

First report of *Meloidogyne javanica* on *Berberis vulgaris* in Iran

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Abstract

A survey was conducted in March 2016, which showed nearly 80% of the common barberry (*Berberis vulgaris* L.) shrubs planted in Birjand (Ghattargaz region), South Khorasan province of Iran infected with root-knot nematode. On the basis of perineal pattern the nematode was identified as *Meloidogyne javanica* and is the first report on *B. vulgaris* in Iran.

Keywords: *Berberis vulgaris*, *M. javanica*, new record, Iran.

Each year, more than 4,500 tonnes are harvested in Khorasan region alone. The common barberry (*Berberis vulgaris* L.) belongs to the family Berberidaceae and is an aboriginal shrub of Europe, Africa and Asia. Khorasan region is the main center of *B. vulgaris* production with annual production of 4,500 tonnes out of the total production of 5,000 tonnes in Iran (Tehranifar, 2003).

Nematode infections are one of the most important factors involved in reducing the product; as it is estimated as 12.5 percent of annual agricultural production of the world destroyed by the plant parasitic nematode (Dabur & Nandal, 2009; Sasser & Freckman, 1987).

Root-knot nematode is one of the most damaging nematodes on a wide range of different crop plants, vegetables, fruit trees, ornamental plants, shrubs and trees. Different

species of nematodes have been reported on tomato, eggplant, cucumber, melon, watermelon, potatoes, carrots, grapes, pistachios, olives, pomegranates, stone and pome fruits, and many others in Iran. The nematode damages on agricultural products in developing countries have been reported between 25 to 50% (Fatemi, 2014). In some checklists and investigated sites, the barberry is mentioned as one of the hosts of *Meloidogyne hapla*.

Materials and Methods

Soil and root samples were collected from infected barberry plants from Birjand, uprooting of plants showed a lot of galls of varied sizes on roots, under the stereoscopic microscope, mature females were isolated from the root galls. The nematodes were extracted from the soil by decanting and sieving method (Barker, 1985). Perineal pattern was prepared and identified as *M. javanica* (Eisenback *et al.*, 1980).

Results and Discussion

During a survey conducted in March 2016, nearly 80% of the common barberry shrubs planted in Birjand (Ghattargaz region), South Khorasan province of Iran, showed symptoms of root galling and decline including defoliation, wilting and yellowing. The clusters were thin and fruits were white or yellow and wrinkled. A lot of galls in various sizes were observed on the roots. *Meloidogyne javanica* was identified based on morphometrical, morphological characters and perineal patterns (Eisenback *et al.*, 1980). To our knowledge, this is the first record of root-knot nematode, *M. javanica*, on *B. vulgaris* in Iran as well as the first report of it as a parasite of a member of genus *Berberis*. Based on our results, root-knot nematode may pose a major threat for production of common barberry both in Iran and worldwide.

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Fig. 1. (A-B). Symptoms of root galling and decline; including defoliation, wilting and yellowing.

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