



MONITORING OF GREEN GRAM [*VIGNA RADIATA* (L.)] PESTS AT BAGHDAD IN IRAQ

Ahmed Alsabte, Amal Hussein Abdallah and Baraa Muzahim Thakir

Department of plant protection, College of Agricultural Engineering Sciences, University of Baghdad, Iraq.

Abstract

In the current study, Insect pests that infested the green gram which belong to three order and four families were diagnosed from samples collected from university of Baghdad field at season 2017-2018. Families namely Aleyrodidae, Aphididae, Tetranychidae and Agromyzidae. Leaves, and stem were infested with the major pests *Bamisia tabaci*, *Aphis gossypii*, *Tetranychus urticae*, and *Liromyza sativae*. The infection rate of *Bamisia tabaci* during the cropping season 2017 July, August, September, and October were 12.50, 18.75, 18.40 and 21.50. *A. gossypii* 13, 9, 16, and 13.75. *T. urticae* 8, 8, 20, 19. *L. sativae* 8, 10, 8.4 and 8.5. while 2018 *B. tabaci* 13, 15, 18.2, 30. *A. gossypii* 9, 12.5, 18, and 18.25. *T. urticae* 14, 12.5, 14, and 19. *L. sativae* 7, 5, 6.2, and 6.5. Two species *Bamisia tabaci* and *Tetranychus urticae* were selected as a major pests of green gram.

Key words : green gram, Insect pests, *Bamisia tabaci*, *Aphis gossypii*, *Tetranychus urticae*, *Liromyza sativae*.

Introduction

Green gram is one of the largest and economically important family leguminosae, grown from the tropical to sub-tropical areas around the world (Kumari, *et al.*, 2012). Green gram [*Vigna radiata* (L.)], is a summer crop with a short growth cycle (70–90 days). It is a widely cultivated plant in many Asian countries as well as in dry regions of southern Europe and warmer parts of Canada and the United States. Green gram is one of the important summer crops which is planted in different sites in Iraq, it's characterized by short growth period and the possibility of planting immediately after harvesting wheat without need soil preparation and harvest it before the planting of winter crop. As an important plant-derived food resource (Zhu yi shen, *et al.*, 2018). the grain contains 24.2% protein, 1.3% fat and 60.4% carbohydrate (Hussain, *f et al.*, 2011). It has the ability to fix nitrogen in the soil because of its root nodules (M. A. Razzaque *et al.*, 2016). in addition to use it as green animal feed. There are various insect pests infesting green gram the sap-sucking insects such as aphids, whitefly, leafhopper, thrips are the major pests of green gram. These insects not only reduce the vitality of the plant by sucking the sap,

but also transmit diseases which reduce the rate of photosynthesis and ultimately cause a reduction in yield (Asawalam, e.f. & anumelechi, *et al.*, 2014).

Materials and Methods

Afield experiment was conducted at the researches station-college of agricultural engineering sciences - university of Baghdad-Al jaderyah during the season 2016/2017, the field was location among the latitude 33 north and longitude 44 east. soil of the field was prepared by plowing and smoothing and then settled. The area of the experiment was divided into plots, one meter was left between each experimental unit which has area of 4.8m² (2.8mx3m). The experimental unit consisted of four rows, the length of each was 3m, the distance between rows was 0.70 m leaving a space of 1m between each experimental unit to obtain a plant densities of 71428 plant ha⁻¹. The phosphorus was added in the form of the triple super phosphate (20%p) in an average of 75kg p₂o₅ ha⁻¹ before planting while nitrogen was added in the form of urea (46 %N) in an average of 40 kg N ha⁻¹ into two doses, the first one was at planting and the second at the flowering stage. Three seeds of the variety of green gram were planted in hole at depth 3cm and after germination

was complete, one seedling was conservative when plant was at stage of 3-4 leaves Than leaves were collected randomly by using a polyethylene bay from the middle rows of each experimental unit and were tested for the pests under light binocular microscope. Other leaves were stored in plastic container for leafhopper which covered with polyethylene cloth to obtained adults and parasitoid. Insects identified by the museum of natural history for diagnosis.

Results and Discussion

Four insect pests' species were recorded during the cropping season between July and October at different stage of green gram. The mean insect pests were *Bamisia tabaci*, *Aphis gossypii*, *Tetranychus urticae*, and *Liromyza sativae* (Table 1).

Bamisia tabaci (Aleyrodidae:Hemiptera) whitefly: both adult and four instar nymph cause yellowing and plant diseases transmission by sucking the sap form leaves. Also its produce the honey dew that make fungal diseases and the reason of attractive some insect like ant, Thus, prevent the coexist of natural enemies. The infestation of *B. tabaci* occur during the cropping season 2017-2018 were at a rate 13 Jul, 16.8 Aug, 18.3 Sep, and 25.7 Oct. *B. tabaci* is considered as a major pest on green gram

Aphis gossypii (Aphididae:Hemiptera) aphid: all nymphs instar and adults suck the sap of leaves, and stem and ability to transmit virus. Also its produce the honey dew. The infestation of *A. gossypii* occur during the cropping season 2017-2018 at a rate 11 Jul, 10 Aug, 15 Sep, and 16 Oct. Due to relative abundance and presence of natural enemies of this pests it considered as a minor pest on green gram.

Tetranychus urticae (Tetranychidae: Trombidiformes) spider mite: protonymph, deutonymph and adult mouth part penetrates plant tissue and ingests sap contents. The leaf will turn yellow, wilt, and finally be shed.. The infestation of *T. urticae* occur during the cropping season 2017-2018 at a rate 11 Jul, 10.5 Aug, 17.2 Sep, and 19 Oct. Due to higher relative abundance considered as a major pest on green gram.

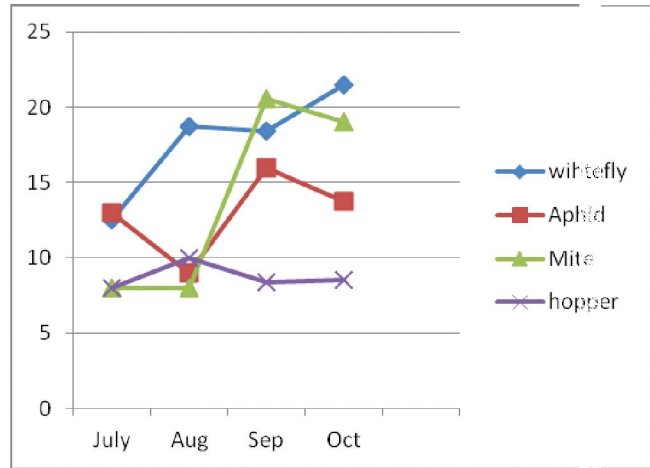


Fig. 1: The presence of insect- pest during cropping season 2017.

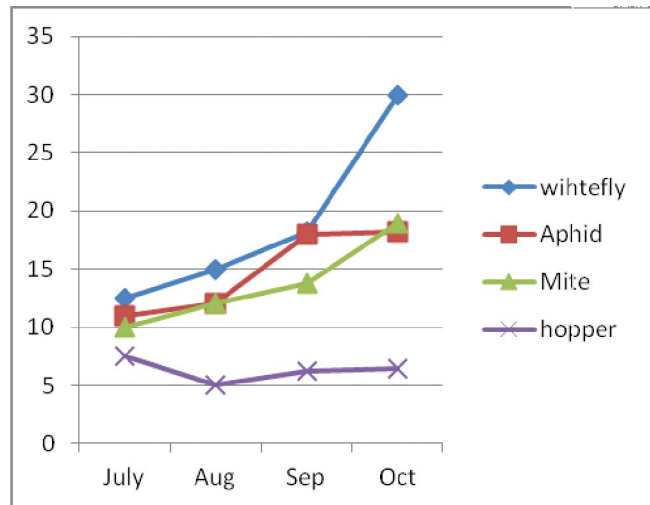


Fig. 1: The presence of insect- pest during cropping season 2018.

Liromyza sativae (Agromyzidae: Diptera) leaf miner: three larva stage creating a tunnels between the upper and lower surfaces while feeding on leaf palisade tissue. The infestation of *L. sativae* occur during the cropping season 2017-2018 at a rate 8 Jul, 7.5 Aug, 7.3 Sep, and 7.5 Oct. Due to low relative abundance considered as a minor pest on green gram.

Several studied showed that different insect pests infest green gram at different stages of crop growth. More than 150 insect pests that belong to 48 families in

Table 1: Insect-pests on green gram *Vigna radiata* (L.)

Order	Family	Insect pests	Status in month			
			July	August	September	October
Hemiptera	Aleyrodidae	<i>Bamisia tabaci</i> <i>Aphis</i>	Minor	Major	Major	Major
	Aphididae	<i>Aphis gossypii</i>	Minor	Minor	Major	Major
Trombidiformes	Tetranychidae	<i>Tetranychus urticae</i>	Minor	Major	Major	Major
Diptera	Agromyzidae	<i>Liromyza sativae</i>	Minor	Minor	Minor	Minor

Coleoptera, Diptera, Hemiptera, Hymenoptera, Isoptera, Lepidoptera, Orthoptera, Thysanoptera, and 7 mites of the order Acarina are known to infest green gram and black gram. S.k (Yadav and S Patel 2015) reported thirteen insect species on black gram attack flower, leaf, and stem and other part of green gram. (Lal and Sachan 1987) recorded 60 insect species on black gram *Vigna mungo* from a different part of crop growth the major insect pests were *B. tabaci* and aphid species. (S.k Yadav and S Patel 2015) report *B. tabaci*, *Trichoplusia ni* and *Spilosoma obliqua* as major pests on black gram. Also (Sahoo and Patnaik 1994) recorded *B. tabaci*, *Aphis craccivora* and *Helicoverpa armigera* as the important pests on green and black gram. (Baliadi, Y.; Tengkan, W 2010) the *Liomyza sativae* were found on soybean and green gram crop in Indonesia. (R. Swaminathan, *et al.*, 2012) were list the sap feeding insects and the more common are aphids, especially black bean aphids, *Aphis craccivora*, *Jassids*, *Empoasca kerri*, white flies, *Bemisia tabaci*. (Karmakar, K. Gupta, S. 2011). Record the spider mite *Tetranychus urticae* one of the more harmful pest on green gram.

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