

Researches Concerning the Spreading of *Tuta Absoluta* Species into Greenhouses from West of Romania

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Abstract. *Tuta absoluta* - the tomato leafminer originated from South America was signaled for the first time in the South of Spain in 2006. In Romania *Tuta absoluta* was detected for the first time in the Western part of the country, into a grange from Satu Mare county in 2009. A year later, in the spring of 2010 its attack was signaled into greenhouses from Curtici, situated in Arad county. We studied the phytosanitary spreading area of *Tuta absoluta*, into solariums and greenhouses. Observations were made in the greenhouse from west of Romania. The tomatoes crops from greenhouse were verified to establish the frequency of pest attack. There were found insignificant pest attacks of *Tuta absoluta* in the first months, but in the last weeks we found major attack of this pest in tomato crops. *Tuta absoluta* is a specie whose area of distributions is expanding. Specialists in the field of plant protection should give special attention to monitoring this invasive pest.

Keywords: *Tuta absoluta*, greenhouses, tomatoes, pest, researches, solariums

INTRODUCTION

Tuta absoluta is a species of moth from the family *Gelechiidae*, also known by the name of tomato leafminer or South American tomato moth, being one of the most important tomatoes pest in Europe and South America (www.wikipedia.org).

The damage is done by its larval stage. The larva preponderantly feeds in the leaf's mesophyll, digging characteristic mines, but sometimes the attack is made at the top of stalks consuming the apical buds and also attacking the fruits. When the population is too big and no actions against are taken, the attack of this species may lead to the loss of the entire crops. (Aplaza, 1992)

The species is oligophagous. Tomatoes are the main host plants but this moth attacks other plants of nightshade family: potatoes, eggplants, tobacco etc. (Desneux, 2010).

This moth was signaled for the first time in South America, attacking the tomatoes. In 2006 it was identified in Spain and the next year it was detected in France, Italy, Greece, Malta, Morocco, Algeria, Libya and in 2009 it devastated the greenhouses and the solariums in Turkey (www.wikipedia.org).

Tuta absoluta was signaled for the first time in Romania in June 2009, detected in a market from Bihor county. In this market had been found tomatoes infected by *Tuta absoluta* according to the Central Laboratory for Phytosanitary Quarantine. The most probably they were imported from Spain (www.ziare.com).

In 2009, the moth *Tuta absoluta* was also discovered in a grange from Baia Mare, Maramures county (www.ziare.com).

In Arad county the pest was signaled for the first time in the spring of 2010 at the greenhouses from Curtici (www.andagra.ro).

MATERIAL AND METHOD

In order to monitor the spread of these species in 2013 there were made observations in several greenhouses from the western part of Romania, county of Arad (Curtici and Arad) and county of Hunedoara, respectively. For establishing the presence of the pest, the tomato plants and eggplants from the monitored greenhouses, were daily monitored. For each observation, the percentage of attacked plants was established. The leaves, which were damaged by the pest, were removed. We noted that usually the leaves from the middle part of plants were attacked. For this reason, pheromone lures were placed for detecting the presence of the pest.

RESULTS AND DISCUSSIONS

The first reporting of the pest *Tuta absoluta* presence was made in greenhouses from Curtici, Arad county, in 20 of March 2013. The attacked plants were only on single segment in the greenhouse. The proportion of damaged plants was approximately 2%.

After a week, in 27th of March 2013, in the greenhouses from Curtici, the proportion of attacked plants was approximately 4%, right in the next segment that has been damaged a week ago.

The frequency of attacked plants increased starting with 15th of May 2013, in the segments where it was signaled the presence of species. In the last decade of May month we detected the spreading of the pest to other segments of the greenhouse. The frequency of the attack reached approximately 8% of plants.



Fig. 2. Attack of *Tuta absoluta* on eggplant leaf

stages (larva, nymph, adult). The catches of adults were approximately 17adults/week/pheromone lure.

Once with the rise of temperatures in Arad and until to dissemination of the culture (20 - 22 July) the population of *Tuta absoluta* was continuously increasing, and at the end of the culture the attack was significant. The frequency of damaged plants reached 15%.



Fig. 1. Attack of *Tuta absoluta* on tomato seedling leaf

In 12th of June 2013, in the greenhouses from Curtici the pest was found in its all development stages: larva, nymph and adult. The adults were detected with pheromone lures. The catches made by one pheromone lure were approximately 5adults/week. After this date until to dissolution of culture (1st of July) we signaled the presence of the pest at every check to the entire surface of the greenhouse.

In the greenhouses from Arad the species was signaled in 22nd of March 2013. The attacked plants were the tomato seedlings (Fig.1) which were infested approximately 1%.

The presence of the pest on mature plants was detected in 15th of April 2013 and the frequency of plants which manifested attack symptoms was approximately 3%.

The frequency of the attack reached proportions of 10% starting with 10th of June 2013 in the greenhouses from Arad. After two days the pest has been found in its all development

To reduce the biological resource of this pest, after the dissemination of the culture the host plants were burnt. (the same method was applied in the greenhouses from Curtici).



Fig. 3. Attack of *Tuta absoluta* on tomato fruit

In 19th of August we detected the presence of this pest into another greenhouses from Arad, but this time it attacked not only the tomatoes but also the eggplants (Fig. 2). After this date the pest has extended and in 9th of September 2013 it was signaled a significant tomato attack including their fruits (Fig. 3). In this greenhouse the frequency of the plants attacked reached 18%, and the fruits attacked were approximately 5%.

In 31st of May 2013 the presence of pest *Tuta absoluta* was signaled also into a greenhouse near Hunedoara county, but in this greenhouse from the last observations, the frequency of attacked plants has not exceeded 3%.

CONCLUSION

Tuta absoluta is a pest whose spreading area is continuously increasing.

The specialists in plant protection should pay special attention to monitoring this devastating pest.

To limit the spreading of *Tuta absoluta* it requires the application of phytosanitary quarantine methods (by using uninfested seedlings), and after detecting the presence of this species into a greenhouse, it is necessary to burn any crop residues to decrease the biological resources of the pest.

REFERENCES

1. Apablaza, J. (1992), La polilla del tomate y su manejo, Editura Tattersal
2. Desneux, N. (2010), Biological invasion of European crops by *Tuta absoluta*: ecology, geographic expansion and prospects for biological control, J. of Pest Sci. 83:197–215
3. www.andagra.ro
4. www.wikipedia.org
5. www.ziare.com