

## **Annotated List of Agromyzidae (Diptera) from Iran, with Four New Records**

Abu Fazel DOUSTI

Department of Entomology, Islamic Azad University, Jahrom Branch, Fars, IRAN  
e-mail: fdousti@jia.ac.ir

### **ABSTRACT**

The Agromyzidae family includes the most important dipterous species miners of crops for agriculture. Knowledge of 2900 worldwide species are cited, of which about 7% are considered of agronomic interest. (Ortiza, 2009). All Agromyzidae species undermine the internal tissue of different organs of plants. Depending on their eating habits they can be classified as leaf miners (leafmining), stem miners (stem-mining and tunneling), cambium miners, and parasites of flower buds or fruits. Agromyzidae genus within the Palaearctic region consists of 24 genera constituting a total of 1165 species.

The first annotated list of Iranian leafminers of the family Agromyzidae (Diptera), comprising 26 species, is presented. Two Genera and four species, are considered to be new records from Iran: *Amauromyza carlinae* (Herring, 1944), *Amauromyza fraxini* (Beiger, 1980), *Calycomyza humeralis* (von Roser, 1840), *Pseudonapomyza atra* (Meigen, 1830).

*Key words:* Annotated list, Agromyzidae, leafminers, new record, Iran

### **INTRODUCTION**

Agromyzidae (leafmining flies) is one of the largest fly families, with more than 2900 species belonging to 30 genera worldwide. From this family about 1165 species have been identified in the Palaearctic region (Civelek, 2003; Çikman & Sasakawa, 2008).

Based mostly on various faunistical survey reports, a taxonomical checklist of 26 nominal species of the Iranian Agromyzidae belonging to two subfamilies, and 11 genera was provided. Therefore, I did not intend to confirm identifications by the previous workers except very obvious cases. A more comprehensive collection-based study is needed to confirm the actual Iranian occurrence of each species listed in this catalog.

The present annotated list aims at reviewing the Agromyzid references as many as possible, and list of every single Agromyzid species with Iranian records.

Among them, two genera and four species, which are marked with an asterisk (\*), are considered to be new records from Iran.

## RESULT

### List of species

#### Subfamily Agromyzinae

##### Genus *Agromyza* Fallén, 1810

##### *Agromyza alnibetula* Hendel, 1931

Host plant: Birch (*Betula pendula* Roth.).

Iranian record: Mazandaran and Tehran provinces (Abai, 1984); Shiraz (Dousti, 2006).

##### *Agromyza ambigua* Fallén, 1823

Host plant: Wheat, Barley and other cultivated and wild cereals.

Iranian records: Karaj (Afshar, 1938); Tehran (Farahbakhsh, 1961); Tehran (Anonymous, 1981); Generally distributed (Esmaili *et al.*, 1996); Shiraz (Dousti, 2006).

##### *Agromyza parvicornis* Loew, 1869

Host plant: Maize.

Iranian record: Locality not given (Esmaili *et al.*, 1996).

##### Genus *Hexomyza* Enderlein, 1936

##### *Hexomyza schineri* (Giraud, 1861)

Host plant: Willow (*Salix*), Poplar (*Populus*).

Iranian records: Generally distributed (Farahbakhsh, 1961; Abai, 1984; Behdad, 1988).

##### Genus *Melanagromyza* Hendel, 1920

##### *Melanagromyza sativae* Spencer, 1957

Host plants: Stems of *Pimpinella affinis* Ledeb., Stems of *Torilis* and other Apiaceae.

Iranian records: Gach-i-sar (Griffits, 1964); Spencer, K. A., 1990.

#### Subfamily Phytomyzinae

##### Genus *Amauromyza* Hendel, 1931

##### Subgenus *Amauromyza* Hendel, 1931

##### *Amauromyza (Amauromyza) carlinae* (Hering, 1944) \*

Host plant: *Echinops*.

Iranian record: Shiraz (Dousti, 2006).

Specimens examined. 4 ♂♂, 4 ♀♀, Ghasroddasht, Shiraz, 30 June 2005.

##### *Amauromyza (Amauromyza) fraxini* (Beiger, 1980) \*

Host plant: Ash (*Fraxinus*).

Iranian record: Shiraz (Dousti, 2006).

Specimens examined. 16 ♂♂, 16 ♀♀, Nirogah, Shiraz, 23 July 2006.

***Amauromyza (Amauromyza) balcanica (Hendel, 1931)***

Hostplants: *Phlomis*.

Iranian Record: (Ortiz,2009).

**Subgenus *Cephalomyza* Hendel, 1931**

***Amauromyza (Cephalomyza) gyrans (Fallen 1823)***

Host plant: *Campanula* sp.

Iranian record: Gach-i-sar (Griffits, 1964).

**Genus *Calycomyza* Hendel, 1931**

***Calycomyza humeralis (von Roser, 1840) \****

Host plant: *Aster*.

Iranian record: Shiraz (Dousti, 2006).

Specimens examined. 9 ♂♂, 11 ♀♀, Shiraz, 11 June 2005.

**Genus *Cerodontha* Rondani, 1861**

**Subgenus *Cerodontha* Rondani, 1861**

***Cerodontha (Cerodontha) denticornis (Panzer, 1806)***

Host plant: Wheat.

Iranian record: Zanjan and Sari (Radjabi *et al.*, 1997).

**Subgenus *Icteromyza* Hendel, 1931**

***Cerodontha (Icteromyza) geniculata (Fallén, 1823)***

Host plant: *Eriophorum latifolium* (Cyperaceae).

Iranian record: Sasakawa, 2005.

**Subgenus *Poemyza* Hendel,1931**

***Cerodontha (Poemyza) albineura Zlobin, 1993***

Host plants: Unknown.

Iranian records: Zlobin(1993).

***Cerodontha (Poemyza) pygmaea (Meigen, 1830)***

Host plant: *Brachypodium sylvaticum* (Huds.).

Iranian record: Gach-i-sar (Griffits, 1964).

**Genus Chromatomyia Hardy, 1849*****Chromatomyia horticola* (Goureau, 1851)**

Host plants: *Cirsium* spp., Tomato, Cabbage (*Brassica*), Alcea.

Iranian records: Gach-i-sar (Griffits, 1964), Khuzestan (Kalantar Hormozi *et al.*, 2000), Moghan (Lotfalizadeh, 2004), Shiraz (Dousti, 2006).

**Genus Galiomyza Spencer, 1981*****Galiomyza violiphaga* (Hendel, 1932)**

Host plant: *Viola* sp.

Iranian record: Gach-i-sar (Griffits, 1964).

**Genus Liriomyza Mik, 1894*****Liriomyza congesta* (Becker, 1903)**

Host plants: *Vicia* sp.? *persica*, Common pea, Vetch and Celery.

Iranian records: Gach-i-sar (Griffits, 1964), Esfahan, Tehran and other northern provinces (Behdad, 1993), Karaj (Esmaili *et al.*, 1996).

***Liriomyza pedestris* Hendel, 1931**

Host Plants: Poaceae-Grasses- formerly Graminae.

Iranian record: Fauna Europaea (2004).

***Liriomyza persica* Griffiths, 1963**

Host plant: *Vicia persica* Boiss Var. *stenophylla*.

Iranian record: Gach-i-sar (Griffits, 1964).

***Liriomyza pusilla* (Meigen, 1830)**

Host plant: *Arctium lappa* L.

Iranian record: Urmia (Von Tschirnhaus and Karimpour, 2006).

***Liriomyza pusio* (Meigen, 1830)**

Host plant: *Tragopogon* sp. (? *bupthalmoides*) Boiss.

Iranian record: Gach-i-sar (Griffits, 1964).

***Liriomyza sativae* Blanchard, 1938**

Host plant: Tomato, Cucumber, Cowpea, Mungbean ; *Chrysanthemum*.

Iranian records: Khuzestan (Kalantar Hormozi *et al.*, 2000), Varamin (Zahiri *et al.*, 2003).

***Liriomyza trifolii* (Burgess in Comstock, 1880)**

Host plant: Cucumber, cotton, bean and many other plants.

Iranian records: Darab and Varamin (Amin *et al.*, 2002), Varamin (Farrokhi *et al.*, 2004), Shiraz (Dousti, 2006).

**Genus *Phytomyza* Fallén, 1810*****Phytomyza minuscula* Goureau, 1851**

Host plant: Columbine (*Aquilegia*).

Iranian record: Locality not given (Esmaili *et al.*, 1996).

***Phytomyza orobanchia* Kaltenbach, 1864**

Host plant: Broomrape (*Orobanche* spp.).

Iranian records: Urmia (Jafarzadeh and Pourmirza, 1998), Shahriar (Tehran) (Movahedi Fazel *et al.*, 1998).

**Genus *Pseudonapomyza* Hendel, 1920*****Pseudonapomyza atra* (Meigen, 1830) \***

Host plant: Sorghum.

Iranian record: Shiraz (Dousti, 2006)..

Specimens examined: 3 ♂♂, 4 ♀♀, Nirogah, Shiraz, 25 July 2006; 4 ♂♂, 5 ♀♀, Kooshk-e-Khalil, Shiraz, 23 Aug., 2006.

***Melanagromyza sativae* Spencer, 1957**

Host plants: Stems of *Torilis* and other Apiaceae.

Iranian records: Spencer, K.A., 1990.

**ACKNOWLEDGMENT**

The author gratefully acknowledge the assistance of Dr. Civelek (Turkey), Dr. Henshaw (UK) and Dr. Tschirnhauser (Germany).

**REFERENCES**

- Abai, M., 1984, *List of pests of forest trees and shrubs of Iran*. Plant Pests and Disease Research Institute, Tehran, 147.
- Afshar, D. J., 1938, *Pest of summer crops, vegetables, industrial plants and forages in Iran and their control*. Ibid., 124.
- Amin, Gh. A., Nouri, P., Gilassian, E., 2002, Identification of cotton leaf miner, determination of its host plants and population fluctuation in Darab and Varamin regions. *Proceeding of the 15<sup>th</sup> Iranian Plant Protection Congress*, 1: 42.
- Anonymous, 1981, Les ravageurs, maladies et les muviases des cultures et arbres fruitiers. Rhone-Peulenc Agrochemicals company, Tehran, 38.
- Behdad, E., 1993, *Pest of field crops in Iran*. Plant Pests and Disease Research Institute, Esfahan, 589.
- Behdad, E., 1988, *Pests and diseases of forest trees and shrubs of Iran*. Plant Pests and Disease Research Institute, Esfahan, 807.
- Çikman, E., Sasakawa, M., 2008, The Turkish Agromyzidae (Diptera), with descriptions of four new species. *Entomological Science*, 11(1): 81-86.
- Civelek, H. S., 2003, Checklist of Agromyzidae (Diptera) of Turkey, with a new record. *Phytoparasitica*, 31(2): 132-138.

- Dousti, A. F., 2006, Biodiversity of leaf miners (Dip.: Agromyzidae), Biology of the major species and their natural enemies in Shiraz region. Ph.D. thesis. *Islamic Azad University, Science & Research Branch*. Unpublished.
- Esmaili, M., Mirkarimi, A. A., Azmayesh Fard, P., 1996, *Agricultural entomology, Destructive insects, mites, rodents, mollusks and their control*. Tehran University Publications, 550.
- Farahbakhsh, Gh., 1961, *Checklist of important insects and other enemies of plants and agricultural products in Iran*. Ministry of Agriculture, Department of Plant protection, Tehran, 1: 1-153.
- Farrokhi, S., Ebrahimi, E., Noori, P., 2004, Study on population fluctuation of *Liriomyza trifolii* and its parasitoids on cucumber in Varamin region. *Proceeding of the 16<sup>th</sup> Iranian Plant Protection Congress*, 1: 16.
- Fauna Europaea, 2004, Fauna Europaea version 1.1, Available online at <http://www.faunaeur.org>.
- Griffiths, G. C. D. 1964, A note on some Agromyzidae (Diptera) from northern Persia, including a new *Liriomyza* species. *Entomologist's monthly magazine*. 99: 75-79.
- Jafarzadeh, N., Pourmirza, A. A., 1998, Studies on biology of *Phytomyza orobanchia* Kalt. in field and under laboratory conditions. *Proceeding of the 13<sup>th</sup> Iranian Plant Protection Congress*, 1: 80.
- Kalantar Hormozi, F., Sahragard, A., Mohajeri, R. and Jalali Sandi, J. 2000. Introduction of vegetable leaf miner *Liriomyza sativae* (Dip.: Agromyzidae) in Khuzestan province. *Proceeding of the 14<sup>th</sup> Iranian Plant Protection Congress*, 1: 251.
- Lotfalizadeh, H., 2004, Report of cabbage leaf miner fly. *Newsletter of Entomological Society of Iran*, 21: 1.
- Movahedi Fazel, M., Shojaii, M., Esmaili, M., 1998, The biology of Broomrape-minor fly. *Proceeding of the 13<sup>th</sup> Iranian Plant Protection Congress*, 1: 95.
- Ortiz, R. G., 2009, Biosystematic contributions to Agromyzidae (Diptera). Tesis Doctoral. *University of Valencia*. 444.
- Radjab, Gh., Hosseini, S. M., Mansoor-Ghaazi, M., 1997, Diptera species occurring in wheat and barley in Iran. *Applied Entomology and Phytopathology*, 64(1, 2): 60-71.
- Sasakawa, M., 2005, Notes on the Japanese Agromyzidae (Diptera), 5. Japanese species of the genus *Cerodontha* Rondani, with the description of five new species. *Scientific Reports of Kyoto Prefectural University Human Environment and Agriculture*, 57: 47-61.
- Spencer, K. A., 1990, Host specialization in the World Agromyzidae (Diptera). (Diptera). Kluwer Academic Publishers, Dordrecht, 1-444.
- Von Tschirnhaus, M., Karimpour, Y., 2006, First record of *Liriomyza pusilla* (Meigen, 1830) (Diptera: Agromyzidae) from Iran. *Proceeding of the 17<sup>th</sup> Iranian Plant Protection Congress*, 1: 251.
- Zahiri, B., Moharrampour, S., Talebi, A. A., Fathipour, Y., 2003, Leaf miner *Liriomyza sativae* (Dip.: Agromyzidae) as a potential pest of chrysanthemum in Iran. *The Second Applied-Scientific Seminar on Flowers and Ornamental Plants*. 12.
- Zlobin, V. V., 1993, Review of mining flies of the genus *Cerodontha*. IV. Subgenus *Poemyza* (Diptera: Agromyzidae). *Zoosystematica Rossica*, 1(0), 117-141.

Received: April 25, 2009

Accepted: August 02, 2010