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SURVEY OF GLOBE ARTICHOKE PESTS AND THEIR ASSOCIATED PREDATORS AT ABOU EL- MATAMEER REGION , EL –BEHAIRA GOVERNORATE

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ABSTRACT

Since seventeenth decade ago ,where the matter of fact had no great problem for globe artichoke insect and animal pests infestation in Egypt . Now a survey of insect ;animal species and associated predators was carried out during 2003 / 2004 and 2004 / 2005 seasons on globe artichoke grown at El- Ashartalaf village ; Abou El-Matameer district , El- Behaira governorate, which it considered one of the important local markets and export for artichoke . Twenty nine species belonging to eighteen families and seven insect orders were recorded as insect pests on G. artichoke plants. These families are :- Agromyzidae; Calliphoridae ; Muscidae ; Tephritidae (Order : Diptera) ; Aleyrodidae ; Aphididae ; Cicadellidae : Margarodidae (Order : Homoptera), Formicidae ; Vespoidae (Order :Hymenoptera), Pentatomidae (order : Heteroptera), Noctuidae; Nymphalidae; Pieridae (Order : Lepidoptera), Acrididae ; Gryllidae ; Gryllotalpidae (Order : Orthoptera)and Thripidae (Order : Thysanoptera) , beside two animal pests , one species of two-spotted spider mite belonging to (Order : Acarina ; family : Tetranychidae) and the second one , snail " *Monacha cartusians* " belonging to (Order : Stylommatophora ; Family : Helicidae) Also , Five species of the associated insect predators were found belonging to four families and three orders. Family Aphididae recorded seven species represented the majority of the found insect pests on G. artichoke leaves where's the other surveyed species for insects and animal pest recorded in relative abundance ; moderate ;rare and few numbers during the period of study . In the present survey , *Trypanea amoena* Fr. recorded few number during April – May as pupae inside G. artichoke heads (Floweriness) as a first time in Egypt . few numbers of adults of whitefly species were appeared only on G, artichoke leaves, whereas its immature stages absent completely .Moreover ; *Chrysoperla vulgaris* (Steph.) individuals were recorded in relatively abundant numbers followed by *Coccinella undecimpunctata* L., *Cydonia vicina var.nilotica* Muls, *Paederus alfierii* Koch and *Calidomantis savignyi* (Sauss .) besid the Predaceous mite *Phytoseiulus persimilis* (A.H.) on plant leaves during the two tested seasons .

INTRODUCTION

Globe artichoke [*Cynara scolymus* L.] was a herbaceous perennial plant grown for its flower heads or buds, is one of the important vegetable crop in Egypt for local consumption and exportation . The literature review proved that by the end of seventieth decade of the century , surely no problems were observed of surveyed insects on G. artichoke fields as shown by Theobald (1923) who recorded, for the first time ,a new species of the aphid ;*Capitophorus cynariella* on globe artichoke grown in Egypt. Afterwards many foreign investigator, identified certain species of insects on artichokes such as ; Del-Canizo(1928)in Spain, Melis (1941) in Italy ,Olalquiga in Argentina (1941) and Labeyrie (1961) in France .The production pattern of G . artichoke in Egypt shows that the major amount of yield usually produces during March and April, whereas small amount of the crop could be harvested

months are the most profitable for export and local markets El-Fadely & Abou El-Hassan (1986) .Artichoke now , are usually liable to be attacked by several insect and animal pests which may be a serious threat for that nutritional crop . So the performance of G. artichoke pests survey and their natural enemies has been studied widely by many investigators : Paitier *et al* .(1987), Foddai *et al* . (1991) ,and in Egypt by Afify *et al* .(2004) . Emphasis in this current research has been placed on recogonized for G. artichoke pests in Egyptian fields . Therefore, the aim of this study was to survey the insect and animal pests infesting the artichokes at Abou El-Matameer district, El- Behaira governorate beside the associated insect and animal predators to protect the crop from this pest losses .

MATERIALS AND METHODS

This survey was conducted in globe artichoke fields at El-Ashartalaf village ; Abou El- Matameer District El- Behaira governorate during the two successive growing seasons (2003 -2004) and (2004-2005). Experimental area chosen was one feddan which divided 4 replicates and the plants were note subjected to any chemical insecticides . Dates of transplantation were 15/8/2004 in the first season and 22/8/2005 in the second one . Samples were taken after transplanting by one week and continued until crop harvested .Infested leave samples were collected from 25 leaves per replicate every week representing terminal , middle and basal parts of plants during the vegetative stage , kept in polyethylene bags and brought to the laboratory then count by sterioelectronicmicroscope . The individuals of insect and mite stages identified and classified by the staff of classification in the Insect Identification Research Department in the Plant Protection Research Institute, A. R. C. in Egypt .Also ,ten plant flower heads and buds picked up randomizly during the flowering stage were put in a labeled plastic bags for inspection in laboratory their every week .Adults and larvae of different pests and their predators were collected by 25 double stroke swept by sweep net in diagonal directions just above the canopy

RESULTS AND DISCUSSION

Table (1) exhibit the list of surveyed insect and animal pests on G. artichoke plants grown at El-Ashartalaf village ;Abou El- Matameer Region , El Behaira governorate during 2003-2004 and 2004-2005 growing seasons .Twenty–nine different insect species related to twenty-five genera , eighteen families and seven orders showed the various developmental stages of the insect pests infesting g, artichoke in this study, of these;five species belonging to the four families; Agromyzidae, Calliophoridae, Muscaidae, Tephritidae (Order : Diptera), twelve species of the four families; Aleyrodidae ,Aphididae ,Cicadellidae, Margarodidae (Order: Homoptera),two species of the two families; Formicidae ,Vespoidae,(Order: Hymenoptera) , one species of the one family ; Pentatomidae (Order : Heteroptera), five species of the three families; Noctuidae , Nymphalidae ,Pieridae (Order: Lepidoptera), three species of the three families; Acridiidae, Gryllidae ,Gryllotalpidae (Order: Orthoptera) and one species of the family ;Thripidae (Order: Thysanoptera)

,as well as , the animal pests the first one the two-spotted spider mite, *T.urticae* Koch belonging to the family ; Tetranychidae (Order : Acarina) and the second the clover snail *Monacha cartusians* which belonging to Phylum: Mollusca ;Class : Gasterpoda . A similar survey was obtained by Paitier *et al.* (1987) in Birttany, who recorded 16 species of insect species and 4 diseases on G. artichoke while Fadel *et. al.* (2001) in Egypt recorded 3 species of mining insects on G .artichoke leaves but Afify *et. al.* (2004) identified 30 insect pests on G. artichoke in his research in Giza and Northern Tahrer.

Table (1): Insect and animal species found infesting globe artichoke at Abou - Almatameer , El - Behaira governorate . in 2003/2004 & 2004/2005 .

Order	Family	Scientific name		Stage	Status	Date of observation
Insect pests	Agromyzidae	*Liriomyza trifolii* (Burgess)	+++	Maggot	Pest	Aug.-Mar.
		Phytomyza atricornis Meig .	+++	Maggot	Pest	Aug.-Mar.
Diptera	Calliphoridae	*Calliphora erythrocephala*	+	Adults	Visitor	Sep.
	Muscidae	*Musca domstica* L.	++	Adults	Visitor	Dec.-Jan.
	Tephritidae	*Trypanea amoena* Fr .	++	Pupae	Pest	Apr.-May
Homoptera	Aleyrodidae	*Acaudaleyrodes citri* (Priesner & Hosny)	++	Adults	Pest	Oct.-Mar.
		Bemisia tabaci (Genn .)	++	Adults	Pest	Nov.-Apr.
	Aphididae	*Aphis craccivora* Koch.	+++	Adults & Nymphs	Pest	Sep.
		Aphis faba L.	++	Adults & Nymphs	Pest	Oct.-Apr..
		Aphis gossypii Glov.	++++	Adults & Nymphs	Pest	Oct.-Apr..
		Macrosiphum pisi (Harris)	+	Adults & Nymphs	Pest	Feb.-Mar.
		Macrosiphum rosefolium Theo.	+	Adults & Nymphs	Pest	Feb.-Mar.
		Brachycaudus hylichrysti	++	Adults & Nymphs	Pest	Mar.-Apr.
		Myzus persicae Sulzer	+++	Adults & Nymphs	Pest	Mar.-Apr.
	Cicadelidae	*Empoasica decipienis* (paoli)	+++	Adults & Nymphs	Pest	Mar.-Apr.
		Empoasica lybica De berg	++	Adults & Nymphs	Pest	Mar.-Apr.
	Margarodidae	*Icerya aegyptiaca* (Douglas)	+	Adults	Pest	March
Hymenoptera	Formicidae	*Componotus maculatus* E	++	Adults	Visitor	Apr.-May
	Vespoidae	*Polistes gallica* L .	+	Adults	Visitor	April
Heteroptera	Pentatomidae	*Nezara viridula* L .	+	Adults & Nymphs	Pest	October
Lepidoptera	Noctuidae	*Agrotis ipsilon* (Huf.)	+	Larvae	Pest	November
		Trichoplusia ni Hbn.	+	Larvae	Pest	November
		Spodoptera exiqua (Hb.)	++	Larvae	Pest	Oct.-Nov.
	Nymphalidae	*Vanessa cardui* L .	+	Adults	Visitor	Oct.
	Pieridae	*Pieris rapae* L .	+	Adults	Visitor	Oct.-Nov.
Orthoptera	Acridiidae	*Anacridium aegyptium* L .	+	Adults	Pest	Nov.
	Gryllidae	*Gryllus domesticus* L .	+	Adults	Pest	May
	Gryllotalpidae	*Gryllotalpa gryllotalpa* L .	+	Adults & Nymphs	Pest	Oct.
Thysanoptera	Thripidae	*Thrips tabaci* (Linn .)	++	Adults & Nymphs	Pest	Nov. - Mar.
Animal pests Acarina	Tetranychidae	*Tetranychus urtica* Koch	++	Adults & Nymphs	Pest	Apr. - May
Stylommato-phora	Helicidae	*Monacha cartusians*	+	Adults & Nymphs	Pest	Nov. - Mar.

++++ : Abundant numbers (over 1000 indiv.)
++ : Few numbers (10 - 20 indiv.)
+++ : Moderate numbers (50 - 100 indiv.)
+ : Rare numbers (1 - 5 indiv.)

Among the insects covered ; *Trypanea amoena* Fr. Is the first record in the region of study as pupae iinside globe artichoke heads with few numbers in April – May during the two tested seasons . It is worthy to mention here that the seven species of recorded aphids made the largest numbers of the whole insects on g. artichoke at Elashartalaf village ; Abou El- Matameer

Destrict, also was noticed the alate and apteruos of *Aphis spp.* on leaves in the end of season, whereas some of insect species found in moderate numbers, others recorded in few and rare numbers, as marked in Table (1) .In this study, two species of leaf mining insects revealed in normal numbers on g. artichoke in the tested regions .These results coincide with those occurred by Osmelak (1983) . Also , the two adult of Aleyrodidae were recorded in normal number with no immature stages completely on the plant leaves .These findings agreed with those obtained by Canas (2001) in Arizona and Afify *et. al* . (2004) .In addition , the only one species of the two spotted mite , *T. urticae* Koch recorded in low numbers as adults and nymphs and showed the clover snail " *Monacha cartusians* " caused serious damage on leaves .while, De-Stefani (1924) recorded some small animals injured artichokes in Italy Also El-Halawany *et. al.* (2002) in Egypt stated that using the predatory mite *P . persimilis* (Athias– Henriot) useful and effective in biological control programe against *T. urticae* Koch. Concerning the natural enemies , in this study adopted and found five species of the insect predators, which condacted four families and three orders, as recorded in Table (2). These families are Coccinellidae, Staphylinidae (Order : Coleoptera), Mantidae (Order : Dictyoptera) and Chrysopidae (Order: Neuroptera),which represented with three species of predators for the first family and one species for each the three later . Individuals of *Chrysoperla vulgaris* (Steph.) appeared, generally in abundant numbers , during the periods of study on plant leaves , followed by *Coccinella undecimpunctata* L .,with normal numbers and the other three predators were low .besid one predacous mite *P . persimilis* belonging to family Phytoseiidae order Acarina . Similar results were recorded by Neuenschwander & Hagen (1980) ,Cotttel *et . al* . (1998) , Fadel *et . al* . (2001) , El-Halawany *et. al* . (2002) and Afify *et al.* (2004),. More probably conclusion could given that survey must be studied greatly in different artichoke localities in Egypt for safe and best crop among the integrated pest management (IPM) programs.

Table (2): Insect and animal predators associated with G. artichoke insect pests at Abou - Almatameer, El – Behaira governorate .

Order	Family	Scientific name	Stage	Date of observation
Coleoptera	Coccinellidae	*Coccinella undecimpunctata* L. +++	Adults & Eggs	Nov.-Feb.
		Cydonia vicina var. nilotica Muls. +++	Adults	Nov.-Feb.
	Staphylinidae	*Paederus alfierii* Koch ++	Adults	Dec.-Jan.
Dictyoptera	Mantidae	*Calidomantis savignyi* (Sauss .) +	Nymphs	November
Neuroptera	Chrysophidae	*Chrysoperla vulgaris* (Steph.) ++++	Eggs & Adults	Oct.-Mar.
Acarina	Phytoseiidae	*Phytoseiulus persimilis* (A . H .) +	Adults & Nymph	Apr. - May

++++ : Abundant numbers (16 - 20 indiv.)
+++ : Moderate numbers (11 - 15 indiv.)
++ : Few numbers (5 – 10 indiv.)
+ : Rare numbers (1 - 4 indiv.)

REFERENCES

Afify, M.M. ; El- Khouly, A . S .; Metwally ,M . M . and Ibrahim,L . I . (2004) : Ecological and biological studies on some insect pests infesting globe artichoke plant. M. Sc.Thesis , Fac.of Agric. Al- Azhar Univ ., Egypt , 147 pp.

Canas, L. (2001) : Seasonal ecology of *Bemisia tabaci* in Arizona , Host plant effects on field populations and associated mortality factors . Entomolgy Department, University of Arizona , Maricopa Agricultural Center , 11 th Annual Desert Vegetable Crop Workshop , December, 2001 (pp. 223)

Cottel , J . M . ; Maisonneyre, J . C .; Coulure , I . and Mezencer , N . (1998) :Utilization of *Chryopa (Chrysoperla) lucasina* larvae against the black artichoke aphid (*Aphis faba*) . First Fransnational workshop. Del- Canizo , J. (1928) : Infestation by *Qcnogyna baetica* Rombin the south of Spain Bol. Pat . Veg. Ent. Agr. III (10 – 11) , pp. 8 – 16 .

De- Stefani , T . (1924) : Notes on some small animals injurious to rtichokes . Fito-pat ., 16 pp .

El- Fadaly , K .A .and Abou El- Hassan , E . A . (1986) : Effect of Gibberellin , Ethrel and Cycoceel on the earliness and yield of globe artichoke. Bull . Fac . of Agric., Univ. of Cairo , 37 (1) , p. 357 .

El- Halawany, M. E .; M. A. . Abd El-Samad and Ebrahim, H .M . (2000) : Biological control of the spider mite *Tetranychus urticae* Koch by the Phytoseid mite *Phytoseiulus persimilis* (A. H.) compared with chemical control. Bull, Ent. Soc. Egypt., Econ.. Ser, 27 : 63-71.

Fadel, A. M .; Lotfy ,A . A .;Aly , F. A. and Abd El- Ghfar , M . M . (2001): Studies on some leafmining Insects infesting vegetable crops in Egypt. Ph. D . Thesis , Fac. of Agric , Al – Azhar Univ., Egypt, 235 pp.

Foddai , A. ; Marras , F . and Idini ; G . (1991) : Field control trials for preventing the spread of aphid borne artichoke latent virus (ALV) in artichoke . Phytopatholgia Mediterranean , 30 (11) , 1-5 pp.

Labeyrie , V . (1961) : On some hymenoptera intervening in the bioccenosis of pests of artichoke in the southeast of France . Entomophaga , 8 (4) : 249-256 .

Melis , A . (1941) : A contribution to the knowledge of the artichoke weevil ; *Apion damryi* Desbr . Redia , 27 , 135 - 165 pp .

Neuenschwander , P . and Hagen , K . S. (1980) : Role of the predator , *Hemerobius paceifieus* in a non insecticide treated artichoke field . Environ . Entomol., 9 (5) : 492- 495 .

Olalquiage , F . G . (1945) : *Lygus fraudulentus* in Quillota . Agriculture Tec . , 5 (2) : 221 – 225 .

Osmelak , J . A . (1983) : Occurrence of leafmining (Diptera) in cultivated crops . Australian Entomological Magazine , 1 : 9- 10 pp .

Paitier , G.; Such, A . and Neen, F. L. E . (1987): Vegetable crops; the diseases and pests of artichoke in Brittany .Phytoma, No. 389, 47- 49 pp .

Theobald , F . V . (1923) : New Aphididae found in Egypt . Bull. , Soc., R ., Ent. , Egypt , 15 , 39- 80 pp.

حصر الآفات الحشرية و الحيوانية على الخرشوف وما يصاحبها من مفترسات في مركز أبو المطامير ، محافظة البحيرة

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الخرشوف من محاصيل الخضر الهامة التي تتبع العائلة المركبة ؛ وهو نبات عشبي معمر ؛ تنتشر زراعته في بلدان البحر الأبيض المتوسط ومصر تتميز نسبيا في الإنتاج المبكر للخرشوف ولم تحدث مشكلة كبيرة بالإصابة الحشرية والحيوانية للخرشوف في مصر حتى عقد السبعينيات ،والآن يتعرض الخرشوف للعديد من تلك الآفات الهامة ، لذلك أجرى هذا البحث لحصر الآفات الحشرية و الحيوانية التي تصيب نباتات الخرشوف المزروع بمساحات مختلفة في عدة مناطق بمركز أبو المطامير بمحافظة البحيرة ، والتي تعتبر من أهم مناطق الإنتاج للسوق المحلى وأيضا للتصدير للأسواق الخارجية . تم في هذا البحث حصر للمفترسات المصاحبة خلال الموسمين الزراعيين ٢٠٠٣/٢٠٠٤ ، ٢٠٠٤/٢٠٠٥ . وقد تبين من النتائج الأتي :-

حصر وتعريف ٢٩ نوع من الحشرات ، اغلبها من الآفات الحشرية الهامة على الخرشوف ، تتبع ١٨ فصيلة ،٧ رتب حشرية ، وكذلك نوع شائع من أكاروس العنكبوت الأحمر الكاذب و يتبع (فصيلة تترانيكدى ورتبة أكارينا) وقوقع البرسيم الزجاجي والذي يتبع قبيلة الرخويات (رتبة : ستيلوماتوفورا فصيلة : هيلسيدى) . وتمثل (فصيلة المن) اكبر الفصائل التي تم حصرها من حيث عدد الأنواع والتي تم حصر ٧ أنواع منها على أوراق الخرشوف وبأعداد عالية نسبيا في تلك المنطقة محل الدراسة ، بينما سجلت بقية الأنواع الحشرية والحيوانية أعداد أقل نسبيا وذلك خلال الموسمين المذكورين . كما سجلت لأول مرة حشرة تراي أمونيا ، كعذارى بداخل رؤوس الخرشوف (منطقة التخت) وبأعداد قليلة خلال الفترة من أبريل- مايو خلال موسمي الدراسة . تم تسجيل حشرة الذبابة البيضاء بأعداد متوسطة على أوراق الخرشوف ولكن لم تلاحظ الأطوار غير الكامله (الحوريات) خلال فترة الدراسة . كما تم أيضا تسجيل خمسة أنواع من المفترسات الحشرية التي تتبع أربع فصائل وثلاث رتب حشرية وكذلك أكاروس مفترس واحد يتبع فصيلة فايتوسدى رتبة أكارينا وكان أعلاها الحشرة الكاملة لأسد المن مع وجود طور البيض وطور الحوريات بأعداد أعلى نسبيا من أطوار أبو العيد ذو ١١ نقطة الموجودة على أوراق الخرشوف تلتها حشرات كل من أبو العيد السمني و الرواغة كما تم حصر حوريات فرس النبي الصغير وبأعداد أقل نسبيا خلال موسمي الدراسة . ويوصى الباحثان بمزيد من الدراسة والحصر والتعريف لمختلف الآفات الحشرية والحيوانية التي تصيب الخرشوف في جميع مراكز إنتاجه وتصديره في مصر .