University of California
Agriculture and Natural Resources
Intermountain Research & Extension Center

RESEARCH REPORT
Number 206, 2024

Insecticide Treatments to Protect Spring-Seeded Onions from Maggots

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Introduction

Two studies evaluating insecticides for maggot suppression were conducted at IREC in 2023. One trial was part of a multi-state study evaluating seed treatments for maggots organized by Brian Nault at Cornell University. The other trial examined the efficacy of different diazinon treatments for suppressing seedcorn maggot. Seed corn maggot flies, *Delia platura*, were captured on yellow sticky traps placed along field edges at the time of planting and seed corn maggot larvae were collected from damaged seedling onions. ***Some pesticides listed in this report may not be labeled for use in onions. Please consult pesticide labels for use instructions.***

2023 Site Information

- **Soil type-** mucky silty clay loam-4.5% OM
- **Growing season-** onions planted on 4/28/2023; onions harvested on 9/28/2023
- **Irrigation –** solid-set sprinklers
- **Onions-** 36 inch beds with 4 seed-lines spaced 6 inches apart; 4-inch seed spacing; fresh market long day variety
- **Design-** RCB with 5 blocks (reps)

2023 Study Methods

Studies were conducted at the UC Intermountain Research and Extension Center. Plots were 6 ft by 18 ft. Seed treatments were applied by Alan Taylor at Cornell University. Diazinon treatments used Diazinon 500 AG at 4 qt/A. Diazinon pre-plant treatment was broadcast applied using a CO_2 pressurized backpack sprayer at 30 GPA at 30 psi two days before planting and then plots were immediately rototilled to incorporate the diazinon into the bed tops using a Johnson bed shaper. Diazinon in-furrow treatments were applied with even fan nozzles set to a 3-inch band at 40 GPA set on the planter to apply the solution in-furrow after seed placement and before furrow closure. Diazinon after planting was broadcast applied using a CO_2 pressurized back sprayer and then irrigated with 1 inch of water immediately after application to set the diazinon. Insecticide treatment efficacy

was determined by measuring onion plant density and vigor at the 1-2 leaf stage and 2-3 leaf stage during onion establishment. Onion plant density and bulb yield were also measured at harvest. Onion stand (plant density) was determined in each plot by counting the number of green onions in the entire plot area (6 ft by 18 ft). Onion yield was measured by harvesting all onions in each plot and obtaining a total bulb weight for each plot.

Results

Influence of seed treatments on onion stand - Insecticides had a significant effect on onion stand at all evaluation times and trends for insecticides were similar at all evaluation times. These results suggest that most of the stand loss from maggots occurred between planting and the 2-leaf stage. Insecticide treatments that included Lumiverd and Sepresto had the highest onion stand of labeled insecticide treatments (Figure 1). A new unregistered insecticide, plinazolin, provided similar onion stands compared to Lumiverd and Sepresto. Combining insecticides did not increase onions stands compared to using insecticides by themselves. Trigard had similar onion stands compared to the untreated control. As such, Trigard cannot be recommended for seedcorn maggot supression in Tulelake.

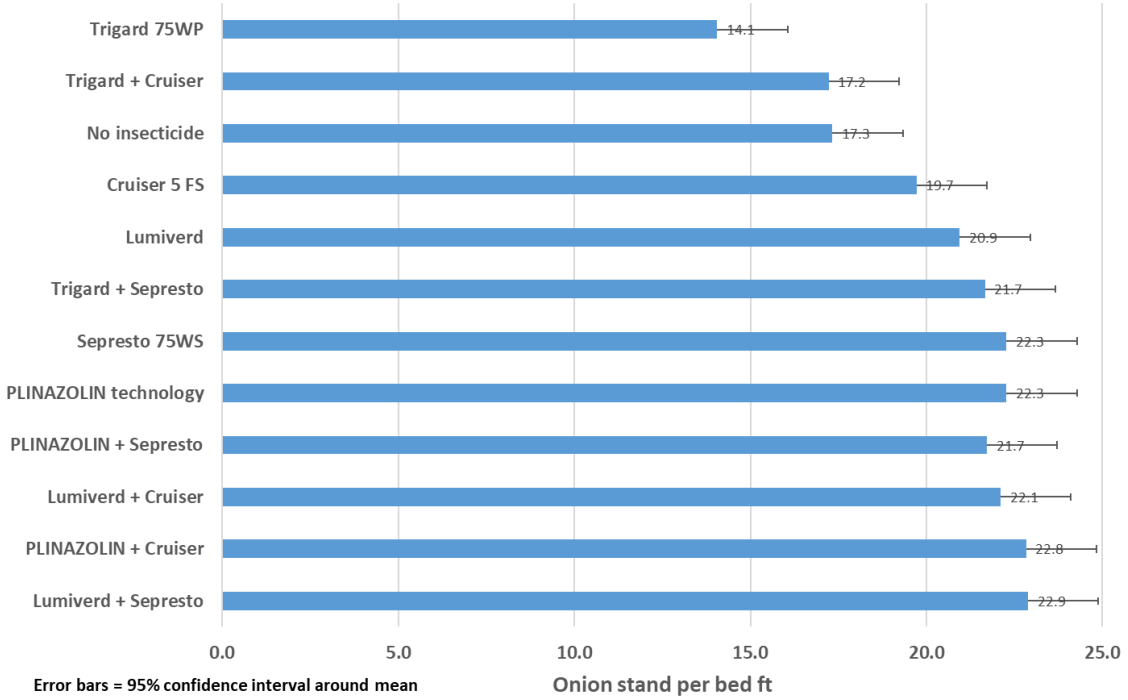
2023 maggot studies at IREC

Influence of diazinon treatments on onion stand- All three application methods of Diazinon at 4 qt/A had similar onion stands compared to the untreated control (figure 2) suggesting diazinon did not provide suppression of seedcorn maggot. Lumiverd and Sepresto seed treatment was included in the study as comparison to Diazinon. Both seed treatments increased onion stands by more than 300% compared to diazinon and untreated control.

Special Thanks: The research team would like to thank the California Garlic and Onion Research Advisory Board for financial support and Alan George Taylor at Cornell University for arranging seed treatment.

Figure 1. 2023 Maggot Insecticide Study- Influence of Seed Treatments on Onion Stand at Harvest

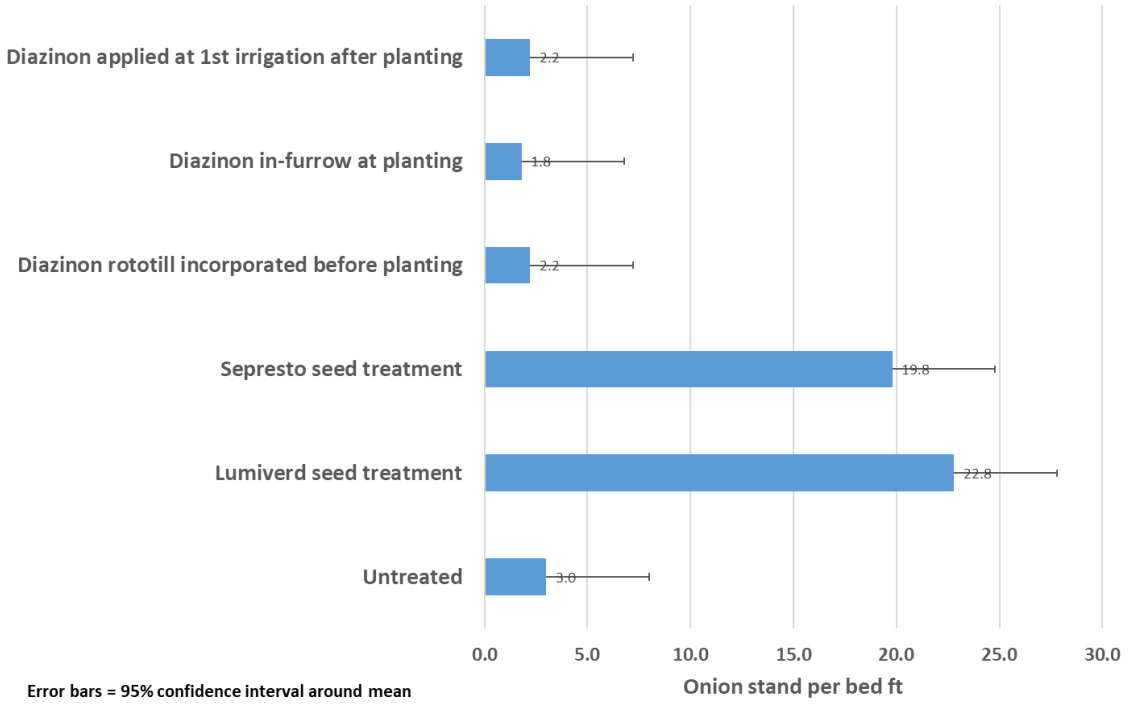
All treatments included F300 & Evergol Prime fungicides for protection from seedling diseases & smut



Error bars = 95% confidence interval around mean

Figure 2. 2023 Maggot Insecticide Study- Influence of Diazinon treatments on Onion Stand at Harvest

All treatments included F300 & Evergol Prime fungicides for protection from seedling diseases and smut



Error bars = 95% confidence interval around mean