Isonet® L TT and Isonet® L TT BIO

New mating disruption products for the control of *Lobesia botrana* (Lepidoptera: Tortricidae)

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Lobesia botrana & Mating disruption

MD with hand-applied dispensers is the most well-studied and widely used pheromone-mediated control technique against grape berry moths in Europe. In 2015: applied on 140,000 ha in European vineyards (3–4% of the total grapevine-growing area).

Rak, BASF
Isonet, Shin-Etsu
Puffer, Suterra
**Lobesia botrana & Mating disruption**

We have been researching on L TT and LTT BIO (biodegradable) because they show advanced merits:

- Applied at half point sources (250 vs 500)
- Applied in less time
- Biodegradable (in one case)
- Aluminum free
• **reservoir pheromone dispensers:** 2 parallel capillary tubes (Twin Tubes) filled with *L. botrana* pheromone blend, and joined and sealed at ends

• No need to twist, only open and hang

• **gap in the middle** allows each dispenser to form a loop easily and quickly deployed over the end of spurs or by looping it around cordons

• **difference** between Isonet® L TT and Isonet® L TT BIO: material of which the dispensers are made: polyethylene for Isonet® L TT and biodegradable plastic for Isonet® L TT BIO
Shape and material of which dispensers are made is of sound importance for a correct and season-long release of pheromone. Efficacy of both products in controlling *L. botrana* on grapevine has been evaluated and verified in several field trials.

This talk deals with the field research we carried out in a Farm of Tuscany in 2014 and
Lobesia botrana trials 2014 - 2015
Tuscany
Isonet® L TT & Isonet® L TT BIO - trial design

- **Test site location:** Bolgheri, Livorno, Tuscany (Italy)
- **Grapevine cultivars:** Vermentino (2014), Cabernet Sauvignon (2015)
- **Tested treatments:**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Product</th>
<th>Applied rate (dispensers/Ha)</th>
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<tbody>
<tr>
<td>Control</td>
<td>-</td>
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- **Grower’s standard 2014 = 2 sprayings**
  - I gen Methoxyfenozide
  - III gen Chlorantraniliprole
ASSESSMENTS

Frequency:
1. at end of 1<sup>st</sup> generation (G1; May, full flowering)
2. at end of 2<sup>nd</sup> generation (G2; July, berry touch)
3. at harvest (G3; September)

Type:
• % infested flower clusters (G1) / bunches (G2 and G3)
• N. nests per flower cluster (G1) / bunch (G2)
• N. damaged berries per bunch (G3)

10 subplots within each treatment, big enough to allow for assessments on at least 100 bunches per subplot, were selected.

10 subplots x 100 flower clusters per treatment (G1) and 10 x 50-100 bunches per treatment (G2 and G3).
Challenges to the success of Mating Disruption:
• overcome the border effects of immigration of mated females;
• prevent potential treatment interference between plots;
• population density.

For these reasons:
• sites cannot be split into conventional plots;
• replicated treatments are often unpractical.

Plot size for the pheromone treatments may be of significant size (e.g. several hectares) in order to achieve reliable performance. Plot size for either untreated controls or standard insecticide treatments do not have to be as large, but should, where possible have comparable population densities.

Whilst replication is preferred where practical, trials may be unreplicated but a suitable number of trials should be conducted to allow appropriate support of product claims.
Isonet® L TT & Isonet® L TT BIO – data analysis

Similar trials in Tuscany, Emilia Romagna, Sicily and Spain supervised by the same research team.

Statistical analysis:

• Since a randomized block design does not apply to large plots required for studies on mating disruption products, ten subplots per each treatment were considered as replicates;

• Data were compared across Treatments using 1-way ANOVA followed by Student-Newman-Keuls’ test for post-hoc comparison of means. Bartlett’s test was used to test for homogeneity of variances.
Crop: grapevine
Variety: Vermentino
Location: Bolgheri (LI)

Total surf. 17.5 ha

L TT 5 ha
L TT BIO 5 ha
Control 7.5 ha

Dosage/ha:
L TT 200 d/ha
L TT BIO: 200 d/ha

Damage assessment:
I° gen: 31 May
II° gen: 17 July
III° gen: 03 Sept

1,000 clusters/plot (G1)
500 clusters/plot (G2 + G3)
Results 2014

% Infested flower clusters (G1) / bunches (G2 and G3)

Grower’s standard was sprayed with Prodigy (Methoxyfenozide, 400 ml/ha) against G1 and all fields were sprayed with Coragen (Chlorantraniliprole, 150 mL/ha) against G3.
Results 2014

N. nests (G1 and G2) and damaged berries (G3) per bunch

Grower’s standard was sprayed with Prodigy (Methoxyfenozide, 400 ml/ha) against G1 and all fields were sprayed with Coragen (Chlorantraniliprole, 150 mL/ha) against G3
% INFESTATION III GENERATION 2014 DESPITE 2 SPRAYINGS WITH METHOXYFENOZIDE AND CHLORANTRANILIPROLE

2014 trial:
- Camillo controllo
  - 12,0%
  - 3,2%
  - 5,2%
  - 0,8%

2015 trial:
- S.Antonio Mer
  - 2,9%
- Campone Cbs
  - 5,6%
25 ha in 6 plots plus a small control
Crop: grapevine
Variety: Cab. Sauvign.
Location: Bolgheri (LI)

Total surface: 25 ha

Isonet L TT: 8.5 ha
Isonet L TT BIO: 7.8 ha
Isonet L: 7.2 ha
Control: 1.5 ha

Dosage/ha:
Isonet L TT: 250 d/ha
Isonet L TT BIO: 250 d/ha
Isonet L: 500 d/ha

Damage assessment:
I° gen: 27 May
II° gen: 16 July
III° gen: 03 Sept

1,000 clusters/plot (1G)
500 clusters/plot (2G + 3G)
Bolgheri Plot 2015

Trap captures

Results 2015

average captures/trap

Control

L

L TT BIO

L TT
Results
BOLGHERI PLOT 2015

% infested flower clusters (G1) / bunches (G2 and G3)

- **G1**
- **G2**
- **G3**
Results 2015

N. nests (G1 and G2) and damaged berries (G3) per bunch
Isonet® L TT & Isonet® L TT BIO trials

Summary

• **Time** required for application of L TT dispensers was **1 hour** per ha compared with 1.5 hs per ha of Isonet L

• In both years, Isonet® L TT and Isonet® L TT BIO resulted in almost complete trap **catches shut-down** of *L. botrana*.

• G1, G2 and G3 *L. botrana* infestation was **lower** in Isonet® L TT and Isonet® L TT BIO than in the control treatment.

• **Efficacy of both products** in controlling *L. botrana* was **comparable to or higher** than that of the **reference treatment**. This was confirmed by the results obtained in other Italian Regions and in Spain.

• Isonet® L TT and Isonet® L TT BIO can be considered valuable tools for effective and less labour-intensive control of European grapevine moth.
Thanks for listening

L TT team