

Damage of *Mecorhisungarica*(Herbst)(Coleoptera: Rhynchitidae) on Wild Plum (*Prunus* sp.) Fruits

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Abstract: Rose weevil, *Mecorhisungarica*(Hbst.) (Coleoptera: Rhynchitidae) is an important pest of rosehip. However, it was observed for the first time that it caused damage to the wild plum (*Prunus* sp.) in Uşak Province. On July 18, 2017 and in the second year on July 16, 2018, a total of 178 fruits were collected from the plants to determine the number of damage and they were brought to the laboratory. In observations made on these, it was observed that all of the fruits were damaged in the first year and the fruits were damaged by 73.0% in the second year. In these fruits it was calculated that the average number of damage on each fruit was 5.1 ± 3.11 ($n = 89$) in the first year and 1.9 ± 2.07 ($n = 89$) in the second year. As a result of the counts made every two years, it has been calculated that there is at least 1 and at most 16 damages in each fruit. According to these result, it is seen that *M. ungarica* is a significant harmful pest of wild plum in Uşak Province.

Key words: Rose weevil, plum, *Mecorhisungarica*, Uşak

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I. Introduction

Rose weevil, *Mecorhisungarica*(Hbst.) (Coleoptera: Rhynchitidae) is an oligophagous species and has been reported to cause damage to plants entering the Rosaceae family. This species was first described by Herbst (1783). It has spread from Western and Central Palaearctic, with the exception of North Africa (Legalov *et al.*, 2010; Avgin and Colonnelli, 2011). The common scientific synonym *Rhynchites hungaricus* is listed in the oldest series of species under this name. It has been reported that the adults of this species are an important pest on rose plants grown for oil in Isparta and Burdur Provinces (Tuatay, 1963) and on rosehip plants in Erzincan Province in our country (Alaserhat and Gültekin, 2014). *Mecorhisungarica* has been reported in many provinces of Turkey (Özbek *et al.* 1996; Çakırbay *et al.*, 2000; Özbek *et al.*, 2005; Alaserhat and Gültekin, 2014), and also found in Afyon, Burdur and Isparta near Province of Uşak (Demirözer and Karaca, 2011). The morphology, biology and infestation rates of *M. ungarica* on rosehip fruits was studied in Erzincan Province (Alaserhat and Gültekin, 2014).

In a survey conducted, it was observed that some of the damaged wild plum (*Prunus* sp.) fruits were poured around and some were hanging on the tree. It was understood that this damage was caused by *M. ungarica*. The presence of rosehip plants has been identified near these trees. According to the available literatures, no evidence has been found of the damage caused by this species on prune fruit in Uşak Province.

The aim of this study was to determine the average number of damages by the *M. ungarica* on each plum fruit and to introduce this damage which was firstly detected in Uşak Province.

II. Materials and Method

During the surveys, the damaged wild plum fruits (Fig. 1) were detected in Uşak Province (38° 43' 34" N, 29° 34' 17" E, 960 m) on July 18, 2017. A total of 178 fruits were collected in the first and the second year. They were brought to the laboratory to determine the number of damage on each fruit. The number of damage on each plum fruit was calculated by looking under a stereo microscope. Morphological characters of *M. ungarica* were provided by Alaserhat and Gültekin (2014). The identification was made using the diagnostic key prepared by Legalov and Friedman (2007) and Skuhrovec *et al.* (2012). The images were acquired by using Olympus SZX10 microscope with an integrated Olympus SC30 camera. The insect specimens' materials for this record were stored in the collection of the Insect Museum in the Plant Protection Department, Faculty of Agriculture and Natural Sciences, Uşak University, Uşak, Turkey.



Fig. 1. Damaged wild plum fruits by *Mecorhisungarica* (original)

III. Results and Discussion

Rose weevil, *M. ungarica* was observed for the first time that it caused damage to the wild plum fruit. In the first year, all of the wild plum fruits were damaged and in the second year 73% of the fruits were damaged. Some of the damaged plum fruits have been laid around and others have been hanging on the tree. The damaged plum fruit becomes deformed as a result of the injury and its shape deteriorates and also resin residue is formed on it (Fig. 1). Thus, the market value of plum fruits that are damaged is lost. The number of damage on each fruit in 2017 and 2018 were determined on the total of 178 fruits. Relationship between number of fruits and damages on each fruit were given in Fig. 2. As seen in there, the relationship between them shows a polynomial change. It is seen that there are differences between the numbers of damage fruits in two different years. The number of fruits on the rosehip plants and the number of fruits on the plum trees are thought to change the rate of damage. Because in the first year the number of fruits in the trees was observed to be less than in the second year. It was thought to be due to climatic factors or when the number of fruits is low, the damage is increasing, or it may be due to the number of overwintered pest population density. Therefore, it will be appropriate to conduct studies in this direction.

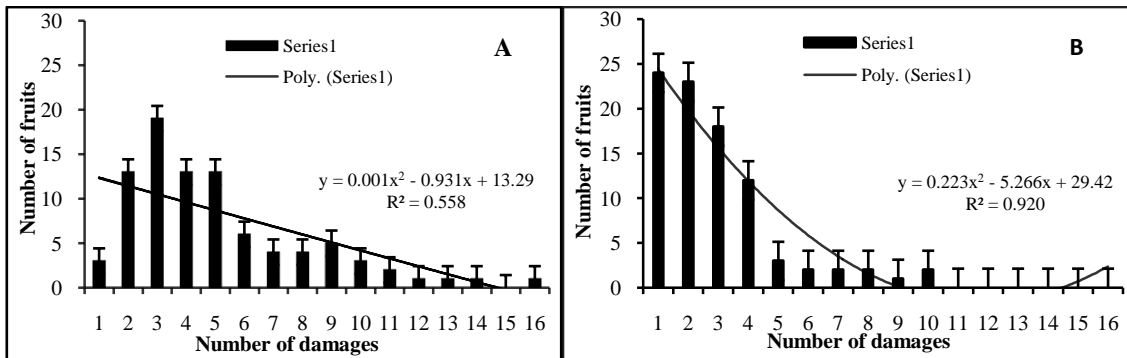


Fig. 2. Relationship between number of fruits and number of damages on each fruit in 2017 (A) and in 2018 (B)

In the observations made, it was calculated that the average number of damage of each fruit was 5.1 ± 3.11 ($n = 89$) in the first year and 1.9 ± 2.07 ($n = 89$) in the second year. Also, it has been calculated that there is at least 1 and at most 16 damages in each fruit. Thus, *M. ungarica* was found to be an important pest of wild plum in Uşak Province.

As a result, plum gardens should not be set up in places near rosehip plants and oil rose production areas because *M. ungarica* is an important pest of the fruits of plum plant. And also as a fence plant, rosehip plants should not be allowed on land boundaries of the plum production gardens.

Literature Cited

- [1]. Alaserhat İ. and Gültekin L. 2014. Investigation of the morphology, biology and infestation of *Mecorhisungarica* (Herbst, 1783) (Coleoptera: Rhynchitidae) associated with rosehip plants (*Rosa* spp.). Turkey Journal of Entomology., 38:157-172.
- [2]. Avgin S.S. and Colonnelli E. 2011. Curculionioidea (Coleoptera) From Southern Turkey, African Journal of Biotechnology, 10: 13555-13597.

- [3]. Çakırbay İ.F., Alici H. and Bozбек Ö. 2000. Studies on the Determination, Distribution and Population Intensity of Beneficial and Harmful Insects on Rosehip Plant (*Rosa* spp.) Naturally Growing in the Erzincan and Gümüşhane Provinces (Result Report) (Unpublished). Horticultural Research Station, Erzincan, Turkey, 17pp.
- [4]. Demirözer O., Karaca İ. 2011. Phytophagous Arthropod Species Associated with Oil-Bearing Rose, *Rosa damascena* Miller, in Isparta Province with Distributional Remarks, SDU Journal of Science (E-journal), 6: 9-25.
- [5]. Herbst J.F.W. 1783. Kritisches Verzeichniss meiner Insektenammlung. Archiv der Insectengeschichte (Zürich: J. C. Fuessly) 4: 1-72, pls. 19-24.
- [6]. Legalov A.A. and Friedman A.L.L. 2007. Review of the Leaf-rolling Weevils of Israel (Coleoptera: Curculionoidea: Rhynchitidae and Attelabidae). Israel Journal of Entomology, 37: 181-203.
- [7]. Legalov A.A., Ghahari H. Yu Arzhanov G. 2010. Annotated Catalogue of Curculionid-Beetles (Coleoptera: Anthribidae, Rhynchitidae, Attelabidae, Brentidae, Brachyceridae, Dryophthoridae and Curculionidae) of Iran. Amurian Zool. J., 2(3): 191-244.
- [8]. Özbek H. and Çalmaşur Ö. 2005. A Review of Insects and Mites Associated with Roses in Turkey. Acta Horticulture, 690:167-174.
- [9]. Özbek H., Güçlü S. and Tozlu G. 1996. Harmful Arthropoda Species on Rosehip Plants in Erzurum, Erzincan, Bayburt and Artvin Provinces. Rosehip Symposium (5-6 September 1996, Gümüşhane, Turkey) Proceedings, 382 pp.
- [10]. Skuhrovec J., Schön K., Stejskal R., Gosik R., Kresl P. and Trnka F. 2012. Digital-Weevil-Determination for Curculionoidea of West Palaearctic. Rhynchitidae and Attelabidae. -Snudebiller 13, Studies on Taxonomy, Biology and Ecology of Curculionoidea, Mönchengladbach: Curculio-Institute: p. 138-161.
- [11]. Tuatay N. 1963. Investigations on Major Damages, Short Biology and Combat Methods of Oil Roses in Isparta and Burdur Region. Ankara Agricultural Struggle Institute, Ankara, Turkey, 39: 78 pp.

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