusion

The integrated management practices were found effective over farmer's practice of indiscriminate use of pesticides.

Acknowledgment

The authors are thankful to Programme Coordinator, KVK, Darsi & Associate Director of Research, ANGRAU, Lam, Guntur for providing the necessary facilities and the Director ATARI zone X, Hyderabad for providing financial support in carrying out the present investigation

References

1. Archana S, Venkatesh, Padmaja AS, Nagaraju N, Manjunatha N. Management of yellow mosaic disease (YMD) of blackgram (*Vigna mungo* L.) in Southern dry zone of Karnataka. Journal of Entomology and Zoology Studies. 2018; 6(3):860-863
2. Jayappa, Ramappa HK, Devamani BD. Management of Mungbean Yellow Mosaic Virus (MYMV) in Mungbean (*Vigna radiata* L.). Journal of Entomology and Zoology Studies. 2017; 5(5):596-601.
3. Lal SS. Insect pests of mung, urd, cowpea and pea and their management in Plant Protection in Field Crops (Eds: Veerabhadra Rao, M and Sithanantham, S). Plant Protection Association of India, Hyderabad, India. 1987, 185-201.
4. Schreinemahers P, Balasubramanian S, Boopathi N, Viet C, Kenyon L, Praneetvatakul S. Farmer's perception and management of plant viruses in vegetables and legumes in tropical and subtropical Asia. Journal of Crop protection. 2015; 75:115-123.
5. www.indiastat.com