Date: 8/2018

Field experiment no. 192

**The effectiveness of the Bio T Plus preparation in controlling Anarsia in almond, Kfar Tavor, June 2018**

**By David Sarid, Eran Shilo—BioYome Company**

**Aim:**

To test the effectiveness of the Bio T Plus preparation in controlling Anarsia (*Anarsia lineatella*) in almond.

**Methods and materials:**

**The crop:** The experiment was conducted in an orchard of the Umm el-Fahm almond variety, planted in Kfar Tavor in 2013.

**Irrigation:** drip

**Soil:** heavy

**Phenological stage**: fruit

**Weather conditions:**

29/6/2018: temperature: 27.0°C, relative humidity: 54%

10/7/2018: temperature: 28.1°C, relative humidity: 59%

**Experiment design:** The experiment was conducted in randomised blocks, with four repeats for each treatment, and four trees in each repeat.

**Application method and spraying volume:** Spray gun, volume: 120 L/dunam (10002)

**Application dates:**

* 26/6/2018, morning
* 10/7/2018, morning

**Evaluation dates:** 29/6/2018, 10/7/2018, 19/7/2018

Four traps were placed on 29/6/2018 for evaluation of plot infestation.

**Evaluation method:** 1.Sampling of 50 fruit/experimental repeat. From the centre of the repeat.

2. Counting of male adults in delta traps with BioYome pheromone.

**Sample size:** 50 fruit/repeat (200 fruit/treatment).

**Analysis:** The JMP (version 5.1) software was used for statistical analysis**.** Results were analysed by ANOVA with a post hoc Tukey-Kramer test to determine statistically significant differences between treatments.

**Preparations:**

* Bio T Plus, SC containing Bacillus thuringiensis subsp. Kurstaki at 16,000 international units (ITU)/mg per litre
* Talstar, EC containing 100 g/L Bifenthrin

**Treatments:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Preparation** | **cm3/dunam or %** |
| 1 | Bio T Plus | 0.2% |
| 2 | Bio T Plus | 0.4% |
| 3 | Bio T Plus | 0.8% |
| 4 | Talstar | 0.075% |
| 5 | Control | - |

**Results:**

At baseline, there were no significant differences between the treatments.

On the first evaluation date, 11 days after the first spray application, Bio T Plus treatment at the target concentration (0.4%) was significantly different from the control.

On the second evaluation date, 9 days after the second spray applications, Bio T Plus treatments at the target concentration (0.4%) and at the double concentration were significantly different from the control. Bio T Plus at half the target concentration was not different from the control.

No signs of phytotoxicity were observed with any of the treatments.

**Table 1. Almond fruit infestation by Anarsia (%)**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Treatment** | **cm3/dunam or %** | **Percentage of Anarsia-infested fruit**  |
| **29/6/2018****(Baseline)** | **10/7/2018** **(First evaluation)** **+11 days from spray I**  | **19/7/2018** **(Second evaluation) +9 days from spray II** |
| 1 | Bio T Plus | 0.2% | 1.0 a | 3.0 ab | 11.0 ab |
| 2 | Bio T Plus | 0.4% | 0.5 a | 0.0 b | 5.0 b |
| 3 | Bio T Plus | 0.8% | 0.5 a | 4.0 ab | 9.0 b |
| 4 | Talstar | 0.075% | 1.0 a | 2.0 b | 11.0 ab |
| 5 | control |  | 0.5 a | 9.0 a | 23.0 a |

\* Values labelled by different letters are significantly different from each other (P<0.05)

**Table 2. Anarsia (adults) captured in pheromone traps**

|  |  |
| --- | --- |
| **Trap no.**  | **Anarsia (adults) captured in monitoring traps** |
| **10/7/2018** | **19/7/2018** |
| **1** | 1 | 14 |
| **2** | 4 | 10 |
| **3** | 9 | 12 |
| **4** | 12 | 5 |

**Discussion and conclusions:**

Bio T Plus (0.4%) effectively eliminates Anarsia larvae in almond. Larvae infestations in treated fruit were significantly lower than in the control.

No phytotoxicity was observed in the crop. No effect on foliage was observed during crop growth.

**Acknowledgements:**

We thank Shahar Sela for allocating the plot and assisting in the experimentation.