

**THE ROLE OF THE PARASITOID, *TETRASTICHUS* sp. IN  
THE NATURAL –DEATH OF *Phytomyza orobanchia* Kalt., AT  
EL-TAHRIR, EGYPT**

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**ABSTRACT:** *Phytomyza orobanchia* Kalt. The Bio-control agent of The Broom-rape, *Orobanche crenata* Forsk., seems to be promising all over the world. The insect exposed to adverse condition, such as : The attacking by the Eulphid Parasitoid *Tetrastichus* sp. and the worth climatic factors. So, it is important to checked these factors .Our studies revealed that the insect exposed to about 3.8% to 12% natural death from February to April of the two years of 2007 & amd 2008. However, *Tetrastichus* sp. not exceeded 4% from this ratio, in the same periods at El-Tahrir area, Menoufyia Governorate, Egypt.

**Key Words:** *Phytomyza orobanchia*, *Orobanche* Weeds, *Tetrastichus* sp. El-Tahrir, Egypt.

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## INTRODUCTION

*Orobanche* species ,is a widespread as economic importance as parasites of several major crops. The most important species are *O.aegyptiaca* Pers. (on tobacco, tomato, melons), *O. cernua* Loefl. (on tobacco, tomato, sunflower). *O.crenata* Forsk. (on broadbean, other legumes, sunflower, carrot). *O. ramosa* L. (on tobacco, tomato, mustards). Thus, they seems to favor certain host families e.g. Fabaceae, Solanaceae, Brassicaceae, and Asteraceae, Link (1991 ).

In Egypt, the agromyzid fly, *Phytomyza orobanchia* Kalt. Seems promising (Hammad *et.al.*, 1967 ). The biology of insect as well as the rate of infestation was studied by Tawfic *et.al.* (1976). The role of this insect on *Orobanche* fruits under field condition was studied by Hegazi *et.al.* (1981). The percentages of the destroyed seeds of *Orobanche* by the Agromyzid *Phytomyza orobanchia* Kalt. Was studied by Kolaib *et.al.* (1985), Kolaib,(1991).

It is interest to shed more lights on the natural death of *P.orobanchia* pupae under field conditions to estimate the ratios of its adverse conditions, also, the role of the Eulophid, *Tetrastichus* sp. at El-Tahrir area, Menoufyia Governorate , Egypt.

## **MATERIALS AND METHODS**

Two visits a month were paid to El-Tahrir (about 120 K.m. west Shebin El-Kom), Egypt, during the growing season of *Orobanche* of 2007 & 2008. The weeds were found during February, March, and April. The allowed number of *P. orobanchia* Kalt., pupae were collected from the fields of beans and broadbeans. The collected pupae were classified into two groups, the first group was represented by the emerged insects. While, the second group was represented by the unemerged one, i.e. those exposed to the attack by the eulophid parasite, *Tetrastichus* sp. and which were exposed to adverse conditions. After two weeks the second group was dissected and data recorded in Table (1).

Table (1): The natural death of *P. orobanchia* Kalt. by the adverse conditions and the parasitoid *Tetrastichus* sp. at El – Tahrir during 2007 & 2008.

## **RESULTS AND DISCUSSION**

*Phytomyza orobanchia* Kalt., (Diptera: Agromyzidae) seems to be promising all over the world as a biological control agent for controlling the harmful weed *Orobanche crenata* Forsk.,. The Egyptian studies extended to the biology of the insect, its role of infestation on *Orobanche* and the consumed weed seeds. (Hammad *et.al.*,1967; Tawfic *et.al.*,1976; Hegazi *et.al.*,1981; Kolaib *et.al.*,1985, Kolaib,1991 ; El-Defrawy,2004 ; and Abou-

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shall, 2007. So, it is necessary to focus on the adverse conditions and obstacles in front of these promising insects. However, in this work we studied the natural death (climatic factors & the parasitoid of the pupae *Tetrastichus sp.*). For studying the natural death of *P. orobanchia* pupae under field conditions at Al-Tahrir area (120 K.M. west Shebin El-Kom), the area was visited twice a month during the growing season of the weed *O. crenata* Korsk., i.e. during February, March and April for two successive years of 2007 & 2008. The allowed number of the agromyzid *Phytomyza* pupae were collected at each visit. The collected pupae were divided into two groups. The first group was represented by the intact pupae i.e. the emerged pupae. While, the second one was represented by the pupae which were exposed to the adverse conditions i.e. the worst condition and the attacking by the eulophid parasite *Tetrastichus sp.* As shown from Table(1), the adverse conditions were found during the season from February to April except March, 2007. However, the ratios of these natural pupae deaths ranged from 3% to 8% with an average of 4.08%. Regarding the exposing of *Phytomyza* pupae to the parasitoid, *Tetrastichus sp.* it was during March and April in the season of 2008 only, while, it was during April only through 2007. Its parasitism ratios ranged from 1.0% to 4.0% with an average of 4.08%. The total adverse conditions (unknown factors + the exposing to *Tetrastichus sp.* parasite) were ranged from 3.8% to 12.0% with an average of 6.97%. This finding also supports the agromyzid fly in controlling the weed *O. crenata* Forsk.,. In this regard, Tawfik et al. (1976) at Giza, Egypt observed the efficiency of *P. orobanchia* as a bio-control agent against the *Orobancha* weed may be slightly affected by the indigenous solitary parasite *Tetrastichus spp.* (Hymenoptera: Eulophidae). This parasite emerges from the host puparium during April. The percentages of parasitism in the field did not exceed 3%. Kolaib (1991) collected 900 *Phytomyza* pupae from Shebin El-Kom and El-Tahrir in Egypt areas during the third week of March a total of 117 expressed as empty and parasitized by *Tetrastichus sp.* Al-Eryan et al. (2001), mentioned that the percentages of parasitized pupae with *Tetrastichus sp.* were 0.0%, 27.87%, and 64.25% during 1996, 1997, and 1998, respectively in Alexandria, Egypt. However, Abou-Shall, 2001, mentioned that the parasitoid *Tetrastichus* was recorded in Abbis (16.97%), Abou El-matamir (16.73%), and Kafr El-Dawar (7.48%). Finally El-Defrawy (2004) recorded (2.4% and 1.5%) during April 2002 and 2003; (2.5% and 2.25%) at El-Menoufyia and El-Gharbia governorate, Egypt, respectively. He also added he did not find the parasitoid at El-Kaliobia Governorate.

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دور طفيل الـ *Tetrastichus sp.* فى الموت الطبيعى لذبابة الهالوك  
بمديرية التحرير بمصر

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الملخص العربى

تناول هذا البحث دراسة الموت الطبيعى لحشرة ذبابة الهالوك فى منطقة مديرية التحرير بمصر ( الحديثة الأستصلاح نسبيا ) وذبابة الهالوك تعتبر حشرة واعدة فى مكافحة حشائش الهالوك بمصر ودول اخرى كثيرة . لذا كان من الأهمية بمكان القاء الضوء على تحديد نسب الموت الطبيعى فى عذارى هذه الحشرة تحت ظروف الحقل فى هذه المنطقة . حيث اتضح من الدراسة ان هذه النسبة وصلت ١٢% فى الفترة من فبراير الى ابريل فى عامى الدراسة ٢٠٠٧ ، ٢٠٠٨ . هذا ولم تتعدى نسبة تعرض عذارى الذبابة للهجوم بالطفيل سالف الذكر عن ٤% . خلال عامى الدراسة الأمر الذى يؤيد امكانية استخدام هذه الحشرة مستقبلاً فى مكافحة هذه الآفة .

