Bull. Iraq nat. Hist. Mus.
(1999) 1 (9) : 117 - 121

RECORDS OF SOME LEAF MINERS OF ANTHOMYIIDAE , (DIPTERA) AND THEIR HOST PLANTS IN IRAQ

Atallah F . Mekhlif ,
Dept . of Biology , College of Education , Mosul University , Mosul , Iraq .

ABSTRACT

The leaf miners *Pegomya terbrans* (Rondani) and *P. bicolor* (Wiedemann) (Diptera ; Anthomyiidae) were newly recorded in Iraq . Host plants of these leaf miners and *P. cunicularia* (Rondani) were identified : *P. bicolor* was found to be monophagous , whereas *P. terbrans* and *P. cunicularia* were oligophagous . It was found that *Cirsium syriaca* and *Silybum marianum* were more susceptible to *P. terbrans* than the other ones . Infectivity and severity of infestation were estimated for most susceptible weeds against *P. terbrans* and *P.bicolor* . These leaf miners . have two generations a year .

INTRODUCTION

Pegomya Robineau Desvoidy 1830 is the commonest genus of the Anthomyiidae (Suwa , 1984) . Suwa (1974) and Cameron (1917) have reported that *Pegomya* includes all the anthomyiids with naked or at least pubesent antennary bristle . They have also concluded that anal vein reachs the wing margin as well as partly yollowish coloration of the legs and abdoman .

P. terbrans has been known as a leaf miner on plants of *Cirsium* (= Notobasis) , *Carduus* and *Cynara* (personal communication with Dr. Suwa) . Hennig (1973) has indictated that *P. terbrans* distributes in Palastine and Europe .

Griffiths (1982) reared *P. bicolor* from *Rumex acetosa* . However , other researchers reared this species from most *Rumex* spp. : *acetosella* (Suwa , 1917) , *acutus* (Seguy , 1937) ,*Obtusifolius* (Cameron , 1917 ; Suwa , 1971) , *Patientia* (Tiensu , 1935) . According to Hennig (1973) , the larvas of *p . bicolor* in europe deve lon on *Emax australis* , *Fagopyrum asculentum* , *Oxyria digyna, pegonia semperflorens* and *Polygonum* and spread in Europe , North Afriica , North America and Asia . *p . cuniclaria* and its allied species are notorious pests injurious to beet and spinach (Michelsen , 1980 ; Suwa , 1984) . In Iraq it was fonnd that *P. cuniclaria* mine *Beta vulgaris* van *cicla* (Makhlif , 1992) .This leaf miner spread in Holarctic regions .

According to the literature available, only *P. hyoscyma* is reported as an anthomyiid leaf miner from Iraq (Hariri , 1976) .

The aim of the present study is to study is to survey anthomyiid leaf miners and their host plants . Besides , the benificial significane of the two species that attack weeds have been

investigated The date of the leaf miners appearance as well as their presence in the field are likewise determined .

MATERIALS AND METHODS

The infested leaves of the host plants were collected from the fields . Later , pupae of anthomyiid leaf miners were confined in the laboratory ; until the adults emerged . The adults were preserved in 70 % alcohol and some drops of glyceren , added to the preservative solution .

Host plants of *P . cunicularia* were collected from AL - Qaim in AL - Anbar province , whereas , the hosts of *P . terbrans* and *P . bicolor* were collected from the parks of the university campus and the woodland in Mosul . Host plants were identified in the herbarium of College of Sciences , University of Mosul .

To evaluate the effeciency of leaf miners against their hosts , the infectivity and severity of infestation were determined : by infectivity is meant the percentage of infested plants to the total examined plants . Severity of infestation was undertaken by counting the mined leaves of each infested plant in relation to its total leaves .

RESULTS AND DISCUSSION

Host plants

P . terbrans

Larvae of this fly cause blotch mines in the leaf blade . The hosts belong to four genera of the family compositae (Table 1) . Therefore , *P . terbrans* is an oligophagous leaf miner . *Onopordum acanthium* and *Silybum marianum* are initialy recorded as genera and species infested with this leaf miner . *C . acanthoides* and *C . syriaca* are newly recorded as hosts for *P . terbrans* .

P . bicolor

Larvae of this species mine two closely related hosts within *Rumex* only (Table 1) . Accordingly , this leaf miner is monophagous . *R . sanguineus* is a new host for *P . bicolor* . Hennig (1973) has indicated that *P . bicolor* bred from *Emax* , *Fagopyrum* , *Polygonum Oxyria* and *Begonyia* . However , Hennig does not examine the bred specimens by himself ; it is , therefore , most likely that these records might have been based on some worng information .

P . cunicularia

(Table 1) shows that *P . cunicularia* is an oligophagous leaf miner . Suwa (1974) and Mekhlif (1992) have found this leaf miner infesting plants from the genera ; *Beta* , *Atriplex* and *Chenopodium* .

Susceptibility of hosts

Cultivated plants

Larvae of *P . cunicularia* attack *B . vulgaris* var . *cicla* and spanich . Several damages cause death to seedlings and wilt of mined leaves .

Weeds

As it is known , significant weeds infestation with insects is useful . Among the hosts investigated in this study , it has been found that *C . syriaca* and *S . marianum* are more susceptible to *P . terbrans* . (Table 2) shows that the females prefer *C . syeiaca* during oviposition . It has been concluded from (Table 2) that F ratio of infectivity and severity of infestation between *C . syriaca* and *S . marianum* is 1. 38 and 1. 26 respectively .

There is no significant susceptibility between *R . obtusifolius* and *R . snguineus* against *P . bicolor* . (Table 2) shows that about four fifths of the examined plants are severly infested . Weeds control by anthomyiid leaf miner is more effective when seedlings and young plants are infested .

Presence date of leaf miners

Growth of weeds which are infested by *P . terbrans* and *P . bicolor* begins after rainfall ; the planting season of *B . vulgaris* var . *cicla* and spanich begins at the same time . The infestation with the first generation starts from November till the first week of Feberuary , but immature stages are not observed for about 45 days . This may be attributed to low temperture ; therefore , the pupae are overwintered . Larvae of second generation are seen from late March untill the end of season .

Table (1) host plants of *Pegomya* leaf miners

Host plant	Leaf miner	Collecting date
Chenopodiaceae		
Chenopodium album	*P . cunicularis*	15 . April , 1989
C . murale	*P . cunicularia*	23 . March , 1989
C . vulvaria	*P . cunicularia*	28 . March , 1989
Spinacia oleracea	*P . cunicularia*	4 . January , 1989
Compositae		
Carduus nutans	*P . terbrans*	15 . January , 1989
C . acanthoides	*P . terbrans*	22. December , 1989
Cirsium (= Notobasis) *Syriaca*	*P . terbrans*	
Onoporaum acathium	*P . terbrans*	19 . March , 1989
Silybium marianum	*P. terbrans*	2. F eberuary , 1989
Polygonaceae		
Rumex Obtusisfolius = *R . sanguineus*	*P. bicolor*	17 . November , 1989
	P. bicolor	20 . April , 1989

Table (2) Infestation of weeds which are mainly susceptible to leaf miners

Host plant	Leaf miner	Infectivity %	Severity of infestation
C . syriaca	P . terbrans	81	76+- 10 . 8
S . *marianum*	P. terbans	58	63+- 12 . 8
Rumex spp.	P. bicolor	78	78+- 15 . 5

ACKNOWL EDGRMENT

Iem indedted to Dr Massaki Suwa of the Institue of Entomology , Faculty of AGRICULTURE , Hokkido University , Japan for identifying the leaf miners .

LITERATURE CITED

Cameron , A. E. 1917 . A contribution to aknowldge of the belladona leaf miner , *Pegomyia hyoseymi* Panz . , its Life - history and biology . *Ann . appl . Bio* . 1 : 43 - 76 .

Griffiths , G. C. D. 1982 . Anthomyiidae . In Griffiths , G. C. D. (ed) , flies of the Nearctic region . 8(2) : 1-288 .

Hariri , G . 1976 . The economic insects of Syria and neighbouring countries . Faculty of Agriculture , University of Aleppo , Aleppo , Syria .

Mekhlif , A . F . 1992 . Some biological aspects about beet leaf miner , *Pegomya cunicularia* (Diptera : Anthomyiidae) . *J. Edu . and Sci* . , 12 : 52 - 57 .

Michelsen , V. 1980 . A revision of the beet leaf miner complex , *Pegomya hysocymi* S. lat . (Diptera ; Anthomyiidae) . *Ent. Scand* . , 11 : 297 - 309 .

Suwa , M. 1971 . Notes on the Japanese leaf - miners of the genus *Pegomya* Robinrau Desvoidy , with descriptions of two new species (Diptera ; Anthomyiidae) . *Kontyu* , 39 (3) : 263 - 272 .

Suwa , M . 1974 . Anthomyiidae of Japan . *Ins . Matsum. S.* , 4: 1- 247 .

Suwa . M. 1984 . Supplementary notes on the family Anthomyiidae of Japan (Diptera) : *Ins . Matsum . n. s.* , 29 : 39 - 57 .

Tiensuu , L. (1935) Die bisher aus Finnland bekannten Musciden . *Acta Soc . Pro . Fauna et Flora Fenn* . 58 : 1 - 56 .

تسجيلات لبعض حفارات الاوراق من العائلة Anthomyiidaeوعوائلها النباتية في العراق

عطا الله فهد مخلف – قسم علوم الحياة ، كلية التربية
جامعة الموصل – الموصل –العراق

الخلاصة

تم تسجيل الحفاران *Pegomya terbrans* (Rondani) و *P. bicolor* (Wiedemann) من العائلة Anthomyiidaeلاول مرة في العراق . وقد شخصت عوائلهما وعوائل حفار الاوراق. *P cunicularia* (Rondani)ايضا" . وجد حفار الاوراق *P. bicolor*احادى العائل ، وكان الحفاران *P. terbrans* و *P. cunicularia*من الحفارات قليلة العوائل . وتم التعرف على اكثر العوائل تاثرا" بالحفار *P. terbrans*، كما قدرت نسبة الاصابة وشدتها للادغال الاكثر تاثرا" بالحفارين *P. terbrans* و *P. bicolor* . وكان لحفارات الاوراق التي شملتها الدراسة جيلان في السنة ...