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Seasonal incidence of sucking pest complex in black gram during *Rabi* 2017-18

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Abstract

A bulk plot of 100 m² was raised duly following the recommended agronomic practices to study the population buildup of sucking pest complex in black gram during *Rabi* 207-18 at Students farm, College of agriculture, Rajendranagar, Hyderabad. Sucking pests like leafhoppers, whiteflies and thrips were recorded during the entire crop period. Incidence of aphids in black gram during the entire crop season did not occur. The results indicated that the population of sucking pest in *Rabi* black gram were started from 2^{nd} week after sowing with 1.80, 2.00 and 2.40 leafhoppers, whiteflies and thrips per six leaves respectively and their population were high during the vegetative stages and reached its peak during the reproductive stage with 6.80, 6.90 and 8.10 leafhoppers, whiteflies and thrips per six leaves respectively and later declined to a population of 1.20, 2.20 and 2.20 leafhoppers, whiteflies and thrips per six leaves respectively

Keywords: Sucking pests, incidence, black gram

1. Introduction

Pulses are the important sources of protein, vitamins and minerals and play a vital role in the diet of vegetarians and are popularly known as "Poor man's meat" and "rich man's vegetable", which contribute significantly to the nutritional security of the country Singh *et al.* (2013) ^[10]. Blackgram, *Vigna mungo* (Linn.) Hepper, also known as urd bean, mash, mungo bean, mashkalai, black mapte etc., belongs to the family Leguminosae; sub family Papilionaceae. It is the fourth most important short-duration pulse crop grown in India due to its nutritional and industrial values Nene (2006) ^[7].

Black gram is attacked by an array of insect pests from sowing to harvest in the field as well as in storage (Lal and Sachan, 1987)^[3]. Among them, sucking pests were the important pests in early stages of crop growth which not only reduces the plant vigour but also acts as vectors for deadly viral diseases. As there is a variation in the climatic conditions in different regions and in order to predict the damage caused by the sucking pests and develop the forecast models there is a great need to study the seasonal incidence of sucking pest complex in blackgram.

2. Materials and Methods

A field experiment was carried out on "Studies on seasonal incidence in black gram *Vigna mungo* (Linn.) Hepper." during *Rabi* 2017-18 at Students farm, College of Agriculture, Rajendranagar, Hyderabad. A bulk plot of 100 m² was raised duly following the recommended agronomic practices to study the population buildup of sucking pest complex in blackgram. The bulk plot was kept completely under unprotected conditions throughout the crop growth period. Ten plants were randomly selected and tagged for recording the observations of sucking pests at weekly intervals from germination to crop maturity. The sap feeders *viz.*, leafhoppers, whiteflies and thrips were counted on two top, two middle and two bottom leaves of the plant at weekly intervals on ten randomly selected plants as suggested by Mahto (1990)^[5] for leaf hoppers, Men and Sarode (1999)^[6] for whiteflies and Rathore and Tiwari (1999)^[8] for thrips during morning hours when insects were inactive from germination to till harvest. Average of ten plants were taken as actual count.

3. Results

The data on sucking pests *viz.*, whitefly, thrips and leafhopper were recorded and the incidence of aphids in black gram during the entire crop season did not occur.

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3.1 Leafhopper

Leafhopper population was recorded from 41st standard week with a mean population of 1.80 leafhoppers per six leaves, which increased gradually and attained its peak during 46th standard week with a mean population of 6.80 leafhoppers per six leaves and thereafter drastically reduced and reached a population of 1.20 leafhoppers per six leaves in the 51st standard week (Table 1.1 and Fig 1.1).

3.2 Whiteflies

The incidence of whiteflies followed the same trend as leafhoppers. Whitefly population was recorded from 41st standard week with a mean population of 2.00 whiteflies per six leaves and attained its peak during 46th standard week with

6.90 whiteflies per six leaves in the reproductive period and then slowly declined upto the crop maturity and reached a population of 2.20 whiteflies per six leaves in the 51^{st} standard week (Table 1.1 and Fig 1.2).

3.3 Thrips

The thrips population was recorded from the 40^{th} standard week with a mean population of 0.80 thrips per six leaves. Thrips population increased gradually by 46^{th} standard week with a mean of 8.10 thrips per six leaves and thereafter thrips population slowly declined and reached to a mean population of 2.20 thrips per six leaves by 51^{st} standard week (Table 1.1 and Fig 1.3).

Table 1.1: Seasonal incidence of major insect pests on black gram at weekly interval, during the crop growth period (Rabi 2017-18)

S. No	Standard meteriological week	Leafhoppers per six leaves	Whiteflies per six leaves	Thrips per six leaves
1	40 th	0.00	0.00	0.80
2	41 st	1.80	2.00	2.40
3	42 nd	4.20	4.40	4.80
4	43 rd	4.60	4.70	5.00
5	44 th	6.20	6.40	7.00
6	45 th	6.70	6.80	7.60
7	46 th	6.80	6.90	8.10
8	47 th	5.10	5.10	7.00
9	48 th	4.30	4.20	5.20
10	49 th	3.10	3.20	3.20
11	50 th	2.60	3.10	3.20
12	51 st	1.20	2.20	2.20



Fig 1.1: Seasonal incidence of leafhoppers in black gram during Rabi 2017-18



Fig 1.2: Seasonal incidence of whiteflies in black gram during *Rabi* 2017-18 ~ 902 ~



Fig 1.3: Seasonal incidence of Thrips in black gram during Rabi 2017-18.

4. Discussions

The data on the seasonal incidence of sucking pests revealed that the population of leafhoppers, whiteflies and thrips appeared from 2nd week of sowing and their population gradually increased upto reproductive period and later declined. These results are in accordance with the findings of Singh and Singh (1977)^[11] who reported that green jassid appeared simultaneously in the early stage of crop growth and their population continued to build up throughout the active vegetative stages in blackgram. Chandra and Rajak (2004)^[1] reported that peak pest population of viz., whiteflies, leafhoppers and thrips were observed when the crop was at vegetative stage in the first week of October. Thrips incidence was also recorded from flowering to pod-filling stage in blackgram. Kavitha et al. (2015)^[2] reported that the population of whitefly started from 42^{nd} standard week *i.e.* fourth week of October and reached to a peak level during 46th standard week (third week of November). The major activity was noticed from 44th standard week to 48th standard week in greengram.

The results were also supported by Swathi *et al.* (2015) ^[12] who reported that the whitefly population started from 3^{rd} week of October and reached to a peak level of 3.7 whiteflies per leaf in 4^{th} week of November in cowpea. Shlokeshwar *et al.* (2015) ^[9] recorded population of thrips, jassid and whitefly with crop age on black gram and found that the population of all the three pests increased with increase in the crop age up to reproductive stage. Reproductive stage was more vulnerable than vegetative and maturity stage. Mahipal *et al.* (2017) ^[4] recorded the thrips population from 5th week of September (39th standard week). Initially, there was less population and reached its peak in the first week of October (40th standard week) in cowpea. Thereafter, the nymph and adult population gradually declined during the third week of December (50th standard week).

5. Conclusions

The results obtained from the investigation seasonal incidence of sucking pests of black gram indicated that the population of sucking pests in *Rabi* black gram started from 2^{nd} week of sowing and their population appeared throughout crop growth period and were high during the vegetative stages and reached its peak during the reproductive stage and later declined. Hence, proper protective measures have to be taken to ensure higher yields.

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