

Pome Fruits—Chemical Control

Effect of Adjuvants on the Length of Residual Activity of Agri-Mek in Apple Foliage as Determined by Twospotted Spider Mite Mortality

Elizabeth H. Beers and Astrid Andersen

Washington State University Tree Fruit Research and Extension Center, Wenatchee, WA

*Keywords:* twospotted spider mite, Agri-Mek, abamectin, Volck Supreme Oil, Sylgard, apple

This study was conducted in a mature 'Delicious' orchard at the Tree Fruit Research and Extension Center in Wenatchee, WA. The four treatments (Agri-Mek 0.15EC 11 g ai/acre; Agri-Mek 0.15EC 11 g ai/acre plus 0.25% Volck Supreme Oil; Agri-Mek 0.15EC 11 g ai/acre plus Sylgard; and an untreated check) were applied on 1 Jun. Treatments were applied with a handgun sprayer operated at 250 psi to the point of drip. Ten leaves were collected on each bioassay date. A 2-cm leaf disk was cut from each leaf and floated upside down in a jelly cup of water and cellucotton. Ten adult female twospotted spider mites were loaded on each leaf disk and evaluated for mortality after 72 h at 25°C. Dead and moribund mites were classed as dead, and mites that were not found on the leaf disk were not included in the analyses. Post-treatment assays were collected at ca. weekly intervals. Treatment mortality data were corrected for check mortality with Abbott's formula.

The mortality on leaves sprayed with Agri-Mek without any adjuvant declined rapidly and was unacceptably low by 14 days post-treatment. The addition of oil to Agri-Mek increased the length of effective residues (>90%) to 28 days, with relatively high levels (>80%) until 63 days post-treatment. With the exception of the first bioassay, the mortality in the Agri-Mek plus Sylgard treatment was 100% until 46 days after treatment and remained relatively high (>80%) until 88 days post-treatment. The value of an adjuvant used with Agri-Mek on apples for mite control is clearly indicated. Both oil and the organosilicone adjuvant provided an increase in the length of effective residues.

Many of the past tests in Washington with Agri-Mek on apples have been done without an adjuvant. This study shows clearly the importance of an adjuvant on the field performance of this material. However, oil used as an adjuvant cannot correct the sharp decline in mortality when applied late in the season (Beers et al. 1990, *J. Econ. Entomol.* 83: 961-964). Further studies will be done to test the organosilicone adjuvant for improvement of late-season performance.

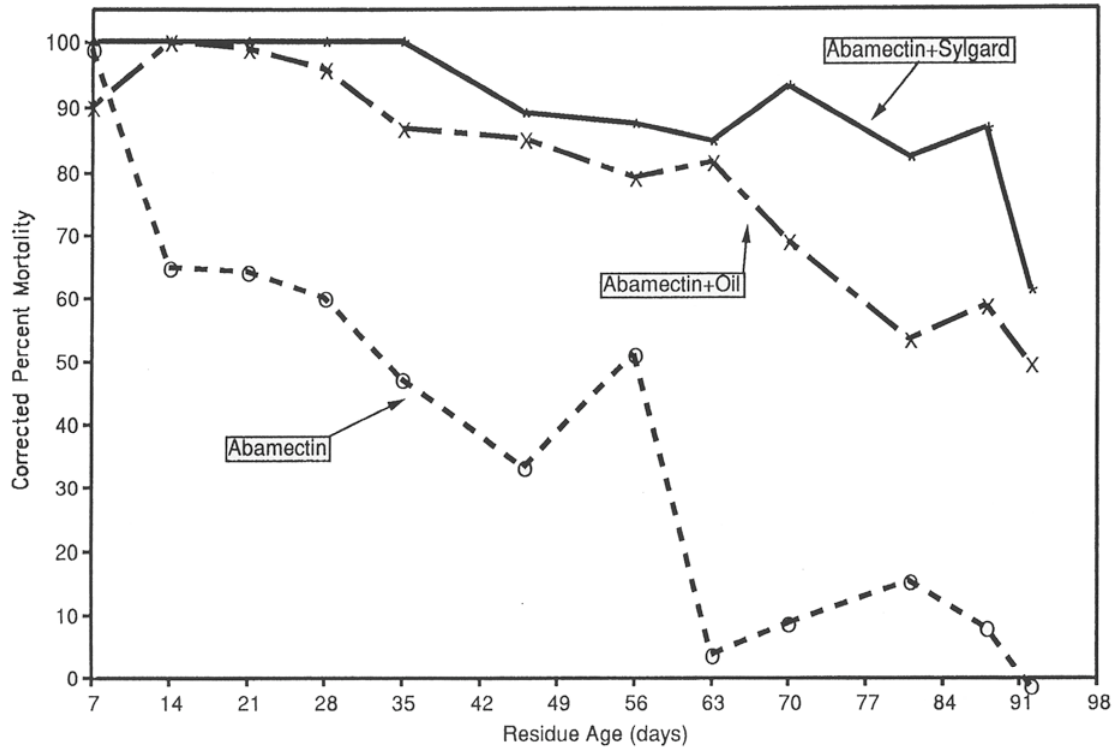


Figure 1. Corrected percent mortality of twospotted spider mite after treatment with Agri-Mek with or without adjuvants, 1992.