INSECT PESTS ASSOCIATED WITH SESAME, *SESAMUM INDICUM* L. AT FAYOUM GOVERNORATE, EGYPT.

Rabei H. A. Solaiman
Department of plant protection, Faculty of Agriculture, Fayoum Univ., Egypt.

ABESTRACT

Survey and population fluctuations of insect pests on sesame plants were carried out in Ibshwai district, Fayoum Governorate during 2008 and 2009 seasons. Eight species in five families were recorded. Population of *Nesidiocoris tenuis* was the highest (13089, 9772 individuals/50 double sweep net) followed by *Empoasca decipiens* (1817, 1044 individuals/50 double sweep net) and *Pseudotomoscelis seriatus* (529, 363 individuals/50 double sweep net) for the 1st and 2nd seasons, respectively. Three peaks were observed for *N. tenius* in mid of June, in the 3rd week of July, and during 2nd week of Aug. with population densities 975, 1529,2207 and in the end of June , mid July, and the beginning of Aug., with 804, 1375,1786 individuals/50 double sweep net for 1st and 2nd seasons, respectively. *E. decipiens* had three peaks in the 1st and 2nd seasons. Only two peaks were observed for *P. seriatus* in the both seasons of study. Also, it showed that these species attack often the plants through all growth stages (vegetative , flower and capsule formation stages).

Key words: Sesame, survey; population fluctuations; *Nesidiocoris tenuis*; *Empoasca decipiens*; *Pseudotomoscelis seriatus*

INTRODUCTION

Sesame, *Sesamum indicum* L (Family : Pedallaceae). is one of the most ancient crops known as an oilseed summer crop of economic importance. Sesame seeds commonly called simsim in east Africa are highly nutritive, and is an important component in the diet of the local people in some countries of southern Africa such Uganda **(Anyanga and Obongo, 2001).** The plant has antirheumatic and anticancerous properties. As well as antifungal and antibacterial effects. Sesame oil from seeds is very useful in treating various ailments and its oil is also very effective and Sesame past is also very good in treating insomnia and protein infusion in several diets. It is also highly rich source of arginine that helps to avoid the development of tumors and detoxification in kidneys and liver, improving the function of the immune system. Sesame seeds are also useful for fertility. The importance of the crop can be attributed partly to the high quality of its oil **(Oplinger *et al.*, 1990).** On the other hand, sesame plants are attacked by many insect pests causing serious damage to foliage and seed yield, therefore, low productivity. **Menita, (1993)** mentioned that the plant bug *Stenobis* sp., that feed on leaves and shoots is considered to be the most serious pest of sesame in Phillipines. **Augstburger *et. al.*, (2000)** mentioned a wide range of insect pests of sesame around the world including *Acherontia styx* Westwood, *Agrotis* sp., *Antigastra catalaunalis* Duponchel, *Asphondylia sesame* Felt, *Bemisia tabaci* Genn., *Cyrtopeltes tenuis*, *Diacrisia oblique*, *Diabrotica* spp., *Heliothis* spp., *Estigmine acrea* Drury, *Myzus persicae* Sulzer, *Nezara. viridula* L. and *Spodoptera* spp. Only the sesame leaf webber, *A. catalaunalis*, *Heliothis* caterpillars, *Helicoverpa punctigera* Wallengren and *H. armigera* and the green vegetable bug, *N. viridula* have caused serious problems in Australia. Mirids can also infest sesame crops. In Pakistan, five insect species were recorded on sesame crop, plant bug, *Stenobis* sp.; whitefly, *B. tabaci*; aphid, *M. persicae*; thrips, *Thrips tabaci* Lind. and leaf roller/ webber, *A. catalaunalis*. Leaf roller / webber was found in highest number during capsule formation and early vegetable stage, while

lowest during flowering. Whiteflies and bugs population was relatively higher during the vegetable phase **(Talpure *et.al*., 2002).** In Iran, **Esmailzadeh-Hosseini *et. al.*, (2007)** mentioned that the leafhopper, *Orosius albicinctus* Distant was collected and found to contain a sesame Phyllody pathogen, Phytoplasma. In Uganda, many insect pests attack sesame such as *A. catalaunalis*, *N. viridula*, *Asphondylla sesami*, *A. scutum*, *A. pubescens*, but the major pest was the sesame webworm and *A. sesami* **(Ssekabmbe, 2007).**

Nevertheless, data on insect pests that attack sesame crop in Egypt is limited. Therefore, this study was carried out to survey insect pest species in sesame fields, as well as, the population dynamic of some piercing sucking species.

MATERIAL AND METHODS

The study was conducted in private sesame fields in Ibshwai district, Fayoum governorate, Egypt for two successive seasons during 2008 and 2009. Fifteen plants were randomly examined weekly to identify the number of insect species present. The population dynamic study, however included only economically important species to sesame. Also 50 double strokes with a sweeping net was taken weekly, were examined in the laboratory to identify and record the number of each species. The relationship between population and weather factors (weekly means max. temp., min. temp. and % RH) was recorded. Data was subject to statistical analysis. Simple correlation and regression values between the number of individuals of each species and the weekly means of the weather factors tested were obtained according to correlation and regression analysis **SPSS 2000,** version 11.

RESULTS AND DISCUSSION

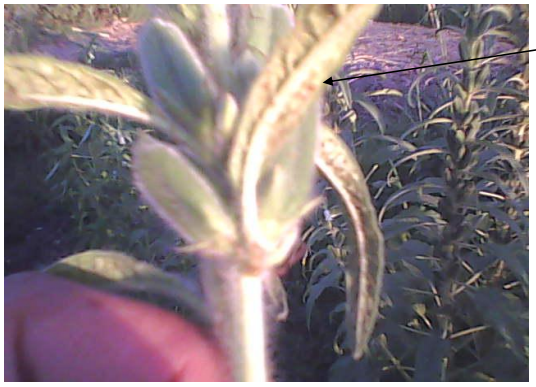
Data, table 1 and fig 1, showed that eight insect pests were found on sesame plants. these pests, namely *Nesidiocoris tenuis* Reuter, *Pseudotomoscelis seriatus* Reuter*; Nezara viridula* L.*; Empoasca decipiens* paoli*; Orosius albicinctus* Distant*; Bemisia tabaci* Genn.*; Antigastra catalaunalis* Duponchel *and Acherontia atropos* Linnaeus belong to seven Families in three Orders. The tomato bug, *N. tenius* was the highest in population followed by the leaf hopper, *E. decipiens* and the plant bug, *P. seriatus*.

Table 1. Insect pests recorded on sesame plants during 2008 and 2009 two seasons at Ibshwai, Fayoum governorate.

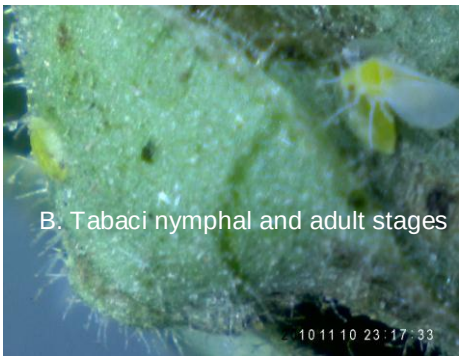
Order	Family	Common name	Scientific name
Hemiptera	Miridae	Tomato bug	*Nesidiocoris tenuis* Reuter
	Lygaeidae	Cotton fleahopper	*Pseudatomoscelis seriatus* Reuter
	Pentatomidae	Green sting bug	*Nezara viridula* L.
Homoptera	Cicadellidae	Potato leafhopper	*Empoasca decipiens* Paoli
		Leafhopper	*Orosius albicinctus* Distant
Lepidoptera	Aleyrodidae	Tomato whitefly	*Bemisia tabaci* Genn.
	Pyraustidae	Web podworm	*Antigastra. Catalaunalis* Duponchel
	Sphingidae	The head death moth	*Acherontia atropos*

Web podworm, *A. catalaunalis stages and symptoms*

Nymphal stage



Tomato bug, *N. tenuis* stages and symptoms



Whitefly,*B. tabaci*, Leafhopper, *O. albicinctus* and symptoms

Fig.1.Some sesame insect pests and symptoms

Population Fluctuations of Economically important species:

1. The tomato bug, *N. tenuis*

Data, table 2 and fig. 2 indicated that the pest started to appear during the 3rd week of May. The population showed three peaks of abundance in the first year of study, the 1st in mid of June, the 2nd in the 3rd week of July, and the 3rd during 2nd week of Aug. with population density of 26.87, 55.67 and 41.13 individuals/plant, and 975, 1529 and 2207 individuals/50 double sweep net, respectively. In the second season of investigation, table 3 and fig 3, the population density took the same trend with also three peaks in the end of June, mid July, and the beginning of Aug., with densities 12.53, 68.01 and 46.60 individuals /plant, and 515,1375 and 1786 individuals /50 double sweep net.

As shown in table 4 population of this insect regardless of sampling method was significantly positive with max. and min. temperatures, and insignificantly negative with % RH in the first season. In the second season, the population density correlation was insignificantly positive with max. temperature or %RH significantly negative with min. temperature. Concerning sweeping net counts, the simple correlation was significantly positive with min. temperature, And insignificantly positive with % RH. In this respect **Ahirwar *et al.*, (2009)** mentioned that nymphal and adult population of *N. tenius* were significantly positively correlated with max. temperature and significantly negatively correlated with min. temperatures and % RH.

2. The potato leafhopper, *E. decipiens*

Data, table 2 and fig. 4 indicated that this insect pest had three peaks through the first season of study. The 1st in the 2nd week of June, the 2nd in the beginning of July, the 3rd mid of July, with population density of the 6.53, 77.87, 76.40, individuals /plant, and 459, 175, 339 individuals/50 double sweep net, respectively. Then the population decreased gradually until crop harvesting at the 3rd week of Aug. In the second season, as shown in table 3 and fig. 5 population of the pest showed three peaks. For plant investigation, the first and lowest peak was in the end of July (17.33 individuals/ plant, and the highest peak (45.60 individuals/50 double sweep net) was in the 3rd week of July. Concerning sweeping net, the pest appeared early in mid of May. Population showed three peaks, the 1st in the end of June, the 2nd in the 3rd week of June, and the 3rd in the beginning of Aug, with 118, 175 and 302 individuals/50 double sweep net, respectively.

As shown in table 4 the simple correlation and regression values between population density, and max. temperature and % RH were insignificantly positive and insignificantly negative with min. temperature in the first season. In second season the simple correlation and regression was insignificantly positive, except for min temperature in plant investigation. In this respect, **Sabra (2002)** mentioned that the highest population was during 4th week of June and the lowest population during the 1st week of September.

Table 2

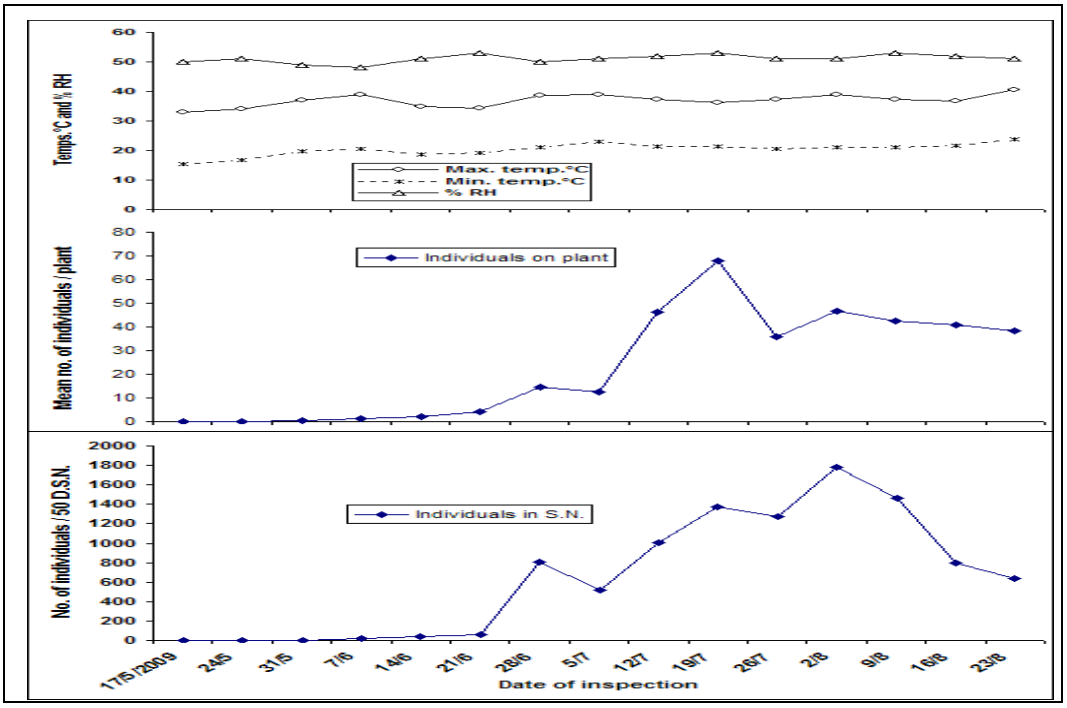


Fig.2. Weekly counts of *N. tenuis* individuals on sesame crop by plant and sweeping net sampling methods during 2008 season.

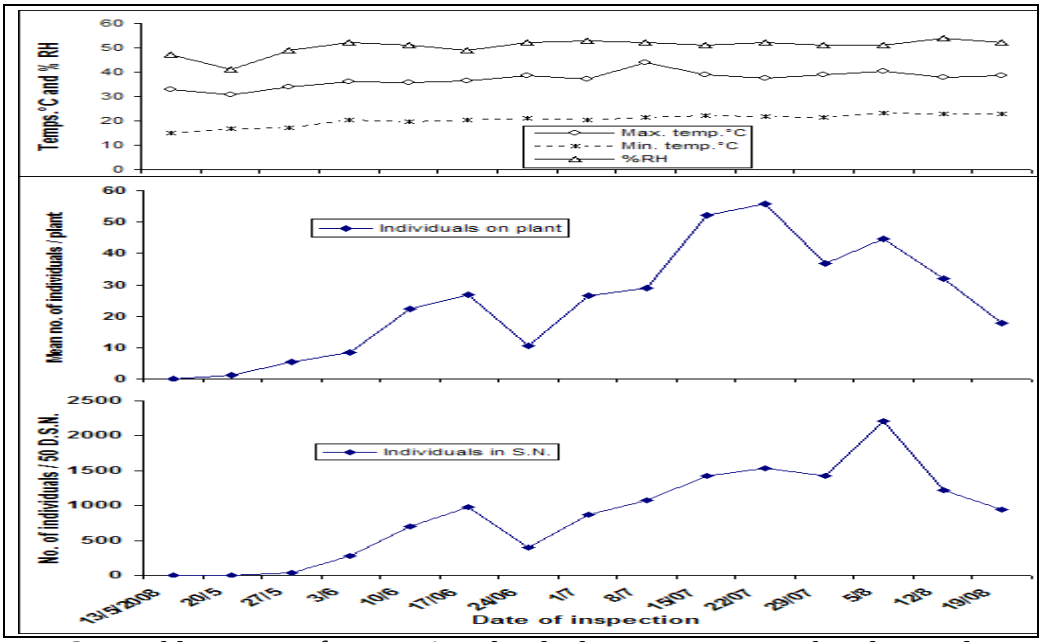


Fig.3. Weekly counts of *N. tenuis* individuals on sesame crop by plant and sweeping net sampling methods during 2009 season.

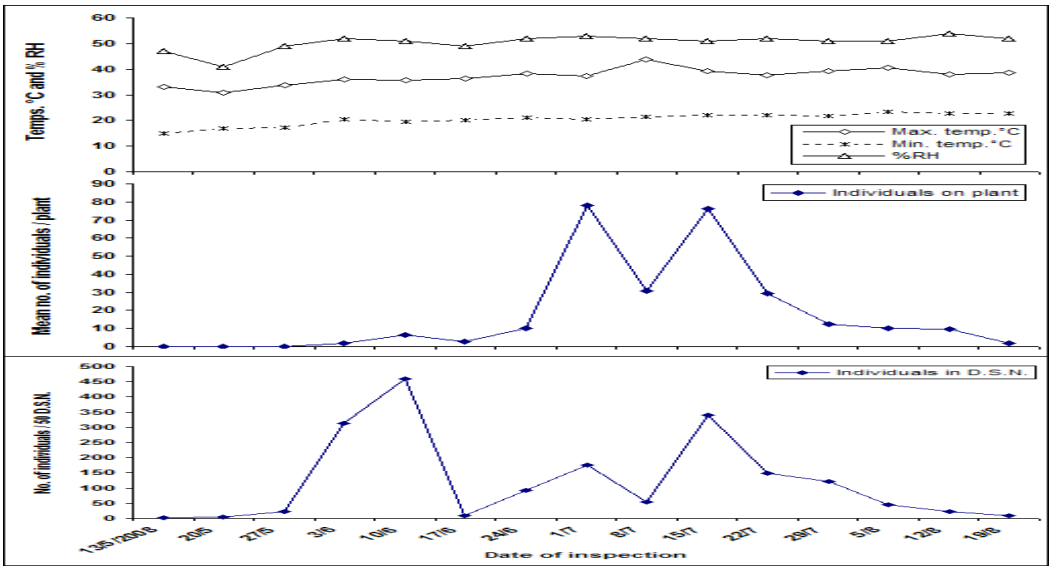


Fig.4. Weekly counts of ***E. decipiens*** individuals on sesame crop by pant and sweeping net sampling methods during 2008 season.

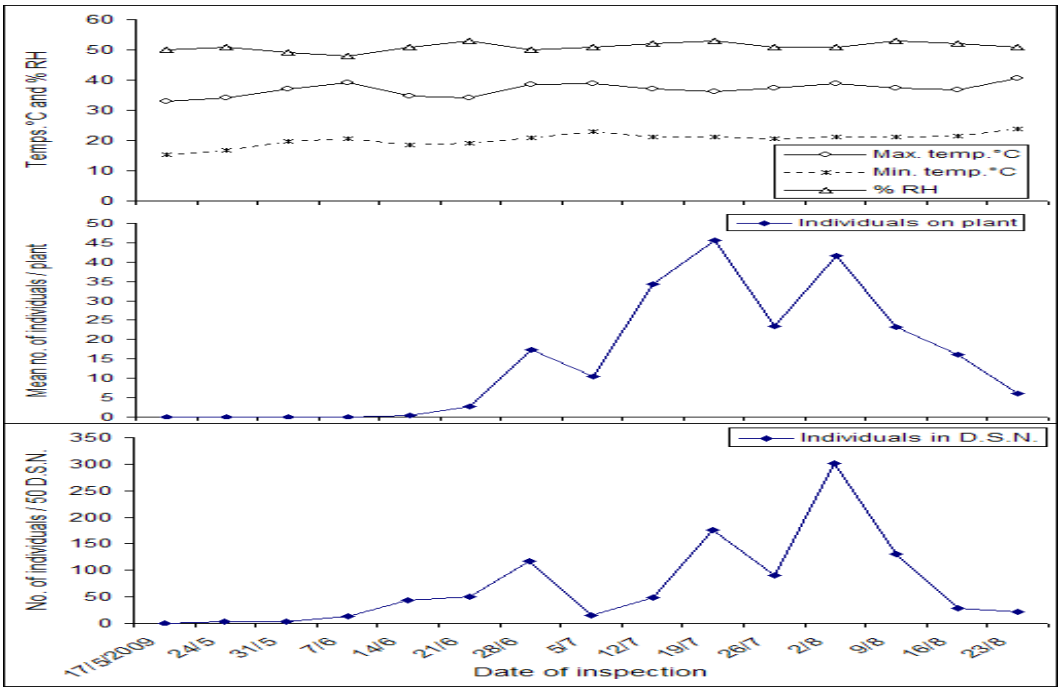


Fig.5. Weekly counts of ***E. decipiens*** individuals on sesame crop by pant and sweeping net sampling methods during 2009 season.

The cotton fleahopper, *P. seriatus*

Data, tables 2, 3 and figs. 6, 7, showed the population density on sesame crop throughout 2008 and 2009 seasons. In the first season, the pest appeared in sweeping net early in the end of May and in the beginning of June in plant samples. Population showed two peaks, the 1st in the beginning of July, and the 2nd in the end of July, with

2.80 and 2.33 individuals /plant, and in the 3rd week of June and in the end of July, with 82 and 85 individuals/50 double sweep net for plant and sweeping net, respectively. In the second season, the presence of pest delayed where no individuals were obtained from mid May until mid June. Population had two peaks, the 1st in the 3rd week of July and the 2nd in mid Aug, with population density of 2.27 and 1.73 individuals/ plant, and 60 and 72 individuals/50 double sweep net, respectively.

As shown in table 4, the simple correlation and regression values between all weather factors and population density was insignificant in the first season. In the second season, the effect of min. temperature and %RH factors on population density was significantly positive, while effect of max. temperature factor was insignificantly negative.

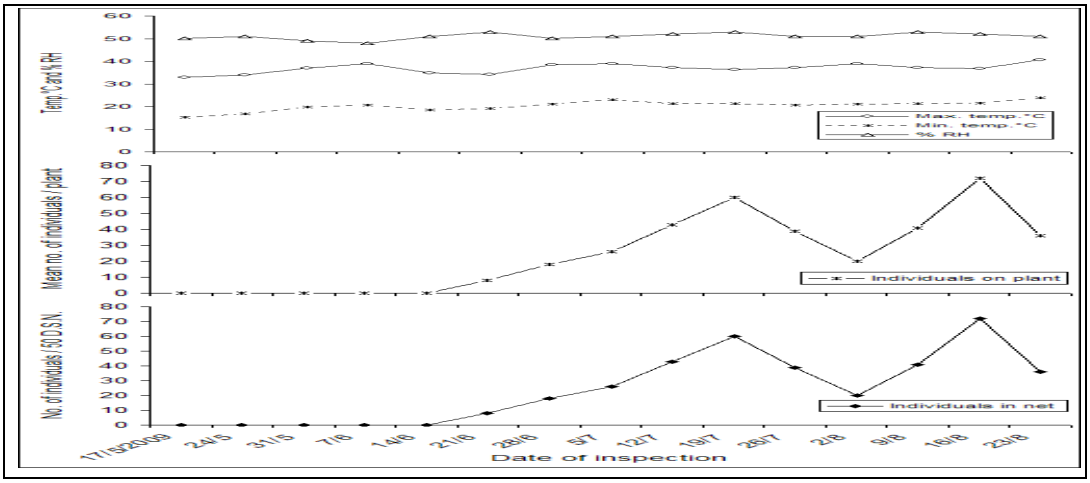


Fig.. 6. Weekly counts of ***P. seriatus*** individuals on sesame crop by pant and sweeping net sampling methods during 2008 season.

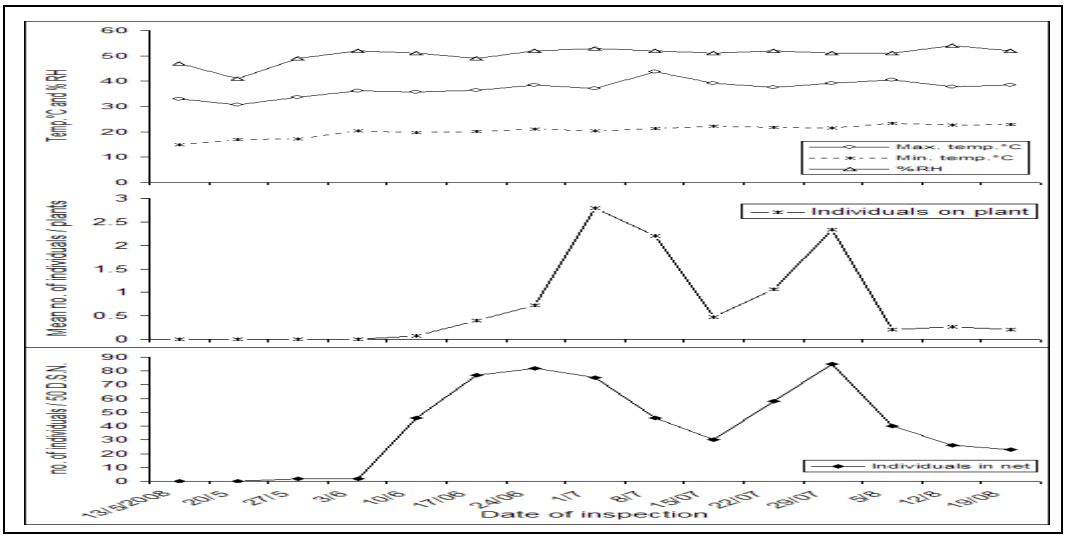


Fig.7. Weekly counts of ***P. seriatus*** individuals on sesame crop by pant and sweeping net sampling methods during 2009 season.

Table 3

Table 4

REFERENES

Ahirwar, R.M., S. Banerjee and P.M. Gupta (2009): Seasonal incidence of insect pests of sesame in relation to abiotic factors. Annals of plant protection sciences 17 (2): *www. Indian Journals.com*

Anyanga, W.O. and Obongo, Y.Y. (2001): Sesame (*Sesumum indicum* L.). p 97-102. In: Mukiibi, J.K. (ed.). Agriculture in Uganda. Volume II. Crops. Fountain Publishers/CTA/NARO.

Augstburger, F.; J. Berger; U. Censkowsky; P. Heild; J. Milz and C. Streit (2000): II special section: Organic cultivation of sesame in Naturland, E.V. (ed.) organic farming in the tropics and subtropics. *www. Naturland.de pdf.*

Esmailzadeh-Hosseini, A.S.; A. Mirzaie; A. Jafari-Nodooshan, and H. Rahimian (2007): The first report of transmission of a phytoplasma associated with sesame phyllody by *Orosius albicinctus* in Iran. *Australasian Plant Disease Notes* 2(1): 33–34.

Menita, M.T., (1993): Progress of sesame research in the Philippine. Sesame and Safflower Newsletter 8, 22 – 29.

Oplinger, E.S.; D.H. Punta; A. R.; Kaminski; C.V. Hanson; E.A. Oelke; E.E. Schutte; and J.D. Doll, (1990): Sesame: Alternative field crop manual. http://www.hort. purdue. edu/newcrop. afcm/ sesame. html.

Sabra, M.I. (2002): Species and populations leafhoppers (Cicadellidae: Homoptera) in Fayoum Governorate with some biological observations. Ph. D. Thesis, Fac. Agric., Cairo Univ., Egypt.

Ssekabembe, K.C. (2007): Comparison of research on sesame (*Sesamum indicum*) and nakati (*Solanum aethiopicum*) at Makerere University. African Crop Science. Conferance. Proceedings Vol. 8, 2063-2069.

Talpure, A.M., D.R. Khuhro; A.M. Rustamani, and I.N. Nazamani, (2002): Insect pests associated with sesame at Tandojam. Pakistan J. of Appl. Sci. 2 (7): 723– 726.

دراسة الآفات الحشرية المرتبطة بمحصول السمسم في محافظة الفيوم، مصر

ربيع حسن عوض سليمان

قسم وقاية النبات – كلية الزراعة – جامعة الفيوم – مصر

أجريت دراسة الحصر وتذبذبات التعداد للآفات الحشرية التي تصيب محصول السمسم في مركز ابشواي محافظة الفيوم خلال موسمي الزراعة ٢٠٠٨ و ٢٠٠٩. وقد تم تسجيل ثماني حشرات تابعة لخمس عائلات تقع تحت ثلاث رتب. سجلت بقة الطماطم *Nesidiocoris tenuis* أعلى تعداد (١٣٠٨٩ ، ٩٧٧٢) يليها حشرة نطاط الأوراق *Empoasca decipiens* (١٨١٧، ١٠٤٤) ثم حشرة بقة نبات القطن *Pseudotomoscelis seriatus* (٥٩٢، ٣٦٣) لكل من الموسم الأول والثاني، على التوالي. سجلت بقة الطماطم ثلاث قمم للتعداد (٩٧٥، ١٥٢٩، ٢٢٠٧) و (٨٠٤، ١٣٧٥، ١٧٨٩) خلال كل من موسمي الدراسةعلى التوالي، بينما سجلت ايضا حشرة نطاط الأوراق ثلاثة قمم في الموسم الأول الثاني. بلغ عدد القمم التي سجلها تعداد بقة القطن النباتية قمتين في كل من الموسم الأول والثاني. كما وجد أيضا أن هذه الأنواع تهاجم النباتات غالبا في كل مراحل النمو (مرحلة النمو الخضري، مرحلة النمو الزهري، مرحلة تكوين الثمار).