

# Evaluation Of Agri-Mek With Various Oils and Adjuvents For Control Of Leafminers In Spring Head Lettuce

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## Introduction

A previous trial using Agri-Mek to control leafminers on celery had demonstrated that Agri-Mek efficacy was affected by the oil applied with it, ranging from 63.6% to 82.1% control at the first sample taken after treatment (Rethwisch 1990). Percent control in samples taken four days later still were separated by more than 10%. The effects of different oils with Agri-Mek on head lettuce were unknown. This trial was begun to ascertain the effects of the oils with Agri-Mek, and to determine if Agri-Mek could be used more economically and be effective at half the current rate by adding more oil to it.

## Methods and Materials

A field trial to examine the effects of various oils applied with Agri-Mek on head lettuce was initiated on March 20th, 1990. The lettuce was very near harvest. Fifteen treatments were applied by a backpack sprayer calibrated to deliver 32.9 GPA at 30 psi. Treatments were replicated four times in a randomized complete block. Each plot consisted of 25 ft of double rowed lettuce on a 42 inch wide bed. Treatments consisted of Agri-Mek 0.15 EC at the 0.02 and 0.01 # ai/A rates, the 0.01 rate with eight oil, soap and other products (Clean Crop 415, Cote, Leaf Act 80A, Pyrellin, R-56, Safer's Soap, Sun Spray Ultra Fine, and Vegetable Oil Concentrate) added at a rate of 6 oz/A, and Agri-Mek at the 0.005 rate with 2 qts/A of two oils. Two other insecticides (Cygon 400 and Monitor 4) were also included for evaluation and comparison.

Samples were taken on March 24th. Samples consisted of 6 wrapper leaves, 2 from each of 3 heads of lettuce in each plot. Samples were placed in plastic bags, transported to the laboratory, and allow to sit for three days to allow leafminer immatures to exit the leaves. Leafminer numbers were counted, but as leafminer populations were very light green peach aphids and western flower thrips were also counted. The accuracy of the results for the aphids and thrips may have been somewhat diminished due to the plastic bags being slightly open to keep the lettuce leaves from degrading and heating. This may have allowed some winged aphids and thrips to escape. Overall results may also have been diminished because the cutting crew was harvesting the plots due to a miscommunication. The cut lettuce was left in the furrow but there was no way of knowing which heads came from which plots. All samples came from heads that remained intact in the plots and were not harvested by the crew, representing heads that were too small or not quite ready for market. A later second sample to assess the residual efficacy of the treatments was not able to be obtained.

## Results

Green peach aphid and western flower thrips numbers were varied and overall were fairly low. Due to the variation and sampling methods used, no statistical differences were noted for these two pests. Numbers of thrips and aphids were lower in the treated plots compared to the water check. Low numbers of green peach aphids and western flower thrips were noted in the Monitor 4 treatment which provided approximately 90% control. Most treatments provided at least 50% control of western flower thrips except for 0.005 rate of Agri-Mek when sunspray ultra fine oil was added. No statistical differences were noted between Agri-Mek at the 0.01 rate and 6 oz of oil compared to the 0.005 rate of Agri-Mek and 2 qts/A of oil.

All treatments for leafminers provided statistically significant control compared to the water only check. However, leafminer numbers were low in this experiment and strong conclusions about the differences in efficacy of the Agri-Mek with various oils additives can not yet be reached. The lowering of the Agri-Mek rates with the high oil rates provided results similar to other treatments in this trial.

#### Literature Cited

Rethwisch, M. D. 1990. Control of *Liriomyza trifolii* in celery. Pp. 89-94. In University of Arizona College of Agriculture 1990 Vegetable Report, Series P-82. N. Oebker and M. Bantlin, eds.

**MEAN NUMBER OF GREEN PEACH APHIDS, WESTERN FLOWER THRIPS, AND  
*Liriomyza* LEAFMINERS IN HEAD LETTUCE FOLLOWING TREATMENTS WITH  
AGRI-MEK, CYGON 400 AND MONITOR 4**

| <u>TREATMENT</u>                           | <u>RATE (# ai/A)</u> | <u>NUMBER OF INSECTS PER SIX LEAF SAMPLE<sup>1</sup></u> |               |                   |
|--|----------------------|--|---------------|-------------------|
|  |                      | <u>APHIDS</u>  | <u>THRIPS</u> | <u>LEAFMINERS</u> |
| Agri-Mek 0.15 EC                           | 0.02                 | 3.0 *  | 4.5 *         | 0.0 *             |
| Agri-Mek 0.15 EC                           | 0.01                 | 5.5 *  | 3.5 *         | 0.25*             |
| Agri-Mek 0.15 EC<br>+ Leaf Act 80A         | 0.01<br>6 oz         | 2.0 *  | 5.5 *         | 0.5 *             |
| Agri-Mek 0.15 EC<br>+ Cote                 | 0.01<br>6 oz         | 8.75*  | 1.5 *         | 0.25*             |
| Agri-Mek 0.15 EC<br>+ Veg. Oil Conc.       | 0.01<br>6 oz         | 4.0 *  | 2.25*         | 0.0 *             |
| Agri-Mek 0.15 EC<br>+ Veg. Oil Concent.    | 0.005<br>2 qts       | 2.75*  | 3.5 *         | 0.0 *             |
| Agri-Mek 0.15 EC<br>+ Clean Crop 415       | 0.01<br>6 oz         | 4.25*  | 2.25*         | 1.25*             |
| Agri-Mek 0.15 EC<br>+ Safer's Soap         | 0.01<br>6 oz         | 6.0 *  | 6.5 *         | 0.5 *             |
| Agri-Mek 0.15 EC<br>+ Sun Spray Ultra Fine | 0.01<br>6 oz         | 5.25*  | 4.5 *         | 0.25*             |
| Agri-Mek 0.15 EC<br>+ Sun Spray Ultra Fine | 0.005<br>2 qts       | 4.25*  | 11.75*        | 1.0 *             |
| Agri-Mek 0.15 EC<br>+ R-56                 | 0.01<br>6 oz         | 5.5 *  | 10.5 *        | 0.25*             |
| Agri-Mek 0.15 EC<br>+ Pyrellin             | 0.01<br>6 oz         | 8.75*  | 4.25*         | 0.25*             |
| Cygon 400                                  | 0.25                 | 4.25*  | 6.75*         | 1.75*             |
| Monitor 4                                  | 1.0                  | 1.5 *  | 2.75*         | 0.0 *             |
| Water Check                                | —                    | 13.5 *   | 21.0 *        | 6.75 <sup>b</sup> |

<sup>1</sup> Numbers in columns followed by the same letter are not statistically significant at the  $p \leq 0.05$  level (Student-

# LEAFMINERS, GREEN PEACH APHID & WESTERN FLOWER THIRPS CONTROL IN HEAD LETTUCE

MEAN NUMBER OF INSECTS/6 LEAF SAMPLE

