**An experiment of controlling fruit fly in a wine grape vineyard—Neta Farm 2019**

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**Aim**

To test the effectiveness of the Bactush preparation in controlling fruit fly in a wine grape vineyard.

**Experimental procedure**

The experiment was conducted at Neta farm, in a Petit Verdot grape vineyard planted in 2014, in a plot affected by cluster rot. The experiment was designed in randomised blocks, in four repeats, with seven vines in a row in each repeat. Results were analysed by ANOVA test using the JMP software (version 8).

**Treatments**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Treatment** | **% Concentration** | **Formulation** |
| **1** | Bactush + Mahatz | 0.5 +  0.07 | SL containing 1200 Iu/mg Bacillus thuringiensis  BioYome surfactant |
| **2** | Bactush + Mahatz | 1.0 +  0.14 | SL containing 1200 Iu/mg Bacillus thuringiensis  BioYome surfactant |
| **3** | Decis | 0.1 | EC containing 25 gr/L Deltamethrin |
| **4** | Control | --- | --- |

**Spraying**

The plot was sprayed twice during the experiment, four days apart, on 1.9.19 and on 5.9.19. We used an experiment-purposed vineyard sprayer with a spray volume of 100 L/dunam (1000 m2).

**Evaluation of infestation**

Three infestation counts were conducted during the experiment: three days after the first application (4.9.19), and three and six days after the second application (8.9.19 and 11.9.19). Eight clusters with rot were randomly sampled in each experimental repeat. Clusters were shaken, and flies released from the clusters were counted.

**Results**

A sample of 20 clusters with rot was analysed at the beginning of the experiment, before the first spray application. We found fruit flies in each of the clusters, with an average of 5.0 flies/cluster.

**Table:** The effectiveness of Bactush applications in reducing the number of fruit flies in grape clusters. The table presents the percentage of clusters with rot in which flies were present (frequency), and the number of flies in clusters with rot (severity). An average of 32 clusters were analysed in each treatment group, Neta Farm, 2019.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Preparation** | **Concentration**  **(%)** | **Fruit fly infestation in grapevines after spraying** | | | | | |
| **% Fly-infested clusters** | | | **No. of flies/ infested cluster** | | |
| **Spray 1** | **Spray 2** | | **Spray 1** | **Spray 2** | |
|  |  |  | **+3 days** | **+3 days** | **+6 days** | **+3 days** | **+3 days** | **+6 days** |
| **1** | Bactush + Mahatz | 0.5 + 0.07 | 84.4 a | 50.0 a | 37.5 a | 2.2 b | 1.3 a | 0.9 a |
| **2** | Bactush + Mahatz | 1.0 + 0.14 | 71.9 a | 40.6 a | 50.0 a | 2.6 ab | 1.0 a | 1.1 a |
| **3** | Decis | 0.1 | 65.6 a | 21.9 a | 31.3 a | 1.4 b | 0.6 a | 0.6 a |
| **4** | Control | --- | 100.0 a | 46.9 a | 43.8 a | 4.2 a | 1.8 a | 1.1 a |

**Note:** Values labelled by different letters are significantly different from each other, α=0.05

**The results presented in the table show that:**

1. The fruit fly population in the control plots infested 100% of the clusters, with an average of approximately five flies per cluster. The size of the fly population decreased during the experiment, likely because of the drying of rotting clusters and the decline in fly number.
2. The Bactush preparation, at the two concentrations tested, was partially effective in decreasing the number of fruit flies in highly infested clusters (after the first spray application) but was ineffective when the infestation was lower (after the second spray), similar to Decis.
3. No damage or typical signs of pesticide use were observed in the clusters or foliage in any of the treatments tested.

**Summary**

Our results demonstrate the challenge of controlling the fruit fly population once it has been established in the plot/clusters. Preparations with partial activity may be more effective if applied earlier when the fly population is not yet established.

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