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***Biyolojik not (Biological note)***

# *Chenopodium album* L. : A new host plant of *Tuta absoluta* Povolny (Lepidoptera: Gelechiidae)

*Chenopodium album* L. : *Tuta absoluta* Povolny (Lepidoptera: Gelechiidae)'nın yeni bir konukçusu

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## Summary

The study was carried out on weeds which were grown in cultural areas to determine the secondary hosts of tomato moth (*Tuta absoluta* Povolny) (Lepidoptera: Gelechiidae) that the pest can feed, develop and reproduce during the absence of tomato in Konya, Turkey in 2013. Typical feeding damages of tomato moth, conspicuous mines and galleries between leaf epidermal layers which contained black larval frass, were observed on the leaves of *Chenopodium album* L. (Common lamb's quarters) (Chenopodiaceae). Laboratory examinations confirmed that they were the larvae of tomato moth. Some weeds have been reported as a host of *T. absoluta* but there has not been any study about *C. album*, hence this is the first record of *C. album* as a host of *T. absoluta* in the world.

**Key words:** *Tuta absoluta*, tomato moth, *Chenopodium album*, *Solanum nigrum*.

## Özet

Bu çalışma Konya ilinde Domates güvesi'nin (*Tuta absoluta* Povolny) (Lepidoptera: Gelechiidae) domatesin yokluğunda beslenip gelişebildiği ve üreyebildiği konukçu yabancı ot bitkilerini belirlemek amacıyla, kültür alanlarında bulunan yabancı otlar üzerinde 2013 yılında yürütülmüştür. *Chenopodium album* L. (Sirken) (Chenopodiaceae) yabancı otunun yapraklarında Domates güvesi'nin tipik beslenme zararı, yaprakların iki epidermisi arasında larvaların beslenmesi sonucu oluşmuş siyah larva pisliklerinin bulunduğu galeriler gözlenmiştir. Laboratuvarda yapılan incelemeler de larvaların domates güvesi larvası olduklarını doğrulamıştır. Bazı yabancı otlar, daha önce yapılan çalışmalarla *T. absoluta*'nın konukçusu olarak belirlenmiştir ancak *C. album* ile ilgili böyle bir çalışma bulunmamaktadır. Bu nedenle bu çalışma *C. album*'un *T. absoluta*'nın konukçusu olduğunu gösteren dünyadaki ilk kayıttır.

**Anahtar sözcükler:** *Tuta absoluta*, Domates güvesi, *Chenopodium album*, *Solanum nigrum*.

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## Introduction

*Tuta absoluta* Povolny (Lepidoptera: Gelechiidae) is considered as a key pest of tomato both in the field and under protected conditions (EPPO, 2005). *T. absoluta* was originally described in 1917 in Peru by Meyrick (1917) and now it is found all tomato planted areas in South America (Desneux et al., 2010). *T. absoluta* was first recorded in Europe in 2006 in Spain (Urbaneja et al., 2007) and then spread rapidly to all Mediterranean countries, North Europe (United Kingdom, Germany, Lithuania) and Middle East (Saudi Arabia, Iraq) (Cocco et al., 2013; Garzia et al., 2012). *T. absoluta* was added in 2004 to the EPPO A1 action list of pests recommended for regulation as quarantine pests and in 2009 transfer to the A2 list (EPPO, 2009).

In Turkey, *T. absoluta* was reported from tomato greenhouses in İzmir first time (Kılıç, 2010), later in Antalya (Erler et al., 2010) and in Mersin (Karut et al., 2011). After its presence was detected, lots of study has been carried out about their distribution, population and control methods (Doğanlar et al., 2011; Durmuşoğlu et al., 2011; Kılıç, 2011; Karabüyük et al., 2011 a, b; Karut et al., 2011; Konca et al., 2011; Tatlı & Göçmen, 2011; Ünlü, 2011; Yükselbaba et al., 2011; Mamay & Yanık, 2012, Öztemiz, 2012).

Even though the most preferred host of *T. absoluta* is tomato, it can also feed, develop and reproduce on other cultivated Solanaceous such as egg plant (*Solanum melongena* L.), potato (*S. tuberosum* L.), sweet pepper (*S. muricatum* L.) as well as on non-cultivated Solanaceae (*S. nigrum* L., *S. eleagnifolium* L., *S. bonariense* L., *S. sisymbriifolium* Lam., *S. saponaceum* Dunal, *Lycopersicum puberulum* Ph.) (Galarza, 1984; Pereyra & Sánchez, 2006; Desneux et al., 2010; Cocco et al., 2013). Reported hosts for *T. absoluta* up to now are listed in Table 1 (USDA, 2011).

Table1. Hosts in the families Solanaceae and Fabaceae reported for *Tuta absoluta*

| Host | Common name | Source |
|---|---|---|
| *Capsicum annuum* L. | pepper | Ministero delle Politiche Agricole Alimentari e Forestali, (2009) |
| *Datura quercifolia* Kunth syn: *Datura ferox* Kunth | long-spinned thorn apple | EPPO (2005) |
| *Datura stramonium* L. | jimson weed, devil's trumpet | Vargas (1970) |
| *Lycopersicum puberulum* Ph. | | Vargas (1970) |
| *Nicotiana tabacum* L. | tobacco | Galarza (1984), Fernandez & Montagne (1990b) |
| *Physalis angulata* L. | | Fernandez & Montagne (1990b) |
| *Physalis peruviana* L. | Cape gooseberry | Garzia (2009b) |
| *Solanum americanum* Miller | American nightshade | Fernandez & Montagne (1990b) |
| *Solanum bonariense* L. | | Galarza (1984) |
| *Solanum elaeagnifolium* Cav. | | Galarza (1984) |
| *Solanum gracilius* Herter | | Galarza (1984) |
| *Solanum hirtum* Vahl | | Fernandez & Montagne (1990b) |
| *Solanum lycopersicum* L. (*Lycopersicon esculentum* Miller) | tomato | Vargas (1970), Fernandez & Montagne (1990b) |
| *Solanum melongena* L. | eggplant | Galarza (1984), Fernandez & Montagne (1990b), Ministero delle Politiche Agricole Alimentari e Forestali (2009), Viggiani et al. (2009) |
| *Solanum muricatum* Aiton | sweet cucumber, pepino | FERA, 2009b |
| *Solanum nigrum* L. | black nightshade | Vargas (1970) |
| *Solanum pseudo-capsicum* L. | Jerusalem cherry | Galarza (1984) |
| *Solanum tuberosum* L. | potato | Pastrana (1967), Vargas (1970), Galarza (1984), Fernandez & Montagne (1990b), FREDON-Corse (2009b), Maiche (2009) |
| *Solanum sisymbriifolium* Lamb. | sticky nightshade, litchi tomato | Galarza (1984) |
| *Phaseolus vulgaris* L. | common bean | EPPO (2009i), Ministero delle Politiche Agricole Alimentari e Forestali (2009) |

The objective of this study is to determine the secondary hosts which the pest can feed, develop and reproduce during the absence of tomato.

## Material and Methods

The weed, *Chenopodium album* L. (Chenopodiaceae) on which the tomato moth was found and the pest, *T. absoluta* was the main material of this study. Field monitoring results revealed that, the typical feeding damages of *T. absoluta* was present on 2-3 weeds within all controlled.

The weeds which were thought to be damaged by *T. absoluta* were collected from the cultural areas and brought to the laboratory for further examinations. The larvae were gently removed from the leaves of the weeds with a brush and reared both on tomato and weeds in cages until the adult stage.

## Results

Conspicuous mines and galleries between leaf epidermal layers which contained black larval frass, were observed on the leaves of *C. album* during the field monitoring and the laboratory examinations (Figure 1). Furthermore, adults obtained from the reared larvae had silverish-grey scales, black spots on anterior wings and filiform antennae which are the most important identifying characters. They were identified as *Tuta absoluta* Povolny by Prof. Dr. Levent ÜNLÜ. Some weeds were reported as hosts of *T. absoluta* but there has not been any study about *C. album*, hence this is the first documented record of *C. album* as a host of *T. absoluta* in the world.

In recent years, *T. absoluta* is considered one of the most devastating pests of tomato and under appropriate conditions, especially in greenhouses; its damage can be detected all around the year. Although *T. absoluta* prefers tomato, it can also feed, develop and reproduce on weeds and this gives a great advantage to continue its existence during the absence of tomato. Therefore *C. album* must be taken into consideration in the control of tomato moth to prevent the continued population, particularly in fields.

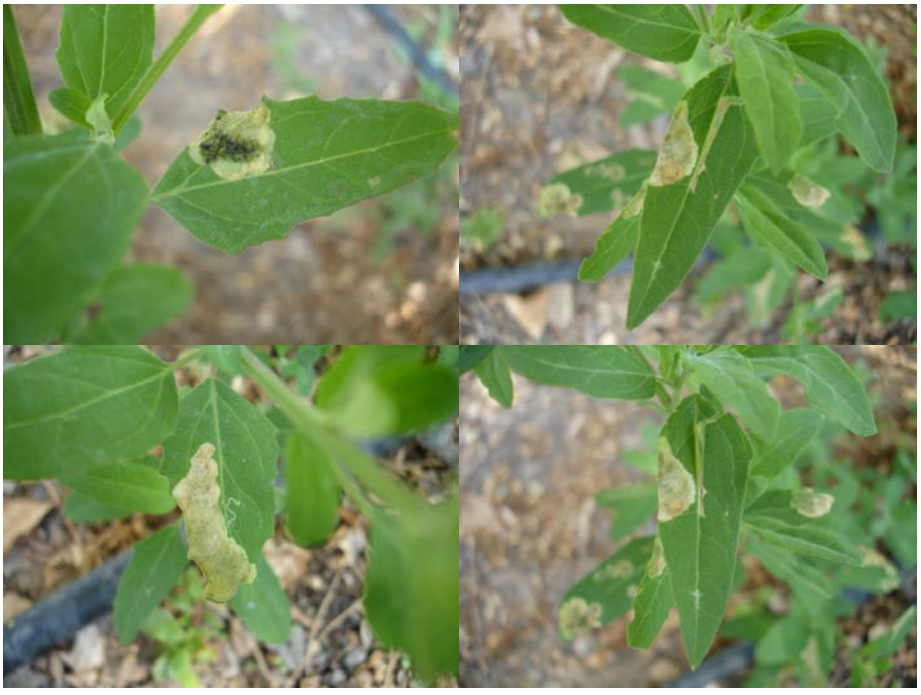

Figure 1. Mines of *T. absoluta* on *Chenopodium album* leafs.

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