

The First Report of Hessian Fly, *Mayetiola Destructor* (Say, 1817) (Dip.: Cecidomyiidae) from Iran

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Abstract

In 2024, an insect from the Cecidomyiidae family was collected and identified from wheat (*Triticum aestivum* L.) in the city of Jafarabad Moghan (39.419799, 48.037757) (Bileh Savar, Ardabil, Iran). After the pests were transferred to the laboratory, they were reared under laboratory conditions to emerge as adult insects. After correspondence with the systematic specialist of Diptera at the Iranian Research Institute of Plant Protection, the collected pest species was identified as *Mayetiola destructor* (Say, 1817) (Dip.: Cecidomyiidae). This is the first report of the species *Mayetiola destructor* from Iran.

Keywords: Wheat; Gall Midge; First Report; Ardabil Province; Hessian Fly

Introduction

Wheat (*Triticum aestivum* L.), as one of the most important agricultural products, provides the greatest food needs of humans around the world [1] and is considered a strategic product in Iran. The yield of this plant during the growth stage may be affected by various plant-damaging factors, including pests. Cecidomyiidae are one of the most important families of the order Diptera, with over 6,500 species. These insects are of global distribution [2]. *Mayetiola* are a genus of flies from the family Cecidomyiidae. Most species are pests of cereal crops. Given the various reports of damage caused by this pest in different parts of the world, the spread of this pest in Iran could challenge the yield of pest hosts.

Collection and Identification

During the pest monitoring of the region from May to September 2024, 100 samples suspected of gall midge (immature stages of larvae and pupae) were collected from the wheat fields of Jafarabad Moghan (39.419799, 48.037757) (Bileh Savar, Ardabil, Iran) (Figure 1) and transferred to the Entomology laboratory of Plant Protection Research Department, Ardabil Agricultural and Natural Resources Research and Education Center for rearing in plastic bags. Pupae were held in a controlled environment (26 ± 2 °C, 65 ± 5 % relative humidity (RH), 12: 12 L: D). Insects were checked daily for collection of emerging gall midge adults. Emerged adults were put in vials with 75% ethanol and kept for identification. The adult insects that appeared were sent to the Iranian Research Institute of Plant Protection for species identification. The pest species *Mayetiola destructor* (Say, 1817) (Dip.: Cecidomyiidae) was confirmed, which is the first report of the mentioned species from Iran.

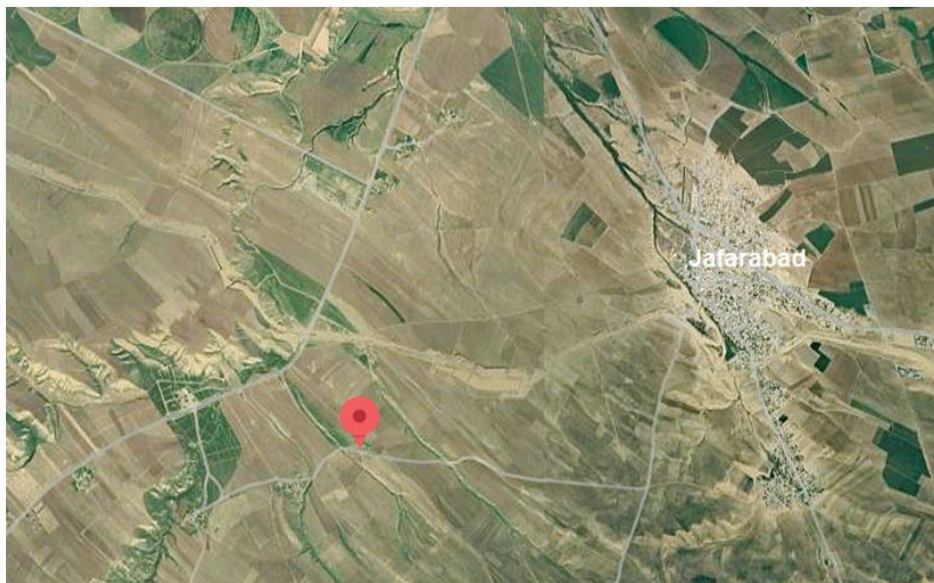


Figure 1: Sampled area (Google Earth, 2023)

The importance of Pest and Host Plant

The Hessian fly, *Mayetiola destructor* (Say, 1817) (Diptera, Cecidomyiidae), is a destructive pest in many wheat production regions worldwide [3]. The most suitable host of *M. destructor* is the wheat plant (*Triticum* spp. L.). *Triticum aestivum* (wheat) is the principle host plant of the Hessian fly. Besides wheat, *M. destructor* feeds on many cultivated and wild plant species belonging to more than 16 genera of Poaceae [4,5]. It may be found on *Hordeum vul-*

gare (barley), *Agropyron* (wheatgrass) and *Secale cereale* (rye) [6,7].

Morphology

Adult- adult stages are 2-4 mm long, females are bigger and both sexes have long antennae (Figure 2a).

Pupa- The brown-headed pupa is basically white with a reddish tinge. The puparium or "flaxseed" within which the pupa is found is spindle-shaped, red to dark

brown and 2 to 6 mm in length (Figure 2b).

Larva- The newly hatched maggot is red for 4 or 5 days after which it turns white. The larvae of the Hessian fly are white and cylindrical. They will also develop a translucent green stripe down the middle of the back. They have a

poorly developed head (Figure 2c).

Egg- The thin, cylindrical egg is 0.4 to 0.5 mm long. Although uniformly glossy red when laid, it gradually becomes deeper red at one end and opaque white at the other (Figure 2d).



Figure 2: Different growth stages of Hessian fly (a- adult, b- pupa, c- larva, d- egg)

Distribution

This pest has been reported from Europe, Oceania, Asia, Africa and North America.

Remark

This is the first report of the *M. destructor* species from Iran.

Management

Success in pest control depends on the use of integrated pest management (IPM) strategies [8]. These meth-

ods include: Avoiding early sowing of cereals and delaying planting date [9], adhering to crop rotation and avoid wheat-wheat rotation especially in infected areas, deep plowing after harvest (which leads to losses in pest pupae), using resistant varieties [10, 11] and applying chemical treatments for seed disinfection and foliar spraying [12].

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