Assiut J. of Agric. Sci., 43(Special Issue)(The 6th Conference of Young Scientists Fac. of Agric. Assiut Univ. May,13, 2012

Survey and seasonal abundance of land snails species in Assiut Governorate

Hasen.A. Khalifa[*], Khalifa.H. Abdel Gawad [**], Samir.H. Mannaa[**] And Hany.A. Abdel Gawad *

** Plant protection Department, Faculty Agriculture, Assiut University

* Plant Protection Research Institute

Abstract

:The present study was carried out in Experimental farm at faculty of agriculture, Assiut University and El-wasta village in Assiut Governorate, during the period of 2010 to 2012. The survey of land snails in these areas show that there were four species from the land snails. The percentage of these species was *Moncha obstructa*77.58%, *Eobania vermiculata*, 18.96%, *Oxyloma elegans*, 2.30*%, Lemax* sp. 1.16%. The study of population density show that the high density in the field crops at El-Wasta village compared with fruit and ornamental farms. On the other side the population in wheat field was low compared with Egyptian clover, this may be due to the preferable of clover as smile food than the wheat. The study of the snails density showed that the high density of the snails during the spring season followed by autumn and the low density was observed during winter and absent during summer season.

Key words: Snails, abundance, dominant, *Lemax* sp , *Oxyloma elegans***,** *Eobania vermiculata* , *Moncha obstructa*

IntroductionLand snails have unique life history traits and play an importantrole in the ecosystem. Land snails generally live in moist microhabitats on the landscape, such as by streams, springs and on north-facing slopes. Snails require moisture to live, because their tissues can be 50% water by weight**(Burch and Pearce 1990).** In addition, snails move by secreting mucous and mucous is mainly composed of water. Snails move small distances each year, making dispersal extremely limited **(Overton *et al*. 2009)**. Because few individuals immigrate to new colonies, gene flow is probably limited. For these reasons, local endemic species may arise. Snails may move long distances via passive dispersal, such as hitch-hiking on birds, humans, etc;

Referees:Prof.Dr.El-said.A.Alaraky Prof.Dr.Hasan.M.Hasan

however, little is known about long distance dispersal by that break down leaf litter. Land snails are also food to many predators, such as small mammals and birds. Despite their small size, land snails are diverse and vital to ecosystem health.Molluscs are considered as a group of serious pests attacking agricultural crops around the world. Land gastropods cause costly damage to field crops, vegetables and fruit trees as well as ornamental plants. In addition, some gastropods work as intermediate hosts for many parasitic worms infesting man and his domesticanimals**Barker(2002).**
The cornerstone of any pest management depends mainly on information about its ecology and biology.
The main aims of these studies were to get more information about survey, population dynamics and importance value of the land snail species in different Assiut Governorate localities.

Material and methods

This study was carried out in two locations in Assiut area. The first was El-Wasta village in the east north of Assiut city, the other area was the experimental farm at Faculty of Agriculture of Assiut University. The first area was cultivated with the field crops such as snails. In the food web, land snails are vital decomposers wheat, Egyptain clover, and vegetables crops. The other area was cultivated with fruit and ornamental trees. Two feddan were taken every area, the first was cultivated with wheat and the other feddan was cultivated Egyptian clover. On the other area the first feddan was represented with Mandarin fruit and the other was cultivated with ornamental farm. Samples were taken from each crop five samples by using the quadrate sample size 25×25 cm **Staikou and Lazaridou (1990**). Samples were taken five times during month. Snails from each host plant in each surveyed areas were transferred in muslin cloth bags to the laboratory and identified according to the keys given by
Godan(1983).**Result and discussion**

Data in Table (1) show the species of land snails catched from experimental farm of Assiut University and El -wasta village during the period from February, 2010 to March, 2012 years. Land snails were included from the study, *Lemax* sp, *Oxyloma elegans*, *Eobania vermiculata* and *Moncha obstructa*. In the Experimental farm *found* that *Eobania vermiculata* was recorded the highest dominant percentage (67.03%) followed by *Oxyloma*

elegans (20.73%) while the lowest percentage *Lemax* sp was (4.11%) during the years of study. This may be due to the presence of more preferable trees for nesting and feeding, and availability of food in neighbored field crops and vegetable plantations in faculty Farm, **Shetaia *et al*. (2009)**. The second area (El - wasta village) recorded one species of land snails in the field crops in this area by *Moncha obstructa* with(100%), while the other species was not recorded. This may be due to availability of food in neighbored field crops and vegetable plantations in area study.

Generally, *Eobania vermiculata* was the most dominant species in the Faculty Farm in the study year, may be due to several factors e.g., intra-specific competition, fecundity increasing and in habitat the ecosystems and this provides shelter and also to an increase in feed stores**,** while *Moncha obstructa* was the most dominant species in (El wasta village). This finding is in agreement with **Ramzy, (2009)** and **Shetaia *et al*. (2009).**

Table (1) : Average numbers of land snails recorded in Assiut Governorate during, 2010-2012.

Area of study	Land snail sp / Total	*Lemax* sp		*O. elegans*		*E. vermiculata*		*M.obstructa*	
		Number	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**
Expt.farm, Fac., Agric., Assiut University	**1095**	**45**	٤.١١	٨٩	٨.١٣	٧٣٤	٦٧.٠٣	٢٢٧	٢٠.٧٣
El-Wasta farms	**2776**	٠	٠	٠	٠	٠	٠	٢٧٧٦	١٠٠
Grand Total	**3871**	٤٥	١.١٦	٨٩	٢.٣٠	٧٣٤	١٨.٩٦	٣٠٠٣	٧٧.٥٨

Data in Table (2) revealed that *Eobania vermiculata* was ranked high dominant percentage (63.29%) in ornamental farm rather than fruit farm (3.74%) in the experimental farm. This may be due to the presence of more prefer trees for nesting and feeding. Also, *Moncha obstructa* the highest dominant was recorded in ornamental farm (16.99%) rather than in fruit farm (3.74%).This may be attributed to the availability of food and shelter in ornamental farm. Results in Table (٢) showed that the highest number of individuals was occurred during spring with average (554) individual. However, the lowest individuals of land snails were in autumn with mean (134) individual in the study years. Generally, that *Eobania vermiculata* and *Moncha obstructa* were more

dominant species in ornamental farm and_fruit farm. the number of land snails in ornamental farm highest than fruit farm. This finding is in agreement with sever authors included **Ramzy (2009), Abd El-Aal (2001) and. Mahrous *et al*. (2002).**

Table (2) Seasonal abundance of land snail species collected from experimental farm of the Faculty of Agricultural Assiut University during, 2010-2012.

Species / Seasonal	Total	No. of land snail individuals															
		Fruit farm								Ornamental farm							
		L		O		E		M		L		O		E		M	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Spring	**554**	**0**	**0**	**0**	**0**	**41**	**7.40**	**13**	**2.35**	**27**	**4.87**	**47**	**8.48**	**316**	**57.04**	**110**	**19.86**
Summer	**212**	**3**	**1.42**	**0**	**0**	**0**	**0**	**28**	**13.21**	**1**	**0.47**	**14**	**6.60**	**165**	**77.83**	**1**	**0.47**
Autumn	**134**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3.73**	**7**	**5.22**	**101**	**75.37**	**21**	**15.67**
Winter	**195**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**4.62**	**21**	**10.77**	**111**	**56.92**	**54**	**27.69**
Grand Total	**1095**	**3**	**0.27**	**0**	**0**	**41**	**3.74**	**41**	**3.74**	**42**	**3.84**	**89**	**8.13**	**693**	**63.29**	**186**	**16.99**

L = *Lemax* sp
O = *Oxyloma elegans*
E = *Eobania vermiculata*
M = Moncha *obstracta*

Data in Table (3) revealed that *Moncha obstructa* was ranked high dominant percentage (78.21% and 21.79) in Egyptain clover and wheat in the El-wasta village Farms. This may be due to the presence of more prefer for feeding. Also, the other species were not recorded in this area .This may be attributed to the availability of food and shelter in field crops. Results in Table (3) showed that the highest number of individuals was occurred during spring with mean (1769) individual. However, absence of land snails was in summer in the study year.Generally, that *Moncha obstructa* was more dominant species in El-wasta village farms. The number of land snails in Egyptain clover highest than wheat crop. This finding is in agreement with sever authors included **Ramzy (2009), Shetaia *et al*.(2009) and Barker (2002).**

Table (3) Seasonal abundance of Moncha *obstructa* collected from wheat and Egyptian clover, El-Wasta, Assiut Governorate during, 2010 -2012.

Species / Seasons	Total	No. of land snail individuals			
		Wheat		Egyptian clover	
		M. *obstructa*		M. *obstructa*	
		No	%	No	%
Spring	**1769**	**397**	**22.44**	**1372**	**77.56**
Summer	**0**	**0**	**0**	**0**	**0**
Autumn	**35**	**0**	**0**	**35**	**100**
Winter	**972**	**208**	**21.40**	**764**	**78.60**
Grand Total	**2776**	**605**	**21.79**	**2171**	**78.21**

References

AbdEl-Aal, S.M. (2001). Studies on certain land snails at Sharkia Governorate. M. Sc.Thesis, Fac. Agric. Zagazig. UNiv., 137pp.

Barker, G. M. (2002). Molluscs as crop pests. CAB, International, Walling Forti Oxon10 DE.UK, 468 pp.

Burch, J. B., and T. A. Pearce. (1990). Terrestrial Gastropods. Pages 201-309 *in* D. L. Dindal, editor. Soil Biology Guide. John Wiley & Sons, New York.

Godan, D. (1983). Pest slugs and snails, biology and control. Spinger- Verlage, Berlin, Heidelberg: 445 pp.

Mahrous, M.E; M. H. Ibrahim and E.M. Abd El-Aal (2002). Ecological aspects of theglassy clover snail, *Monacha cartusiana* (Muller), under field conditions in SharkiaGovernorate,Egypt. 2nd.Inter.Conf.PPRI.Cairo, Egypt,21-24December,1:107-114.

Overton, J. M.; G. M. Barker and R. Price (2009). Estimating and conserving patterns of invertebrate diversity: a test case of New Zealand land snails. Diversity and Distributions15:731-741.

Ramzy, R. R. (2009). Bilogical and ecological studies on land snails at Assiut,Egypt**.** M. Sc.Thesis, Fac. Science,. Assiut. Unv., 164pp.

Shetaia, S. Z. S.; S. A. A. Ismail and S. M. Abdel-Kader (2009). Survey, population dynamics and importance value of certain land snail species infesting different crops in sharkia governorate, Egypt. Acad. J. biolog. Sci., 1 (1): 37-43.

حصر وكثافة انواع القواقع الارضيه في محافظة اسيوط

السيد / حسن على خليفة* ،الاستاذ الدكتور /خليفة حسين عبدالجواد**
الاستاذ الدكتور / سمير حسن مناع، الاستاذ الدكتور / هاني أحمد عبدالجواد ***
**قسم وقاية النبات – كلية الزراعة – جامعة أسيوط
*معهد بحوث وقاية النباتات – مركز البحوث الزراعية

الملخص العربي :
تعتبر القواقع الارضيه والبزاقات من الافات الحديثه التي انتشرت في صعيد مصر بصفه عامه ومنطقة اسيوط بصفه خاصه و تهدف الدراسه الي حصر و تقدير انواع القواقع الارضيه وكثافتها العدديه في منطقة اسيوط حيث شملت زراعات منطقة الواسطي شرق اسيوط كمنطقة مجاورة للنيل بجانب انها ممثله للزراعات الحقليه كذلك منطقة مشتل الزينه ومزرعة الفاكهه بكلية الزراعة بجامعة اسيوط وهي تمثل الزراعات البستانيه و قد شملت الدراسة قياس للكثافة العدديه خلال الفترة من فبراير ٢٠١٠ الي مارس ٢٠١٢ و لقد اعطت النتائج الاتيه:

1- *Moncha obstructa* 77.58% قوقع البرسيم الزجاجي
2- *Eobania vermiculata* 18.96 % قوقع الحدائق البني
3-Oxyloma elegans 2.30%
4 – *Lemax* sp ١.١٦%

مع العلم بان قوقع البرسيم الزجاجي الوحيد الموجود بمنطقة الواسطي اما منطقة الجامعة فيوجد بها الاربعة انواع من القواقع، ومن دراسة العوائل وجد ان كثافة القواقع علي البرسيم المصري اعلي منها علي القمح في حين ان الكثافة بمشتل الزينه للاربعة انواع اعلي من مزارع الفاكهه. وعند دراسة الكثافه العدديه في فصول العام وجد ان اعلي فصول العام كثافه هو فصل الربيع وتكون الكثافة متوسطه في كل من فصلي الخريف و الشتاء اما في فصل الصيف فتكون الكثافه صفر هذا ربما يرجع الي دخول القوقع في بيات صيفي خلال فصل الصيف.

.