



SEASONAL INCIDENCE OF MAJOR SUCKING INSECT PESTS OF GROUNDNUT (*ARACHIS HYPOGAEA* L.)

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ABSTRACT

Seasonal Incidence of major sucking insect pests of groundnut (*Arachis hypogaea* L.)” was studied during July to December 2010, at Reasearch farm, College of Technology and Engineering, Udaipur. Groundnut crop was infested by Aphid (*Aphis craccivora* Koch), Jassid (*Empoasca kerri* Pruthi), Thrips (*Scirtothrips dorsalis* Hood). The study revealed that the incidence of jassid and thrips started in 2nd week of August; while, the aphid appeared in 3rd week of August. The population of aphid (*Aphis craccivora* Koch) touched the peak in the last week of September with a mean population of 15.05 aphids/ 3 leaves; whereas, Jassid, *Empoasca kerri* (Pruthi) increased slowly and attained the peak in the second week of September with a mean population of 13.56 jassids/ 3 leaves. The population of thrips, *Scirtothrips dorsalis* (Hood) reached the peak in the fourth week of September with a mean of 4.16 thrips/ 3 leaves. The population of aphid exhibited a non significant negative correlation between mean population of aphids and relative humidity whereas average temperature was found to be non significant and negatively correlated. The population of jassid showed a non significant and positive correlation with relative humidity and rainfall, whereas temperature was found non significant and negative. The Thrips population shows that a. non significant positively correlation with relative humidity and rainfall, while a non significant and negative correlation with temperature.

Key words: Groundnut, seasonal incidence, aphid

INTRODUCTION

Groundnut (*Arachis hypogaea* L.) is an annual legume crop, also known as peanut earthnut, monkey–nut and goobers. It forms the world’ largest source of edible oil and ranks 13th among the food crops and is also 4th most important oilseed crop of the world (Ramanathan, 2001). It is grown in tropical and subtropical countries. Cultivated groundnut has been reported to from South America (Weiss,2000). It is grown in 26.4 million hectares with a production of 38.20 million tones and productivity of 691 kg ha⁻¹(FAO, 2010). Asia posses 1st rank in area (63.4%) and production (71.1%). Major groundnut countries are India (26%), China (19%) and Nigeria (11%). In india is mainly grown in the southern and north–western states; Gujrat, Andhra Pradesh, Tamil nadu, Karnataka, Maharastra, and Madhya Pradesh, together occupying about 90 percent of the groundnut area in the country. The major insect pest of groundnut are the groundnut aphid (*Aphis craccivora* Koch), leaf minor (*Stomopteryx nertara* meyrick), stem borer (*Sphenoptera perotett* camron), white grub (*Holotrichia consanguinia* Blanchard), Bihar hairy caterpillar (*Spilosoma oblique* walker), Tobbaco cater pillar (*Spodoptera litura* Fab.), Red hairy caterpillar (*Amsacta albistriga* Butler), Jassid

(*Empoasca kerri* Pruthi), Thrips (*Scritothrips dorsalis*), Termite (*Odontotermes obesus* Rambur) as reported Atwal and Dhaliwal, (2008). However aphid was not considered to be a serious pest of groundnut until late 1980 (Nandgopal,1992)

The aphid (*A. craccivora*), besides causing direct damage to the crop by sucking the sap, is also responsible for the causing rosette viral diseases (Alebejo *et al.*, 1999; Alegbejo,1999; Subrahmanyam *et al.*,2000; Alegbejo and Abe,2002).

MATERIAL AND METHOD

The experiment was conducted during Kharif 2010 at College of Technology and Engineering, Udaipur to investigate the Seasonal Incidence of major Sucking Insect Pests of Groundnut (*Arachis hypogaea* L.) Variety TG–37 was sown under natural conditions without spraying the insecticides in plot size 5mx5m with 30cm row to row and 10 cm plant to plant spacing. The population of sucking pests viz., Aphid(*Aphis craccivora* Koch), Jassid (*Empoasca kerri* Pruthi) and Thrips (*Scritothrips dorsalis* Hood) were recorded at weekly intervals during morning hours between 7.00 am to 9.00 am on five randomly selected and tagged in each plot by using sampling techniques

given by Satpathy (1973) population was counted on three leaves. The data were subjected to statistical analysis and correlation coefficient was worked out.

RESULT AND DISCUSSION

The mean population of Aphid (*Aphis craccivora* Koch), Jassid (*Empoasca kerri* Pruthi) and Thrips (*Scirtothrips dorsalis* Hood) has been presented in Table 1 During the course of investigation, Jassid, *Empoasca kerri* Pruthi; Aphid, *Aphis craccivora* Koch; Thrips, *Scirtothrips dorsalis* and were recorded as major sucking insect pests of groundnut.

Aphid [*Aphis craccivora* (Koch)]: The data presented in Table 2 and depicted in Figure 2 clearly indicated that the aphid appeared during 33rd standard meteorological week (SMW) i.e. 13th–19th August (3rd week) with a mean population of 7.36 aphid/ 3 leaves /plant. The population increased gradually and attained its peak in the fourth week of September with a mean population of 15.05 aphid/ 3leaves/plant, when mean temperature 25 per cent and 55 per cent relative humidity were respectively. Thereafter, the population declined and reached to a minimum levels of 2.40 aphid/3leaves/plant during 43rd SMW i.e. 22nd–28th October (4th week).

The correlation coefficient was compared between the insect population and the weather parameters. The

analysis depicted a non significant and negative correlation between mean population of aphids and relative humidity and rainfall ($r_2=0.32331$) and rainfall ($r_3=0.3822$) whereas, average temperature was found to be non significant and negatively correlated ($r_1=18068$).

Jassid, *Empoasca kerri* (Pruthi): The data presented in Table 2 and depicted in figure –2 clearly indicated that the jassid first appeared during 32nd standard meteorological week (SMW) i.e. 6th– 12th (second week 7th August) with a mean population of 1.04 jassid/ 3 leaves /plant. The population increased slowly and reached to its peak in the second week of September with a mean population of 13.56 jassid/3leaves/plant. Thereafter, the population declined and reached a minimum levels of 1.00 jassid/3leaves/plant during 43rd SMW i.e. 22nd–28th October (4th week).

The correlation coefficient was compared between the insect population and the weather parameters. The analysis depicted a non significant and positive correlation between mean population of jassid and relative humidity ($r_2=0.1793$) and rainfall ($r_3=0.05349$) whereas, average temperature was found to be non significant and negatively correlated ($r_1=0.4155$).

Thrips, *Scirtothrips dorsalis* (Hood): The data presented in Table 2 and depicted in Figure 2 clearly indicated that the thrips first appeared during 32nd standard meteorological week (SMW) i.e. 6th– 12th August (2nd week)

Table 1. Seasonal incidence of sucking insect pests in groundnut variety TG-37 during kharif, 2010

SMW No.	Date	Temperature (°C)	Humidity (%)	Rainfall (mm)	Avg. number of sucking insect pests on 3 leaves		
					Thrips	Aphids	Jassid
32	6 Aug–12 Aug	26.70	87.5	0.0	1.20	0.00	1.04
33	13 Aug–19 Aug	27.40	84.5	69.2	1.50	7.36	1.50
34	20 Aug–26 Aug	27.20	76.00	16.50	1.80	9.06	2.88
35	27 Aug–2 Sept	27.15	86.00	27.20	2.40	6.88	3.42
36	3 Sept –9 Sept	26.80	87.50	55.70	3.16	6.39	8.66
37	10 Sept–16 Sept	25.80	85.00	100.3	2.64	7.22	13.56
38	17 Sept – 23 Sept	25.30	60.5	13.20	2.56	9.09	9.50
39	24 Sept– 30 Sept	25.60	55.00	0.0	4.16	15.05	7.18
40	1 Oct – 7 Oct	26.40	52.70	0.0	1.74	8.38	4.14
41	8 Oct–14 Oct	25.80	54.50	0.0	1.02	7.14	2.30
42	15 Oct–21 Oct	26.65	56.50	0.0	0.9	6.30	1.50
43	22 Oct– 28 Oct	25.40	54.5	0.0	0.00	2.40	1.00

Table 2. Correlation coefficient between abiotic factors and population of insect pests of groundnut

Parameters	Thrips	Aphid	Jassid	Tobacco caterpillar
Temperature (°C)	-0.0833**	-0.1807**	-0.4156**	-0.56092***
Humidity (%)	0.2202*	-0.3233**	0.17936*	-0.67099***
Rainfall (mm)	0.2382*	-0.3822**	0.05349*	-0.59106***

* Positive and non-significant; **Negative and non-significant; *** Negative significant

with a mean population of 1.20 thrips/ 3 leaves /plant. The population increased gradually and attained the peak in the fourth week of September with a mean population of 4.16 thrips/3leaves/plant. Later on, the population declined and reached a minimum levels of 0.9/3leaves/plant during 42th SMW i.e. 14nd–21th October (3rd week) .The pest exhibited a non significant and positive correlation with relative humidity ($r_2=0.22019$) and rainfall ($r_3=0.2382$). Non significant and negative correlation ($r_1 =0.0833$) with average temperature. The study revealed that incidence of aphid *Aphis craccivora* commenced in the second week of August and the population attained its peak during the fourth week of September. In the present investigation it was found that increase in the temperature & relative humidity had adverse effect, the multiplication of the aphid, while rainfall had adverse effect on population build up of aphid.

Similarly, the incidence of jassid *Empoasca kerri* was commenced in the second week of August and touched its peak in the fourth week of September. The jassid exhibited a negative correlation with temperature while positive and non significant with relative humidity and rainfall. Population of jassid decline after fourth week of October.

The incidence of thrips *Scirtothrips dorsalis* was commenced in the second week of August and touched its peak in the fourth week of September. In the present investigation it was found that relative humidity & rainfall favours multiplication of the thrips, while temperature had adverse effect on population build up of thrips. The findings of present investigation is in close conformity with the finding of Kenchaiah and Porte,(1989), Ranga Rao and Wightman,(1994), Sharma and Sharma (1997), Pareek *et al.* (2001), Jyothirmai *et al.* (2002), Nandgopal *et al.* (2004), Singh *et al.* (2005), Yadav *et al.* (2007), Anita and Nandihalli (2008), Meena *et al.* (2010).

ACKNOWLEDGEMENTS

The authors thanks the Head, Department of Entomology; Dean, Rajasthan college of Agriculture; MPUAT Udaipur

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