ECOLOGICAL STUDIES ON THE WHITEFLY, *BEMISIA TABACI* (GENN.) ON SOME VEGATABLE CROPS. (HOMOPTERA : ALEYRODIDAE)

MIKHAEL R.H.G.

Plant Protection Research Institute, Agricultural Research Centre, Dokki,Giza.

(Manuscript recevied August 2003)

Abstract

The present study was conducted with the object of studying the population fluctuations of *Bemisia tabaci* on four vegetable crops; pepper,okra,eggplant and cabbage, as affected by three weather factors; daily -mean temperature, night mean temperature and daily mean relative humidity and to evaluate these hosts for the *B.tabaci* infestation throughout two successive summer seasons of 2001 and 2002 at Qualyobia Governorate.Results can be summarized as follows:

Population of eggs and nymphs of *B. tabaci* were greatly affected by the host plant as well as the combined action of the three tested weather factors rather than the single effect of each factor.

Pepper was the least infested (8.43 & 11.25 eggs /10 ins.^{2} and 5.28 & 10.55 nymphs /10 ins.^{2}), the cabbage was the most infested (94.25 & 100.53 eggs/10 ins.^{2} and 80.75 & 88.53 nymphs/10 ins.^{2}), okra harboured (21.4 & 25.4 eggs/10 ins.^{2} and 15.05 & 23.1 nymphs/10 ins.^{2}), while eggplant harboured (81.58 & 78.85 eggs/10 ins.^{2} and 62.23 & 69.43 nymphs/10 ins.^{2}), respectively.

INTRODUCTION

The whitefly, *Bemisia tabaci* (Genn.) is one of the most damaging whiteflies in the world (Cock,1986), and is reported as a pest of wide range of crop plants (Greathead,1986).Besides its direct damage to host plants, whiteflies responsible for transmitting virus diseases in many plants even if their populations are low (Gupta and Harris,1994).The population fluctuations of the whitefly, *B.tabaci* on vegatable crops have been studied by certain investigators (El-Sayed,1986; Ozgur and

Sekeroglu, 1986; Butler *et al.*,1988; El-Sayed *et al.*,1989; Flint and Parks, 1990; Sharaf El-Din *et al.*,1993; Hady,1994; Tantawi, 1995; Hassan,1996; Metwally,1999.).

The present work is mainly concerned with some ecological factors of this pest on four vegetables crops. These studies could be used as basic for integrated pest management.

MATERIAL AND METHODS

The present work was conducted throughout two succssive summer seasons of 2001 & 2002 at Qualyobia Governorate to study the population fluctuations of *B.tabaci*. Four vegetable crops,Green pepper (*Capsicum annum* L.), Okra (*Hibiscus esculentus* L.) , Eggplant(*Solanum melongena* L.) and Cabbage(*Brassica oleracea* L.) were used in an applied study to evaluate their relative sensetivity. Studies were conducted in an area of about one feddan, divided into 16 plots (1/16 feddan each) and distributed in a completely randomized design with four replicates. No chemical treatments were applied and all cultural practices were followed out. Biweekly, samples of 25 leaves were picked up at random from each replicate.Each sample was kept in a paper bag and transferred to the laboratory for inspection by the aid of stereo- microscope. The actual numbers of eggs and nymphs were counted within a random area of one square inch on the lower surface of each leaf, then the mean numbers of each of eggs and nymphs/ ten square inches were determined from each sample.The relation between the population fluctuations of *B.tabaci* immature stages and certain weather factors,[Daily mean temperature , (D.m.T.), night mean temperature (N.T.) and daily mean relative humidity (m.R.H.%)] was calculated by applying the simple correlation and partial regression formula.

Data were statistically analyzed and means were separated by LSD test according to Snedecor and Cochran (1980).

RESULTS AND DISCUSSION

A. Population fluctuation of *B.tabaci* under field conditions through summer plantations: Data concerning the counted numbers of each of *B.tabaci* immature stages are illustrated in Figs 1&2 .

B.tabaci infestation started early in both seasons, but with low numbers of immature stages on most of the host plants. In 2001 summer season, the first sample of Jun., 26th. showed that no *B.tabaci* eggs was found on pepper. On okra, eggplant and cabbage only 10.5, 21.85 and 16.25 eggs were counted /10 ins.^{2} , respectively. While in the first sample on Jun.,28th. of the next season showed that *B.tabaci* eggs was found neither on pepper nor on okra. A slight increase in the numbers of *B.tabaci* immature stages indviduals occurred in both seasons, in the second sample of Jul.,10th., 2001 and Jul.,12th.,2002 with all host plants.

Regarding the abundance of egg population in 2001 the 1st. peak of abundance occurred on Jul., 24 th., for pepper, okra, eggplant and cabbage (16.25,24.25,121.25 and 123.0 eggs/10 ins.^{2} , respectively). The 2nd. peak of egg population occurred on Aug., 21st. for okra and eggplant (45.5 and 132.5 eggs, respectively), on Sept. 4th. for pepper (18.75 eggs) and on Sept.18th. for cabbage (153.75 eggs/10 ins.^{2}). In 2002, the 1st. peaks of eggs population were recorded on Jul.,26th. for eggplant (82.75 eggs) and cabbage (114.25 eggs), and on Aug.9th. for pepper and okra (23.75 and 24.0 eggs/10 ins.^{2}, respectively.The 2nd. peaks of eggs population were recorded on Sept.6th. for pepper,eggplant and cabbage (30.25,121.75 and 140.25 eggs/10 ins.^{2},respectively) and on Sept.20th. for okra (59.0 eggs/10 ins.^{2}).The third peaks of eggs population were recorded on Oct.18th. for okra and cabbage (36.25 and 146.75 eggs/10 ins.^{2}) ,respectively.

As for nymphs, in 2001 summer season, the 1st. peak of abundance was recorded on Aug.,21st. for pepper and cabbage(14.75& 126.75 nymphs /10 ins.^{2}, respectively), while it occurred on Jul., 24 th. for okra and eggplant (18.75 and 33.00 nymphs/10 ins.^{2}, respectively).The 2nd. peak was recorded on Sept.,4 th for okra (20.25 nymphs/10 ins.^{2}) , while it occurred on Sept.,18th. for eggplant and cabbage (167.75 & 170.75 nymphs/10 ins.^{2}), respectively.

In 2002, summer season , the 1st. peak of nymphal population occurred on Aug.,9th. for okra (27.5 nymphs /10 ins.^{2}), while the 1st. peaks were occurred on Aug.,23rd. for pepper, eggplant and cabbage (19.0 & 106.25 and 128.5 nymphs / 10 ins.^{2}), respectively. The 2nd. peaks were recorded on Sept.,6th. for okra (54.25 nymphs /10 ins.^{2}), on Sept., 20 th. for pepper and eggplant (24.5 and 132.25 nymphs /10 ins.^{2} , respectively),on Oct.,4th. for cabbage (128.0 nymphs nymphs /10 ins.^{2}).

Similar findings were recorded by El- Sayed *et al.*(1989), who mentioned that some host plants were more suitable for rearing and multiplication of *B.tabaci* than others.

The recorded numbers of eggs were always higher than those recorded for nymphs. These findings agreed with the reaults obtained by El-Sayed (1986), who stated that this may be due to the natural mortality factors including climatic conditions and the role of natural enemies which suppress the numbers of indviduals from each stage and this undoubtedly, affects the numbers of the subsequent stage.

B.Effect of three weather factors on the population density of *B.tabaci*, immature stages on four host plants, pepper, okra, eggplant and cabbage: The population density was measured at the recorded D.m.T., N.T. and m.R.H.% in two summer plantation seasons,2001 and 2002, respectively. The results of the calculated simple correlations (r), regressions (b), and partial regressions (P.reg.) and the variance explained by the weather factors combined (E.V.%).

1-Pepper

a. Effect of daily- mean temperature (D.m.T.): Data indicated that there were signifacnt positive correlation between the (D.m.T) and both of eggs and the nymphs in the first season 2001(r = 0.65 and 0.61, respectively), but in the second season,2002 were insignificant positive (r = 0.55 and 0.57, respectively).

The precise effects of the tested factors as measured by P.reg. were significant negative for egg stage(-0.28&-0.11) in both seasons and for nymphal stage in the second season (-0.11), but it was positive in the first season (0.16).

b.Effect of night temperature (N.T.): Data indicated that there were high positive correlations between the N.T. and both of eggs and nymphs during the both sesons (r = 0.81and 0.87, respectively), and (r = 0.64 and 0.81 for nymphs, respectively). The actual effects of this factor (P.reg. value) were significantly positive (0.63 and 0.42, respectively for eggs) in both seasons, In case of nymphs, it was isignificant positive (0.07) in the first season, but high significant positive in the second season (0.41).

These results emphasize that D.m.T. and N.T. seemed to be fluctuated out of the optimal range of the number of oviposited eggs.

c.Effect of daily mean relative humidity (m.R.H.%): The values of simple correlation and regression were insignificant positive throughout both seasons on both stages (r = 0.28 and 0.25 for eggs, respectivly), and (r = 0.50 and 0.31 for nymphs, respectively).

The precise effects of the tested factors as insured by P.reg. were insignificant and positive for egg stage(0.05&0.04)and (0.12&0.51) for nymphal stage in both seasons.

d.The combined effect of the three weather factors: The analysis of variance of the the three tested weather factors combined showed significantly effects on eggs throughout the both seasons and on nymphal stage in the second season. The explained variance percentages due to the three weather factors on the egg stage in both seasons varied from 78.47% (summer season,2002) to 80.67% (summer season, 2001) and from 70.42% to 72.12% in case of nymphal stage throughout 2001 & 2002, respectively.

Accordingly, it can be generally mentioned that the population of each of egg stage and nymphal stage on pepper leaves are mostly related to the combined action of the three tested weather factors rather than the effect of each factor separately.Such relatively, still other unknown factors that affect the populations of eggs and nymphs, for instance, data obtained and illustrated in Figs.1&2 indicate that pepper was the least preferred host for oviposition, as it received the lowest mean numbers of eggs (8.43/10 ins.^{2}) and nymphs (5.28/10 ins.^{2}) in the first season and (11.25 eggs and 10.55 nymphs/10 ins.^{2}) in the second season.

2. Okra

a.Effect of day- mean temperature (D.m.T.) The results of statistical analysis of simple correlations and regressions show that these coefficients were insignificant, but positive in both seasons for both of eggs (r = 0.65 & 0.28) and nymphal stages (r = 0.25 & 0.16). The precise effects of the tested factor as measured by P.reg. were insignificant in both seasons for both egg stage (57.02 & 42.67) and nymphal stage (43.16 &46.11 , respectively).

b.Effect of night - mean temperature (N.T.) The results of simple correlations and rgressions illustrated that the direct relations between this weather factors and the population densities of both stages throughout both studied seasons insignificantly positive except for egg stage in the first season 2001 was a. The actual effects of this factor (P.reg.values) on the egg stage during the first season was insignificantly positive (0.07&0.34)throughout both seasons.This accurate effect was insignificant on nymphal stage(0.37), but negative in the first season (-0.04).

It is interesting to note that the effects of D.m.T. and N.T. were within the optimal ranges, thus, resulted in an insignificant values.

c.Effect of daily - mean relative humidity (m.R.H.%) The results indicate that these values were insignificantly positive in both seasons for both stages. Partial regression values gave an evidence of an insignificant effects of this factor.

These results are in accordance with those obtained by Tantawi (1995) who mentioned that the actual effect of daily mean relative humidity was significantly negative for both egg and nymphal stages of *B.tabaci* on melon leaves.

d. The combined effect of the three weather factors: The results indicate that the combined effect of the three tested weather factors on the population density of egg and nymphal stages was insignificant in both seasons. Results of analysis of variance revealed that day-mean temperature , night mean temperature and daily mean relative humidity had a certain influence on the population density of eggs throughout both seasons. The percentage of variance explained by the previous weather factors ranged from a minimum of 42.67% in the second season to a maximum of 57.02 % for egg stage and from 43.16% to 46.11% for nymphal stage in both 2001&2002 seasons, respectively. Such relatively small percentages, mean that there are still other unknown factors that affect the populations of eggs and nymphs.

3 Eggplant

a.Effect of daily mean temperature (D.m.T.): It can be noticed from the simple correlation and rgression values that the primary effect of this factor on the population density of eggs throughout both seasons were insignificantly positive (r = 0.26 &0.30), and it was negative in case of nymphs in the first season (r = -0.05), but positive (0.50) in the second season . Results of the partial regressions on the same factor indicated that the accurate effects also insignificantly positive in the first season (0.08 &0.03), but negative in the second season (- 0.05&-0.03) for both eggs and nymphs.

It is obvious that the tested factor can not be regarded as a weather factor influencing the population densities of *B.tabaci* eggs and nymphs.

b. Effect of night mean temperature (N.T): The resulting primary effect of this factor on the population density of both eggs and nymphs throughout both seasons were insignificantly positive (r = 0.22 &0.52 for eggs and 0.0 & 0.59 for nymphs).

Results of P. reg. showed that the effect of N.T. was insignificantly negative on eggs and nymphs(-0.06 & -0.03), but positive in the first season. In the second season it was insignificantly positive for both stages (0.10 & 0.10).

c. Effect of daily mean relative humidity (m.R.H.%): The results of statistical analysis of simple correlations and regressions show that these coefficients were insignificant, but positive for both stages in the first season (r = 0.48 for eggs and 0.75 for nymphs). In the second season the same factor produced insignificant positive for eggs (r = 0.08), but negative for nymphs (r =-0.08).

Results of P.reg. showed that the actual effect of this factor on both stages during the two seasons were insignificantly positive, the P.reg. values were (0.04 and 0.02 for eggs) and (0.02 and 0.02 for nymphs) throughout the two summer seasons of 2001& 2002, respectively. These results support that m.R.H.% can not be regarded among the weather factors influencing the population density of each egg and nymphal stages.

The foregoing results confirmed that the influences of D.m.T. &N.T.and m.R.H.% on the population densities were within their optimal ranges, hence, produced an insignificant effects.

d. The combined effect of the three weather factors: The three tested weather factors combined showed insignificant effect on both stages during both seasons. These results also, reveal that the variance explained by the three wether factors simultaneously varied from 33.46% to 36.36% in case of egg stage and from 47.91% to 56.32% in case of nymphal stage.

Accordingly, it can be generally mentioned that the population of both of egg and nymphal stages on eggplant leaves are mostly related to the combined action of the three tested weather factors rather than the effect of each factor separately.

4. Cabbage

a. Effect of daily- mean temperature (D.m.T.): It can be noticed from the simple correlations and regressions values that the primary effect of this factor on the population density of egg stage was insignificantly positive (r = 0.17 and 0.07) in both seasons 2001 &2002, respectively. In case of nymphal stage it was insignificantly negative (r = - 0.16) in the first season, but positive (r = 0.10) in the second season.

Results of the P. reg. on the same factor indicated that the accurate effect also, insignificantly positive (0.02) in the first season for egg stage,but it was negative (-0.08) in the second season. In case of nymphs it was insignificantly negative (- 0.01) in the first season, but positive (0.08) in the second season.

b. Effect of night-mean temperature (N.T.) The resulting primary effect of this factor on the population of egg stage throughout both seasons was insignificantly positive (r = 0.23 and 0.28, respectively). In case of nymphs, this effect was insignificantly negative (r = - 0.08) in the first season, but positive (r = 0.32) in the second season. Results of the partial regressions on the same factor indicated that the accurate effects also insignificantly positive on both of eggs and nymphs throughout the both seasons.

It could be concluded that the influence of D.m.T. and N.T. on the population densities of eggs and nymphs were within their optimal range, hence, produced an insignificant effects.

c.Effect of daily- mean relative humidity (m.R.H.%) The values of simple correlations and regression were significantly positive on both stages (r = 0.70 and 0.80 for both egg and nymphal stages, respectively), in the first season, and insignificantly negative for both stages (r = - 0.01 and - 0.02 for eggs and nymphs, respectively) in the second season.

Results of P.reg. showed that the accurate effect was significant positive (P.reg. values were 0.50 and 0.08) for eggs and nymphal stages through the first season. In the second season, it was insignificant negative (- 0.01) for eggs, but positive in case of nymphs (0.02).

These results emphasize that m.R.H.% seemed to be fluctuated out of the optimal range of the number of deposited eggs in the first season and within the optimal range in the second season, thus it yielded an insignificant effect.

These differences may be due to the nature of vegetative shoot of the cabbage plants which grow near to the surface of the soil and may be affected by the moisture of soil content.

d. The combined effect of the three weather factors: The results of analysis variance of the three previous weather factors simultaneously indicate that the three tested weather factors combined showed insignificantly effects on both stages during both seasons.

These results also reveal that the variance explained by D.m.T., N.T. and m.R.H.% , simultaneously varied from 21.58% to 55.48% in case of egg stage, and from 27.41% to 64.90 in case of nymphal stage.

Accordingly, it can be generally mentioned that the population of each of egg stage and nymphal stage on cabbage leaves are mostly related to the combined action of the three weather factors rather than the effect of each factor separately.

Similar findings were recorded by Sharaf El-Din *et al.*(1993), Hady (1994), Tantawi (1995), Hassan (1996) and Metwally (1999).

C.The evaluation of four vegetable crops for the *Bemisia tabaci* (Genn.)infesation: Data in Table,1 showed mean numbers of eggs and nymphs of *B.tabaci* per 10 ins.^{2} on four vegetable crops, pepper, okra, eggplant and cabbage throughout two successive summer seasons (2001&2002).

a. Eggs

Data obtained throughout the two successive summer seasons of 2001 and 2002 indicate that *B.tabaci* females showed the same tendency of preference for egg deposition on the tested vegetable crops. Cabbage was always the most preferred as it received the highest mean number of *B.tabaci* eggs (94.25 &100.53eggs/10 ins.^{2}) in both of 2001 & 2002 summer seasons, respectively.While pepper was the least preferred host for oviposition, as it received the lowest mean number of eggs (8.43 and 11.25 eggs / 10 ins.^{2}) throughout the two seasons, respectively. The remaining crops could be arranged descendingly according to the number of eggs counted on leaves, whereas eggplant received (81.58 and 78.85 eggs / 10 ins.^{2}) and okra as it received (21.4 and 25.40 eggs/10 ins.^{2}) throughout the two seasons 2001 & 2002, respectively.

Statistical analysis revealed highly significant difference between the mean numbers of eggs on all tested hosts throughout the two summer seasons and the inspected vegetable crops could be categorized according to the obtained data as follow: The least preferred host was pepper ,followed by okra with high significant difference, eggplant was moderately preferred, while cabbage was the most preferred host for egg deposition.

Table 1. Mean numbers of *B.tabaci* eggs and nymphs on the leaves of four vegetable crops at Qualyobia Governorate in 2001 &2002 summer seasons .

Host	2001		2002	
	eggs	nymphs	eggs	nymphs
pepper	8.43 d	5.28 c	11.25 d	10.55 d
okra	21.40 c	15.05 c	25.40 c	23.10 c
eggplant	81.58 b	62.23 b	78.85 b	69.43 b
cabbage	94.25 a	80.75 a	100.53 a	88.53 a
L.S.D. 0.05	12.08	15.69	12.48	11.32

* Means followed by the same letter are insignificantly different from each other at 0.05 level of probability.

b. Nymphs

Data in Table 1, showed highly significant differences between the tested vegetable hosts concerning the mean numbers of *B.tabaci* nymphs in both 2001

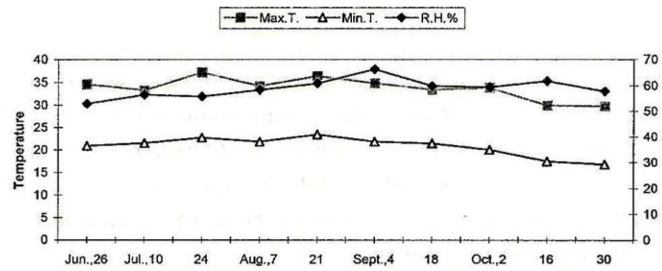
&2002 summer seasons. Regarding the data on the first summer season, cabbage harboured the highest mean number of *B.tabaci* nymphs (80.75 nymphs/ 10 ins.^{2}). On contrary, the lowest mean number of nymphs was on the pepper (5.28 nymphs/10 ins.^{2}). The remaining vegetable hosts could be arranged in an ascending order according to the mean counts of nymphs, as okra and eggplant were harboured 15.05 and 62.23 nymphs/10 ins.^{2}, respectively.

Consequently, the inspected vegetable hosts could be divided according to the calculated L.S.D. 0.05 as, pepper was the least infested host, followed by okra with significant difference.Eggplant was moderately infested host, while cabbage was heavily infested crop.

Similar results were obtained in the second summer season 2002, the tested host plants showed also, the position , as hosts for *B.tabaci* nymphs, as pepper was the least infested host (10.55 nymphs/10 ins.^{2}), followed by okra (23.10 nymphs/10 ins.^{2}) with significant difference, eggplant was moderately infested host (69.43 nymphs/10 ins.^{2}) and the severely infestesd host was cabbage (88.53 nymphs/ 10 ins.^{2}).

The results are in agreement with those of El-Sayed *et al.*, 1989 who mentioned that some host plants were more suitable for rearing and multiplication of *B. tabaci* than others; vegetable marrow, cucumber, eggplant and bean were associated with higher numbers of attracted *B. tabaci* females, lower natural mortality rates of immature stages, lowest adult longevities and oviposition periods and the highest numbers of eggs were deposited on these plants. Hady 1994, reported that no clear correlation could be concluded between the presence of denesities of trichomes or hairs on the lower leaf surfaces and the rate of *B.tabaci* infestations. Cabbage which has glabrous leaves harboured more immature stages than tomato and okra that have hairy leaves. Also, tomato which has higher trichome denesities on its lower leaf surfaces harboured lower immature stage numbers than cucumber, bean and eggplant which have less dense trichomes on leaves.This indicate that densities of trichomes on leaves may not be a main factor affecting selection for development of *B.tabaci* immature stages.

Physical plant characters, such okra leaf shaped and an open canopy, have conferred resistance to whitefly in some instances (Ozgur and Sekeroglu 1986; Butler *et al.*,1988; Flint and Parks 1990).



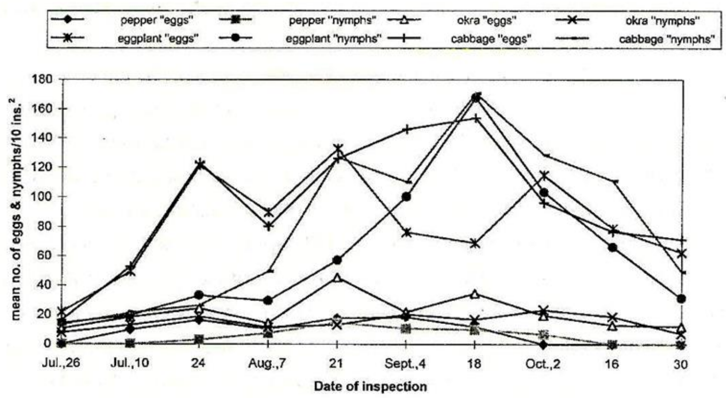


Fig. 1.Mean numbers of *B.tabaci* eggs and nymphs on the leaves of four vegetale crops at Qualyobia Governorate throughout 2001 .

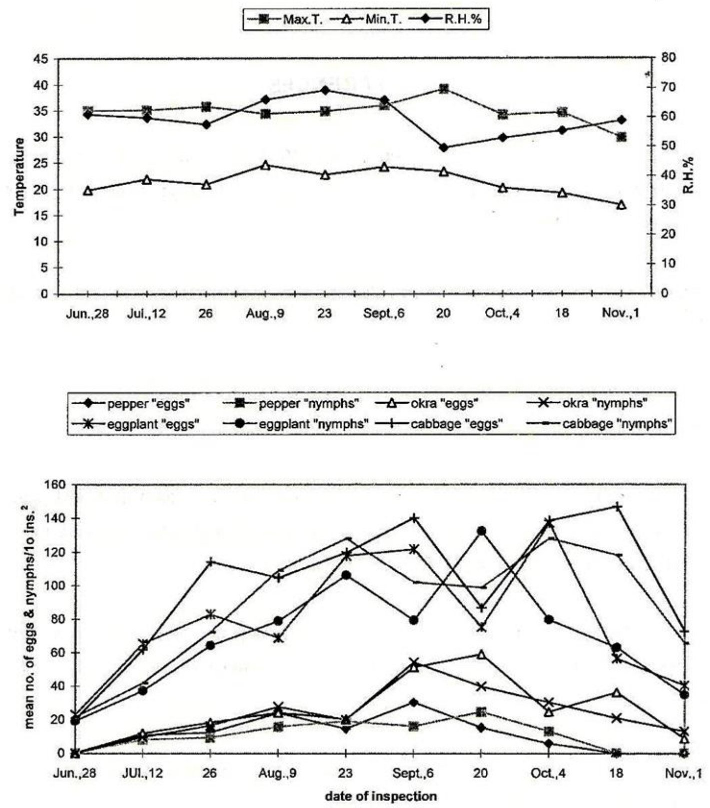


Fig.2. Mean numbers of *B.tabaci* eggs and nymphs on the leaves of four vegetable crops at Qualyobia Governorate throughout 2002 .

REFERENCES

1. Butler, Jr.,G.D., D.Rimon and T.J.Henneberry. 1988. *Bemisia tabaci* (Homoptera: Aleyrodidae):populations on different cotton varieties and cotton stickness in Israel Crop Port. 7 :43-47.

2. Cock, M.J.W.1986.A literature survey.C.A.B.International Institute Biological control, 121 pp.

3. El-Sayed, A. M.1986. Further studies on whitefly, *Bemisia tabaci* (Genn.) and its natural enemies in Egypt.Ph.D. Thesis, Fac. Agric. Moshtohor, Zagazig Univ.

4. El-Sayed, A. M. F.F. Shalaby and A.A. Abd El-Gowad. 1989. Influence of host plant on some biological aspects of *B.tabaci* (Genn.)(Hemiptera-Homoptera : Aleyrodidae). Proc. 1 st. Int. Conf. Econ. Ent. 1:241-249.

5. Flint, H. M. and N.J. Parks.1990.Infestation of germoplasm lines and cultivars of cotton in Arizona by whitefly nymphs (Homoptera: Aleyrodidae) J.Entomol. Sci. 25:223-229.

6. Greathead, A.H. 1986. Host plants. In:*Bemisia tabaci* - a literature survey. Ed. By Cock, M.J.W. Fao and CAB, Ascot, U.K, 17-25.

7. Gupta, G.P. and M.K. Harris.1994. Utilization of biopesticides in management of whitefly populations. Abstract of paper presented at the International workshop of *Bemisia* spp. BARD. 3-7 Oct., 1994, Shoresh, Israel.

8. Hady, S.A. 1994. Ecological studies on whitefly, *Bemisia tabaci* (Genn.) infesting some vegetable crops in Qualubia Governorate. Ph.D. Thesis, Fac. Agric.Moshtohor, Zagazig Univ.

9. Hassan, M.S.1996. Ecological studies on whitefly in vegetable cultivations reference to an integrated control approach. Ph.D. Thesis, Fac. Agric. Suez Canal Univ.

10. Metwally, S.A.G. 1999. Effect of planting date and certain weather factors on the population fluctuations of three insect pests infesting kidney beans in Qualyobia Governorate. Egypt. J. Agric. Res., 77 (1):139-149.

11. Ozgur, A.F. and E. Sekeroglu.1986. Population development of *Bemisia tabaci* (Homoptera:Aleyrodidae) on various cotton cultivars in Cukurova, Turkey.Agric. Ecosyst. Environ. 17: 83-88.

12. Sharaf El- Din, A.A.A., I.I. Ismail and A.M. Sameada 1993. Population density of *Bemisia tabaci* (Genn.) on various crops as affected by certain weather factors at Fayoum Governorate, Egypt. J.Agric. Sci. Mansoura Univ., 18 (8): 2427-2435.

13. Snedecor, G.W. and W.G. Cochran.1980."Statistical Methods". 75th. ed., Iowa State Univ., Press Ames, U.S.A.

14. Tantawi, M.A.M. 1995. Monitoring of *Bemisia tabaci* (Genn.) population on certain crops and its control. M.Sc., Thesis, Fac. Agric. Cairo Univ.

دراسات بيئية على الذبابة البيضاء على بعض محاصيل الخضر

رفعت حسنى جندي ميخائيل

معهد بحوث وقاية النباتات ، مركز البحوث الزراعية ، الدقي ، الجيزة .

أجريت هذه الدراسة بهدف معرفة تأثير ثلاثة عوامل جوية هى: درجة حرارة النهار، ودرجة الحرارة الليل والمتوسط اليومى للرطوبة النسبية على تذبذب تعداد الذبابة البيضاء على أربعة من محاصيل خضر هى : الفلفل والباميا والباذنجان والكرنب ، وتقييم درجة اصابة كل منهم بالذبابة البيضاء خلال الموسم الصيفى لعامى ٢٠٠١ و٢٠٠٢ فى محافظة القليوبية .

يمكن تلخيص نتائج هذه الدراسة فيما يلى :

- تأثر تعداد بيض و حوريات الذبابة البيضاء بالعائل وأيضا بالتباين المشترك للثلاثة عوامل الجوية المختبرة أكثر من تأثير كل منهم منفردا. و كان الفلفل أقل محاصيل الخضر تحت الدراسة اصابة حيث بلغ متوسط تعداد بيض الذبابة البيضاء خلال موسمى الدراسة ٨,٤٣ و ١١,٢٥ بيضة /١٠ بوصة مربعة ، بينما بلغ متوسط تعداد الحوريات ٥,٢٨ و ١٠,٥٥ /١٠ بوصة مربعة .

- كان الكرنب أشدهم اصابة حيث بلغ تعداد البيض عليه ٩٤,٢٥ و ١٠٠,٥٣ بيضة / ١٠ بوصة مربعة وبلغ تعداد الحوريات ٨٠,٧٥ و ٨٨,٥٣ حورية / ١٠ بوصة مربعة.

- بلغ تعداد البيض على أوراق الباميا ٢١,٤ و ٢٥,٤ بيضة / ١٠ بوصة مربعة أما الحوريات فقد بلغ تعدادها ١٥,٠٥ و ٢٣,١٠ حورية / ١٠ بوصة مربعة .

- بينما بلغ تعداد البيض على أوراق الباذنجان ٨١,٥٨ و ٧٨,٨٥ بيضة / ١٠ بوصة مربعة ، أما تعداد الحوريات فقد بلغ ٦٢,٢٣ و٦٩,٤٣ حورية / ١٠ بوصة مربعة خلال موسمى الدراسة ٢٠٠١ و ٢٠٠٢ على التوالى .