Researches Regarding the Chemical Control of *Tuta absoluta* Species

**Raul BAETAN**<sup>1)</sup>, **Ion OLTEAN**<sup>1)</sup>, **Petru VĂRĂDIE**<sup>2)</sup>, **Teodora FLORIAN**<sup>1)</sup>

<sup>1)</sup> Faculty of Agriculture, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Manastur St., 400372 Cluj-Napoca, Romania; Raul.Baetan@gmail.com

<sup>2)</sup>S.C. Consultanță Agricolă Vărădie S.R.L. – Caransebeș St., No.13, Bl.9, Ap.7, 310000, Arad, Romania

**Abstract.** *Tuta absoluta* species originates from South America. It was signaled for the first time in Europe in 2006 in eastern Spain. In Romania it was detected for the first time in the western part of the country into a grange from Satu Mare county in 2009. After a year the attack of *Tuta absoluta* was signaled into a greenhouse from Curtici city, Arad county. Studying *Tuta absoluta* reaction at different chemicals and trying to discover which one is the most suitable and efficient to reduce or eliminate the population of the pest. Observations were conducted in greenhouses in Arad. They used different chemicals to reduce or eliminate the pest *Tuta absoluta* population. Chemicals had a positive effect to eliminate the pest population of *Tuta absoluta*. If it is discovered in an early stage of the attack, it can be controlled or eliminate by chemicals treatments.

**Keywords:** *Tuta absoluta*, chemical, pest, greenhouses, solarium, attack.

**Introduction** *Tuta absoluta* originates from South America and in Europe it was reported for the first time in 2006 in Spain (<http://www.andagra.ro>). After its intrusion in European continent, the pest has increased its spreading area, in some greenhouses becoming an invasive pest which produce huge loss in Solanaceae crops, especially the tomato crops (<http://www.ziare.com>).

In Arad county the pest was reported for the first time in the spring of 2010 at the greenhouses from Curtici (<http://www.andagra.ro>).

Starting with this date the species was reported almost in every greenhouse in the county, and the their owners took some preventing measures and control methods against this leafminer.

**Aims and objectives.** Possibility of dealing with *Tuta absoluta* species by chemical. Testing a lot of insecticides to reduce or eliminate the population of *Tuta absoluta* from the greenhouses.

**Materials and methods.** The researches concerning the combating *Tuta absoluta* species were made in 2013, in two greenhouses from Arad county (Curtici and Arad). We used several chemical products which could be alternatively introduced in combating programs to reduce or eliminate the population *Tuta absoluta*.

The chemical products used: Coragen 0.02%, Affirm 0.15%, Karate Zeon 0.05%.

Coragen is an insecticide from antranilamide class, based on clorantraniliprol. Is has local and translaminar action. Acts by contact and ingestion. It has mainly ovo-larvicidal action. To combat the tomato leafminer the insecticide was used 0.02%.

Affirm is an eemamectin bensona product which acts translaminar and penetratring, being a product with local systemic action and also having contact and ingestion action. The break time is reduced and the residues are less at the treatments done with this insecticide. The used concentration was 0.15%.
Karate Zeon is an insecticide from synthesis piretriosis, based on lamdachalotrine which acts by contact and ingestion. The Zeon microcapsules formula of this product allows the gradually release of it on plants. The concentration was 0.05%. Three treatments were applied for each product.

The treatment’s efficiency was evaluated by comparing the frequency attacked tomato plants with untreated control. The biological efficiency was also expressed in Abbott percentage.

**Results and Discussions.** In the case of untreated control the frequency of attacked plants was 18% in Arad and 14% in Curtici. The products which were used had a positive effect to reduce or eliminate the population *Tuta absoluta* (Tab. 1).

The most efficient product was the Coragen, which after it was used, it reduced the frequency of attacked plants with 94.4% in the greenhouse from Arad, and at Curtici the efficiency was 100%. The second product concerning its efficiency is Affirm which decreased the frequency of the attack at a medium proportion of approximately 85%. The most decreased efficiency was registered by Karate Zeon, the medium efficiency being approximately 72%.

<table>
<thead>
<tr>
<th>Variant</th>
<th>Frequency of attacked plants</th>
<th>Efficiency</th>
<th>Frequency of attacked plants</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coragen 0.02%</td>
<td>1</td>
<td>94.4%</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Affirm 0.15%</td>
<td>3</td>
<td>83.3%</td>
<td>2</td>
<td>85.7%</td>
</tr>
<tr>
<td>Karate zeon 0.05%</td>
<td>5</td>
<td>72.2%</td>
<td>4</td>
<td>71.4%</td>
</tr>
<tr>
<td>Untreated control</td>
<td>18</td>
<td>-</td>
<td>14</td>
<td>-</td>
</tr>
</tbody>
</table>

**Conclusion.** To reduce the frequency of *Tuta absoluta* attack it is recommended to implement prevent and combating strategies and the application of chemical treatments. Considering the specific attack and the fact that the larva is endophyte, the best result are obtained by using products with systemic action. To avoid the appearance of resistance phenomenon, in applied treatments it is mandatory to alternate the products from different classes concerning the active substance and mode of action.

**REFERENCES**

1. www.andagra.ro
2. www.ziare.com

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