ASSESSMENT OF THE SPECTRUM OF ACTIVITY OF A NEW INSECTICIDE BASED ON CLITORIA TERNATEA EXTRACT

Livia Zanotelli¹, Oscar Giovannini¹, Sandro Frati², Andrea Nesler² and Ilaria Pertot¹,³

¹Department of Sustainable Ecosystems and Bioresources, Research and Innovation Centre, Fondazione Edmund Mach, San Michele all’Adige, Italy; ²EMPA, Londerzeel, Belgium; ³CSA, University of Trento, Trento, Italy

Clitoria ternatea L. (butterfly pea)
Fabaceae family

- Pharmacological properties
- Excellent forage legume (very good regrowth and yields)
- Cover crop
- Edible plant (young and tender parts of the plant, shoots, leaves, flowers and pods)

Recent studies indicate that C. ternatea has insecticidal effects (cyclotides and flavonoids)

The aim was to explore the possible use of C. ternatea extracts against a wide range of phytophagous insects

Materials and methods

- Small scale trials under controlled conditions (lab, greenhouse)
- Concentration of the active ingredient in the formulated product: 400 g/l
- Dosage of the formulated product: 20 ml/l
- Untreated control (UTC): water
- Chemical standard reference (names and dosages, Table 1)
- Experiment carried out at least twice with 5 replicates/treatment
- Data of the experiments were pooled
- Statistics: ANOVA, Tukey’s test (α = 0.05)

Table 1. Target pests and chemical standard references and related dosages

Results

Discussion

- Good efficacy against thrips and whiteflies (also confirmed by field trials)
- Promising results against some other species (poor results with some others)
- Based on the nature of the extract (no toxicity for humans and environment) the C. ternatea extract can be considered a new low-risk tool to be used in the integrated pest management of crops against some specific targets

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Cyclotides: molecules composed of 28-37 amino acids in a head-to-tail cyclic backbone with three interlocking disulfide cystine bonds, mainly produced by plants as defence proteins

Graf image

Table 1.

<table>
<thead>
<tr>
<th>Target</th>
<th>Active ingredient</th>
<th>Concentration (ml or g/l)</th>
<th>Reference Product 1</th>
<th>Reference Product 2</th>
<th>Reference Product 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphis gossypii</td>
<td>UTC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antispa oinophylla</td>
<td>UTC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lobesia botrana</td>
<td>UTC</td>
<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Scaphoideus titanus</td>
<td>UTC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drosophila suzukii</td>
<td>UTC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halyomorpha halys</td>
<td>UTC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

UTC = untreated control (water)

Different letters indicate that values are significantly different (ANOVA p < 0.05, Tukey HSD test, α = 0.05)