EFFECT OF THE PREDATOR *NESIDOCORIS TENUIS* (REUTER) (HEMIPTERA: MIRIDAE) ON *TUTA ABSOLUTA* (MEYRICK) (LEPIDOPTERA: GELECHIIDAE) AND ITS DAMAGE TO TOMATO PLANT.

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ABSTRACT

Tomato, *Lycopersicon esculentum* Miller is one of the economically important vegetables in Egypt as well as in the world. The mirid bug, *Nesidocoris tenuis* (reuter) (Hemiptera: Miridae) was observed as predator on *Tuta absoluta* (Lepidoptera: Gelechiidae) which attacking tomato plant in kafr Singreg, Menouf , Menoufya Governorate, Egypte during two successive plantation of 2014 and 2015. The obtained results recorded the relationship between the predator, *N.tenuis* and T*uta absolution* in tomato plant. In general, the numbers of both two insects fluctuated during the two plantation(The first was fromSep.2014to– Jan.2015 while The second was from Feb. toAug.2015). Our data showed that the predators go into attacking the tomato plants when the population density of the prey (*Tuta absoluta*) was decreased relatively comparing with the number of the predator (*Nesidocoris tenuis*). In this study it can be observed that the predator habits changed from attacking the prey(*T.absoluta*) to infesting and damage Tomato plants. Therefore this information must be in minded when depend this predator in (IPM program).

Keywords*:The predator Nesidocoris tenuis* (reuter*), Tuta absoluta*(Meyrick), Tomato plant, sex Pheromone traps,Egypt.

INTRODUCTION

Tomato, *Lycopersicon esculentum* Miller is one of the economically important vegetables in Egypt as well as in the world .Tomato production of Egypt was about 8,639,024 tons of fresh fruits during 2007 an area of 537,208 Fadden (Fadden Equal 0.4hectare) with an estimated 16.45 tons/Fadden according to(The report of Economic Affairs Sector, Department of Agricultural Economics, Ministry of Agriculture 2008). Many pests attacking plants causing serious damage, one of the most serious pest is *Tuta absoluta* .The mirid Tomato bug, *Nesidocoris tenuis* (reuter) were recorded for the first time on Tomato plant in north Sulawesi, Indonesia during 2002, since the bug caused serious injury to the Tomato plants, **Sembel** et,al (2012)., **Arno** et al.(2006), **Calvo** et al.(2008) and **Sanchez** (2008) found that the bug infests tomato flowers ,whether, it's a predator or plant feeder dined on the a variability of predation of the white fly ,*Bemisia* sp. or aphid sp .In Egypt, **EL-Arnaouty** and **kortom** (2012) recorded The Mirid bug for the first time in Giza,Qalubia and Fayom Gavernorates. This investigation was conducted to study the relation between the density of both, *Nesidocoris tenuis* , *Tuta absoluta* and the impact of this on the phytophagous habits of predator. The development time for eggs and nymphs and female fertility were determined for *Nesidiocoris tenuis* Reuter (Hemeptera, Miridae) at 15, 20, 25, 30, 35 and 40 ± 1°C was studied by**Sanchez**, (2009). *Nesidiocoris tenuis* (Reuter) is apoiyphagous predator widely distributed in the Mediterranean region , where it has been used an augmentative biological control agent for several pests such as T*rialeurodes vaporiorum* (**Tellez** and **Tapia**,2006), *Bemisia tabaci* (**Tellez** , **Tapia**,2006 and **Gimenez** et al. 2008) as well as leaf miners , thrip ,white flies and mites (**Hughes** et al.,2009).

MATERIAL AND METHODS

The present investigation was carried out at kafr Singreg, Menouf , Menoufya Governorate, Egypt during two successive plantation in 2014 _2015 year. The first plantation extended from, Sep.2014 to Jan.2015 and the second one was from Feb. until Aug. 2015.About half Fadden (0.2 hectare was cultivated by tomato crops (supper strain-B). Three sex pheromone traps (Tuta 100 N ((E,Z,Z) -3,8,11-Tetradecatrienyl acetate) were used for catching the *Tuta absoluta* male . 60 plants were examined in the field at weekly intervals to determine the caused damage by the predator *Nesidiocoris tenuis* Reuter. An average numbers of the pest(*T. absoluta*) , predator and Numbers of small branches and Petiole of flowers infested by the predator were estimated, calculated and tabulated. The daily recorded of temperature and relative humidity was taken from the meteorological station of Climate Research Institute of Egypt.

RESULTS AND DISCUSSION

A – *Injuring of the predatorN. tenuis to tomato* plants:-

- During this study, it was observed that the mirid predator *Nasidocoris tenuis* reuter (Hemiptera: Miridae) attack the insect pest *Tuta absoluta* (Lepidoptera: Gelechiidae) during its normal behavior, however it started to feed on the host plants(i.e. Tomato plant) when the prey numbers decreased or not available. The damage occurred on the small branches and petiole of flowers forming yellow brown rings, also sucks the young leaves and stems (Fig. 1).

Fig. (1). The damage of the predator *Nasidocoris tenuis* on branches of tomato plant.

B –*population fluctuation of both prey and predator*:-

- During obtained results as shown in table (1) and (2) represented the number of *Nasidocoris tenuis*, *Tuta absoluta* and the numbers of damage plants were attacked by predator. The total average of *Tuta absoluta* during the first plantation ranged between 0 – 29.75 individuals / trap on Sep.2014 to Jan.,2015, while the highest total average of *Nasidocoris tenuis* was 7 individuals/ plant recording the highest average and the lowest total average (zero individual / plant) occurred during Feb.2015. The highest total average of predator (6.8 individuals), when the total average of *Tuta absoluta* was (68 individuals), then the predator caused damage to one small branches and 2.5 petiole of flowers. While, the total average numbers were 2.5 individuals / plant and *Tuta absoluta* recorded 41.5 individuals. The total average of damaged plant occurred 0.2 small branch and 0.5 petioles flowers.

On the other hand in the second plantation during Feb., to. Aug., 2015, the total average of *Tuta absoluta* decreased sharply affected by the high temperature (36.5°C) recording the lowest numbers of 1 individuals *T.absoluta* / trap, while the predator appeared with total average of 5.8 and 7 individuales / plant, during Jul. And Sep.,so the predator feeds on Tomato plants whereas, the prey during Aug. average recorded 2 individuals / plant and the predator was 6.8 individuals / plant,hawever the injury caused to 2.3 small branched and 5 petioles of flowers.

Data obtained explaining that the damaged of small branches and petioles of flowers increased, when average number of *Tuta absoluta* decreased relatively.

In this respect, the result obtained in line with, **Arno. et al**. (2006), **Calvo** et al. (2008) , **Sanchez** (2008) and **EL-Arnaouty** and **kortom** (2012).

Regarding to the population of *Tuta absoluta* , *Nasidocoris tenuis*, and the numbers of small branches and petioles of flowers damaged in this study it can be observed that the predator habits changed from attacking the prey(*T.absoluta*) to infesting and damage Tomato plants. therefore this information must be in mind when depend this predator in (IPM program).

Table (1) Total average of *Nasidocoris tenuis, Tuta absoluta* and damage plant by predator during winter plantation (Sep.2014 to Jan.2015).

Sampling date	Mean no. *T. absluta* /trap	Mean no. *N.* tenuis /plant	Mean no. of predator infestation /		Mean Temp. Cº	Mean RH%
			Small branches	Petiole of flowers		
Sep. 2014	1.25	7	2	4.75	28.4	49.8
Oct. 2014	29.75	0	0	0	24.4	57.5
Nov. 2014	23.25	0	0	0	19.6	52.7
Dec. 2014	0.0	0	0	0	17	57.7
Jan. 2015	0.0	0	0	0	15.7	57.5

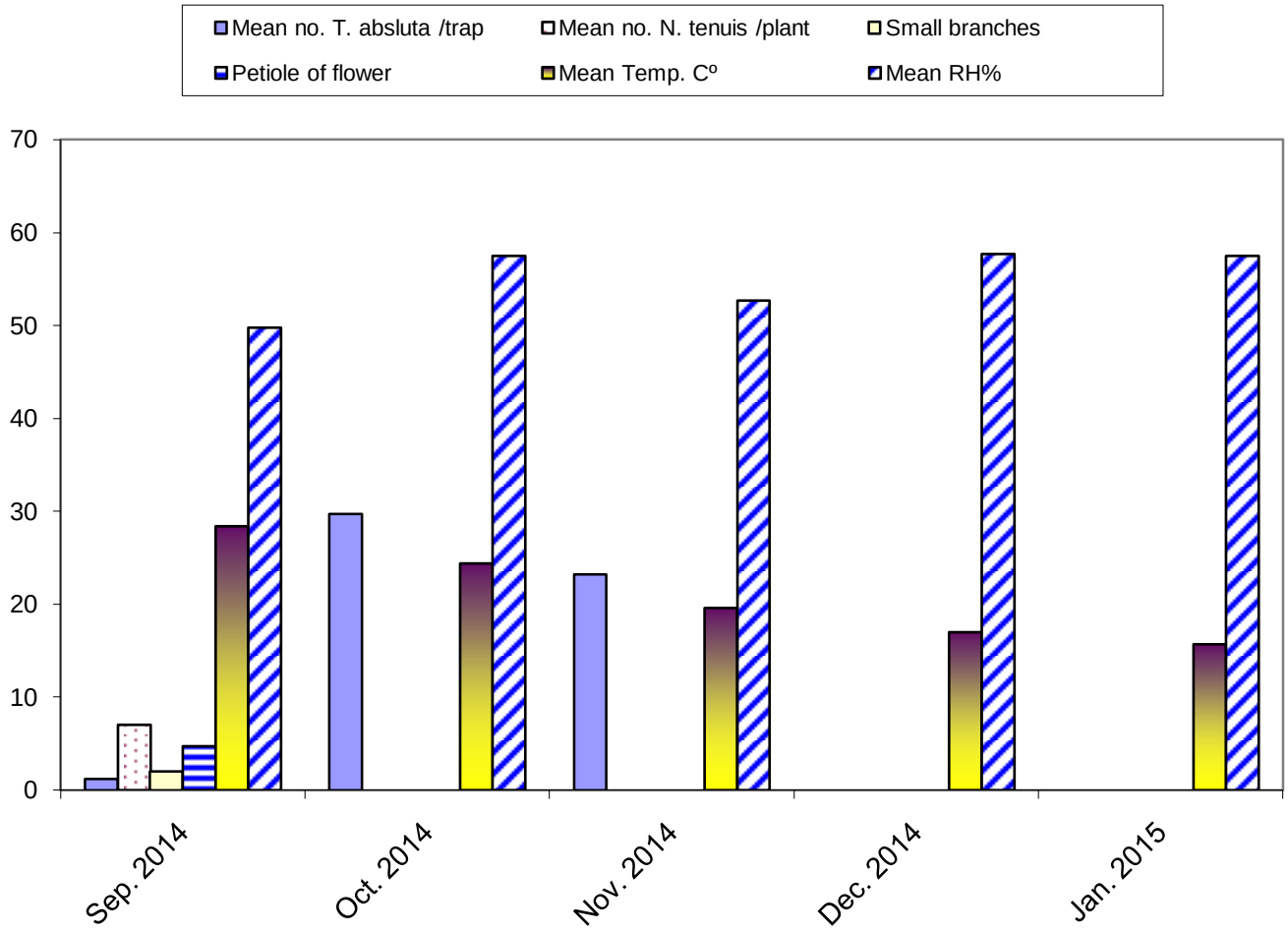

Fig. (1).average of branches and petioles flowers damage caused by the predator Nasidocoris tenuis and Tuta absoluta during winter plantation(Sep.2014 to Jan.2015).

Table (2) Total average of *Nasidocoris tenuis*, *Tuta absoluta* and damage plant by predator during summer plantation (Feb. to Aug. 2015).

Sampling date	Mean no. T. absluta /trap	Mean no. N. tenuis /plant	Mean no .of predator infestation /		Mean Temp. Cº	Mean RH%
			Small branches	Petiole of flowers		
Feb. 2015	68	1	0	0	28	52.5
Mar. 2015	41.5	2.5	0.25	0.5	29.5	48.3
Apr. 2015	90	2.5	0	0.25	33	52.5
May.2015	67.5	3.75	1	2.5	32.5	49
Jun. 2015	27.3	2.6	1.3	2	33.5	60.5
Jul. 2015	1	5.75	2.25	4	36	62
Aug. 2015	2	6.75	2.25	5	36.5	65

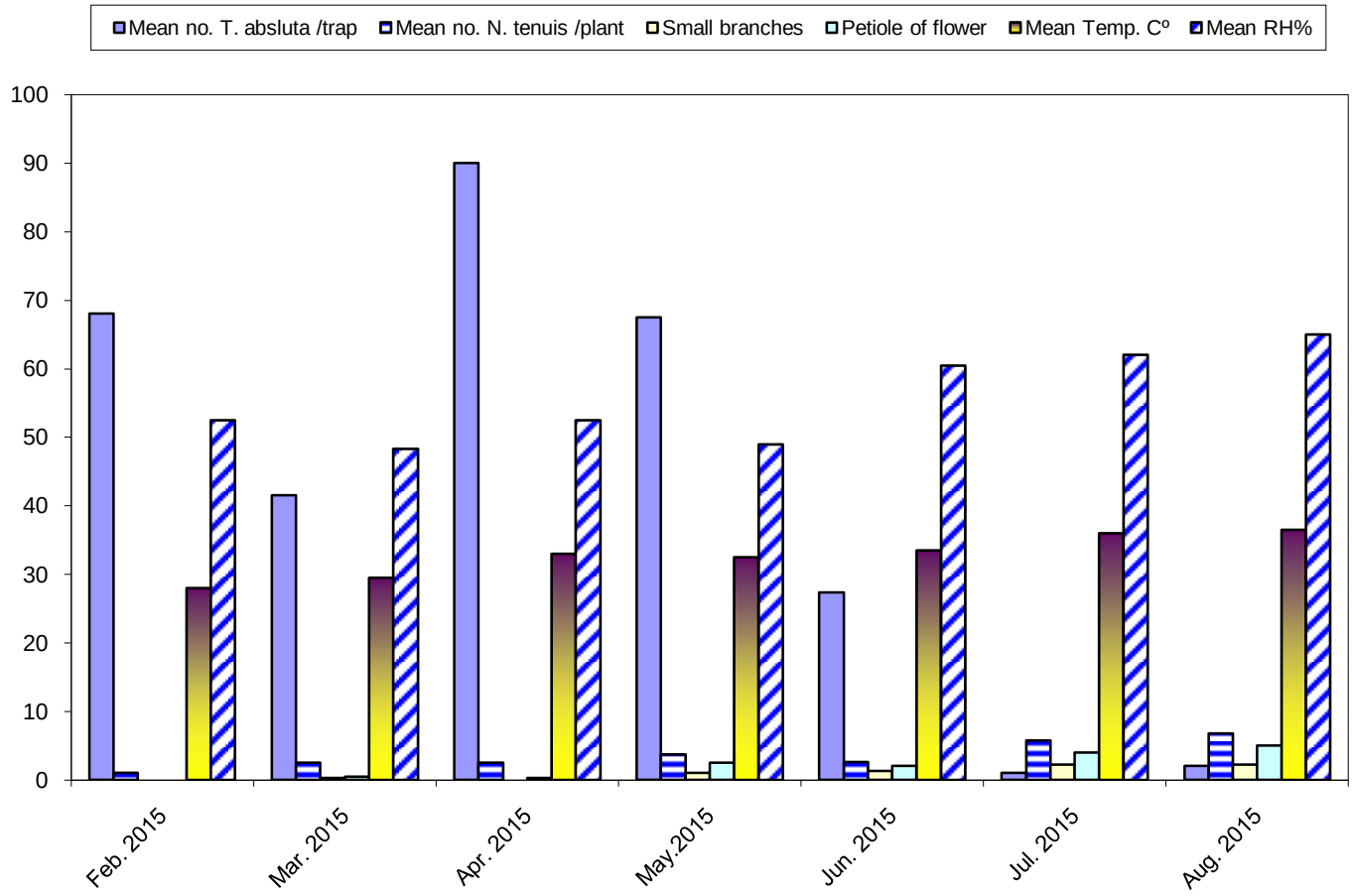

Fig. (2).Average of branches and petioles flowers damage caused by the predator Nasidocoris tenuis and Tuta absoluta during winter plantation(Sep.2014 to Jan.2015).

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الملخص العربى ◌ Arabic Summary

تاثير المفترس نزيديكورس(رتبه نصفيه الاجنحه-عائله ميريدى) على حشره حفار الطماطم التوتا ابسليوتا واضراره على محصول الطماطم فى محافظه المنوفيه –مصر

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1. قسم الحشرات الاقتصاديه والحيوان الزراعى-كليه الزراعه-جامعه المنوفيه-جمهوريه مصر العربيه

2. قسم افات الخضر –معهد بحوث وقايه النبات-وزاره الزراعه-جمهوريه مصر العربيه

الطماطم واحده من اهم محاصيل الخضر الاقتصاديه فى مصر والعالم0 حيث أنتج فى مصر حوالى8639024 طن من ثمارها الطازجه من مساحه 537208 فدان فى عام 2007 (الفدان يساوى 0.4 من الهكتار) بمعدل 45و16 طن/فدان(تقرير الشئون الاقتصاديه من قسم الاقتصاد الزراعى بوزاره الزراعه المصريه عام 2008) ولقد سجل مفترس النزيديكورس الميردى(Hemiptera: Miridae) *Nesidiocoris tenuis (Reut*er) على حشرة حافرة الطماطم *Tuta absolutea* (Meyrick)(Lepidoptera: Gelechiidae)التى تسبب اضرار كبيره لمحصول الطماطم . تم عمل هذه الدراسه فى قرية كفر سنجرج مركز منوف محافظة المنوفيه- مصر خلال عروتى عام 2014 – 2015 وكانت النتائج المتحصل عليها انها اوضحت العلاقه بين كل من مفترس النزيديكورس و حشرة حافرة الطماطم وبينت ان المفترس يتحول الى افه على المحصول ويسبب اضرار بالغه فى السيقان والازهار عندما يقل تعداد الحشره بسبب الظروف الجويه وزيادة تعداد المفترس الذى يقوم بتعويض غياب الحشره بالتغذيه على النبات (أزهار وسيقان نبات الطماطم) مما يسبب خسائر كبيره فى كمية المحصول لذا يجب أن يؤخذ ذلك فى الاعتبار عن استخدام المفترس فى الاداره المتكامله لحشرة حافرة الطماطم .