

The first findings on rusty grain beetle, *Cryptolestes ferrugineus* (Stephens, 1831) (Coleoptera, Cucujoidea: Laemphloeidae) in pistachio orchard in Siirt province (Turkey)

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Abstract

In this study, Siirt province (Turkey) has been reported as the new distribution area for Rusty Grain Beetle, *Cryptolestes ferrugineus* (Stephens, 1831). In addition, some morphological measures are presented. The measured length of this species varies between 2.19 and 2.22 mm. It was found between May and June in pistachio orchards. In addition to being found in such pistachio areas, for this species; the facultative predator property must be observed. Adults as well as larvae, are cannibalistic and will consume eggs, pupae and prepupae of other species co-habiting with them. For instance, it is important to monitor the relationship of this species with the species belonging to the family Scolytidae, Bostrichidae and Diaspididae family species in this pistachio orchards in future.

Keywords: *Cryptolestes ferrugineus*, Pistachio, Siirt, Turkey

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Introduction

Stored products and food industry arthropod pests present a serious economical and medical risks for stored food, feed commodities and seeds in Turkey, and requires phytoquarantine. The rusty grain beetle, *Cryptolestes ferrugineus* (Stephens, 1831) is a world-wide pest of stored food products. Meanwhile; they are primarily pests of wheat. However, this pest also feed on barley, cacao, capsicum, cassava, chilies, clover, copra, corn, currants, dates, flax, illipe nuts, lucerne, millet, mustard, oats, palm kernels, peanuts, rape, rice, sorghum, soybean, sunflower, and triticale (Throne, 1987). *Cryptolestes* spp. are capable of being hazardous for whole kernels under suitable conditions, but can be associated with primary invaders such as *Rhyzopertha dominica*.

C. ferrugineus generally causes mixed infestations with *Tribolium castaneum*. Larvae and pupae are protected from predation or cannibalism because they develop singly under the seed coat covering the germ of cereal seeds (Suresh et al., 2001). *C. ferrugineus* is one of the most common grain feeding insects found in grain stores in farms in Turkey. It is widely distributed throughout the World. In Turkey; It is distributed many different locations. This report has been written about a new locality record of this stored product pest. Also, it is important that this species, which is basically known as stored product pests, has been found in pistachio orchards. Although not active; It has been reported that this species has predator behavior in its habitat. They are also found in the nests of *Vespa* wasps and under tree barks. They are facultative predators and scavengers and able to feed on many species of storage fungi (Suresh et al., 2001). Adults as well as larvae, are cannibalistic and will consume eggs,

pupae and prepupae of other species co-habiting with them (Suresh et al., 2001). For this reason it is necessary to determine the relations with the bark beetle and scale insects, as they are reported to be related in the literature (Zakladnoi and Ratonova, 1987; Thomas, 1988).

Materials and Methods

Specimens were collected from traps in Siirt Province. The light trap was operated from mid-June to mid-September in years 2008 and 2009. This study was carried out in two pistachio orchards in Siirt province. There was one light trap in each garden. Number of study orchards was changed to 5 within 8 acres (Figure 1). Each orchard was controlled every week. A 20-watt Philips energy saver white day light bulb was used. The specimens are preserved in 70 % ethanol. The collected material is deposited in Bioengineering Department Laboratory of Firat University, Bioengineering Department, Turkey.



Figure 1. Pistachio orchard in Siirt Provinces, habitat of *Cryptolestes ferrugineus* (Stephens, 1831).

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Results and Discussion

Cryptolestes ferrugineus (Stephens, 1831) (Figure 2).

Distribution in World: Widely distributed (Halstead, 1993)

Distribution in Turkey: Adana, Ankara, Konya, Mersin, Şanlıurfa (Bağcı et. al., 2014; Er et. al., 2016).

Hosts: Wheat, cotton (Thomas and Ghari, 1988) common important pest of stored grain and grain products in warehouse and field (Rees, 1994).

Material examined: Siirt, Aydınlar, 17.06.2008, 9 exc, 02.08.2008, 15 exc, 08.06.2009, 13 ex., 24.08.2009, 16 exc., pistachio orchard, Siirt, Center, 17.07.2008, 2 exc, 02.08.2008, 5 exc, pistachio orchard, 12.05.2009, 5 exc, 01.06.2009, 6 exc., pistachio orchard, Totally: 68 exc.

The length of species was measured to be approximately 2, 19 mm (Figure 2). This measure was given as 2.2 mm in some previous studies (Zakladnoi and Ratonova, 1987). *Sitophilus granarius*, *S. oryzae* L., *Tribolium* spp., *Oryzaephilus surinamensis* L., *Tenebroides mauritanicus* L., *Rhizopertha dominica* F. and *Trogoderma granarium* Evert. species are distributed in some provinces in the South and the Southeast Anatolia region (Özer, 1957). Ergül et al., (1972); in their study they have carried out in Southeast Anatolia reported that *Plodia interpunctella* Hb. in addition to the presence of the same species parallel to the previous year's work, is also detrimental to storage. Özar and Yücel (1982); found in the study conducted in the Southeastern Anatolia region that *S. granarius*, *Tribolium* spp., *O. surinamensis*, *R. dominica* are harmful. Number of studies on stored product pests is limited in Southeast Anatolia region. It is estimated that *C. ferrugineus* would be a problem in the province of Siirt and in the neighboring province Batman, if it is not struggled against in wheat and stored products. In addition, this pest was firstly found in pistachio orchards. The behavior of the species should be monitored in pistachio gardens, because it is capable of showing predator behaviors in harmful natural conditions (Zakladnoi and Ratonova, 1987). In these studies, this species has been found in tree barks. In this study, it is necessary to determine the relation with bark beetle with *C. ferrugineus* which is caught by light traps. In these gardens there are Scolytidae family species belonging to this family, characterized by *Chaetophorus (Hylesinus) vestitus* Mulsant & Rey, 1861 (Coleoptera: Scolytidae) significant damage. This pest is a major pest of pistachio gardens in Southeastern Anatolian region of Turkey (Bolu, 2002). In addition, it has also been reported that *Cryptolestes* sp. feed on scale insects species (Thomas, 1988). *Lepidosaphes pistaciae* A. has significant density in gardens where the study has been carried out in (Suresh et al., 2001). It is likely to be associated with this species. Hence; it must be observation of interact pest in orchard to following time.



Figure 2. Habitus of *Cryptolestes ferrugineus* (Stephens, 1831).

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