

Chemical Control/New Products

Western Tentiform Leafminer Control: Is Agri-Mek Translocated in Apple Foliage?

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Agri-Mek has provided excellent control of western tentiform leafminers since 1996, when it was registered on apples. Usually a single application applied during the 6-week period following petal fall will provide season-long commercial control. Because of its length of control, it has been speculated that Agri-Mek is translocated within the apple foliage. A test was conducted with apples to find out if Agri-Mek moves from treated to untreated foliage.

Materials and Methods

Foliage was treated with a suspension of Agri-Mek and horticultural spray oil at 5 fl oz/100 gal + 0.25% volume/volume, which is the highest registered concentration. The application was made on May 21, 1998, when the first generation of leafminer population was 46% sap feeders and 54% tissue feeders. Treatments were made by dipping leaves into the above suspension and removing them immediately. The treatments were 1) untreated terminal, 2) treated the entire terminal, 3) treated only one leaf (the fourth youngest) on a terminal, and 4) treated the youngest three leaves and growing point on a terminal. A hole was made with a paper punch on the next oldest leaf in treatments 3 and 4, so the treated leaf or leaves could be referenced later. There were 11 replications on an Elstar tree and 8 replications on a Gravenstein tree, for a total of 19 replications.

The next generation was evaluated 76 days after treatment, and each mine was examined. However, in this paper only the tissue feeding mines will be reported because the miners would have been killed before they developed into a tissue feeder if Agri-Mek were present in the leaf being examined. Consequently, the presence of tissue feeding mines indicated that Agri-Mek was not present or that the level of Agri-Mek was too low to provide control.

Results

There was excellent control of leafminers in the foliage that was treated. When the entire terminal was treated, there were 0.48 tissue feeding mines per leaf (tfm/l). On the single treated leaf there were 0.31 tfm/l, and when the three youngest leaves were treated, there were 0.00 tfm/l in these leaves. In the leaves that developed from the growing point, there were 1.12 tfm/l when all reps were evaluated. When one rep that averaged 4.13 tfm/l (no control) was deleted from the average, there was 0.65 tfm/l in the leaves that developed from the growing point. I speculate that an air bubble developed around the growing point when it was treated and maybe none of the suspension contacted the plant tissue.

There was no control in the older and younger leaves when only one leaf was treated. There was no control in the older leaves when the three youngest and the growing point were treated.

Conclusions

Agri-Mek provided excellent control of leafminers in treated leaves and good control in leaves that developed from the treated growing point. Agri-Mek is not translocated out of treated leaves into untreated younger or older leaves.

Table 1. Western tentiform leafminer counts 76 days after treatment.

Treatment	Average tissue feeder mines/leaf			
	entire terminal	in the treated leaves	in the older leaves than the treated one or ones	in the younger leaves than the treated one or ones
1. Check	4.19			
2. Entire	0.48	0.48		
3. One leaf	2.98	0.31	3.46	2.95
4. Youngest 3 leaves and growing point	2.23	0.00	3.65	0.65*

Both first and second generation tissue feeding mines were counted, so the older leaves could have mines from both generations and the younger leaves only from the second generation count.

*0.65 is the average if the one rep with no control (4.13 tfm/l) is deleted.