THRIPS CONTROL IN DRY BULB ONIONS

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In the efficacy experiments detailed below, field plots of onion (var. 'Calibra' Bejo Seeds) were established at the WSU Research Farm in Pasco, WA, and were grown using drip irrigation and standard grower practices for agronomic and pest management inputs, excluding thrips treatments. On May 9, 2016, an onion plot 120 feet wide and 350 feet long was planted with two double rows of onions planted on each 44 inch wide bed. Double rows are 2 ½ inches apart with 3 inches in row spacing. Lorsban™ 15G (chlorpyriphos) was applied at planting and incorporated over the double row at the rate of 3.7 oz./1,000 row feet. Plots were established in a random complete block design with four replications. In each instance, plots were 7.5 feet wide and 25 feet long. Foliar applications were made with a CO2 pressurized three point tractor mounted research plot sprayer applying 30 gallons of water carrier per acre at 25 psi. Sprinkler chemigation applications were made with a trailer mounted research sprayer applying 0.1 inches of water per application with an in line injection of insecticide. Drip applications were made by injecting insecticide into individual drip lines via a check valve with an electric diaphragm pump. Efficacy was evaluated four or five days after applications by counting the number immature and adult thrips per plant, on 10 individual plants per plot. All data for each sample date were analyzed by ANOVA and treatments means were compared to thrips population means from non-treated control plots in pair-wise t-tests. At the end of the growing season, onion yield and size were evaluated for comparison among treatments.

An apparatus designed to mimic center pivot sprinkler chemigation has been used in previous studies to evaluate insecticide efficacy. In these previous experiments, this simulator showed excellent efficacy of Lannate (methomyl) and good efficacy with Radiant and Verimark compared to water applied untreated check plots for controlling thrips in onions. During 2016, Radiant, Lannate, Minecto Pro and Exirel were evaluated for control of thrips by overhead chemigation. Exirel is a less expensive formulation of cyantraniliprole, the same active ingredient in Verimark that was tested in previous seasons. Thrips pressure was relatively low, and we did not see a significant reduction in thrips populations with overhead chemigation of Minecto Pro, Exirel, or Agrimek during 2016 (Fig. 2). There was a numeric decrease in thrips populations with Minecto Pro and Exirel, but not with Agrimek. This will be re-evaluated in 2017. Foliar applications of Radiant were superior to other treatments in this trial (Fig. 1). Foliar applications of Minecto Pro and Agrimek were numerically, but not statistically, better than chemigation applications.

In a separate experimental block, Radiant and Lannate significantly reduced thrips numbers when applied by chemigation compared to the untreated check (Fig. 2). These results confirm previous experiments with these two insecticides.

AzaDirect was also evaluated via drip chemigation. It was not effective (Fig. 3). Foliar application evaluations were not part of this experiment, but data was included for reference in Figure 5 below. Warrior did not provide control of thrips. Radiant was the most effective insecticide by foliar application. Movento, Exirel, Minecto Pro, Agrimek, and Lannate all provided control better than the untreated check and Warrior, but was not as effective as Radiant.

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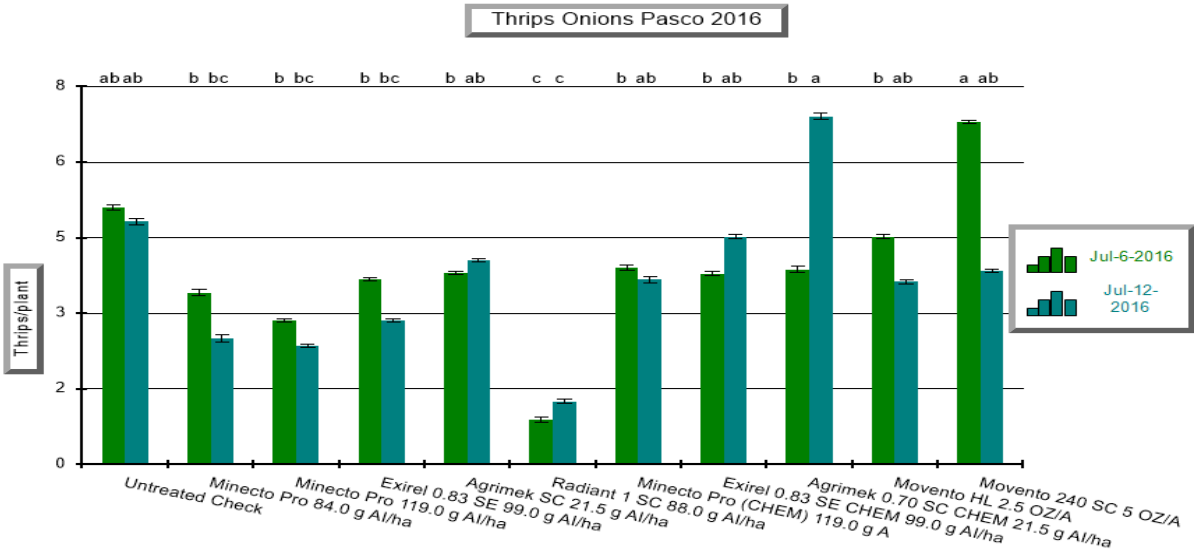

Figure 1. Thrips per plant versus sprinkler chemigation and foliar treatments for two sampling dates. Treatments with the same letters are not statistically different from one another (P=0.05 Student-Newman-Keuls test)

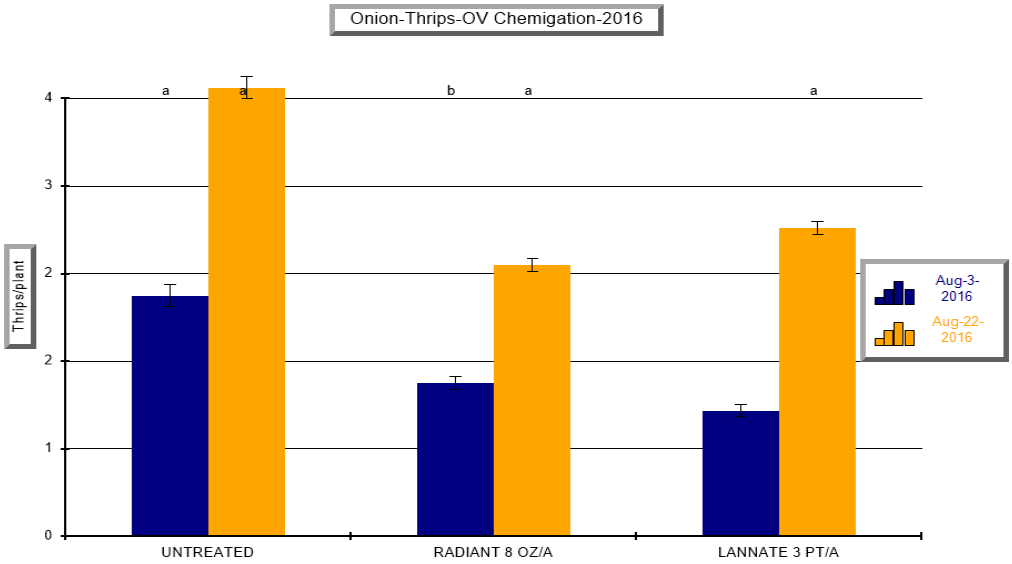

Figure 2. Thrips per plant versus sprinkler chemigation for two sampling dates. Treatments with the same letters are not statistically different from one another (P=0.05 Student-Newman-Keuls test)

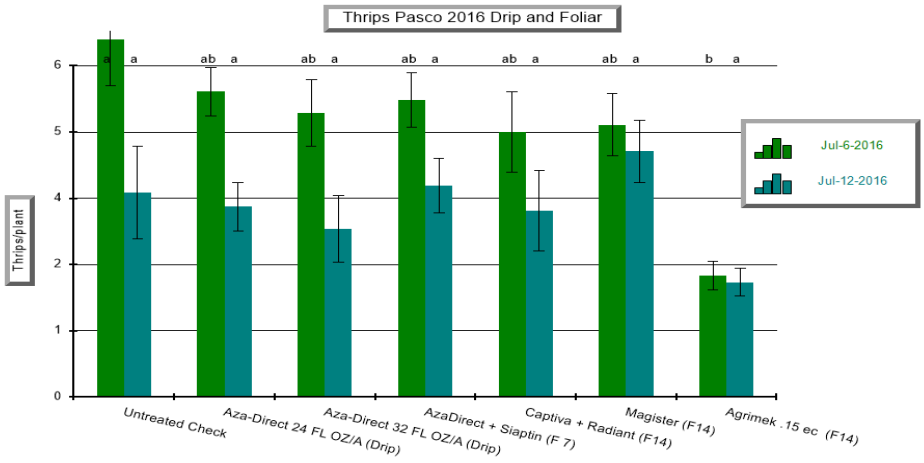

Figure 3. Thrips per plant versus drip chemigation and foliar application for two sampling dates. Treatments with the same letters are not statistically different from one another (P=0.05 Student-Newman-Keuls test)

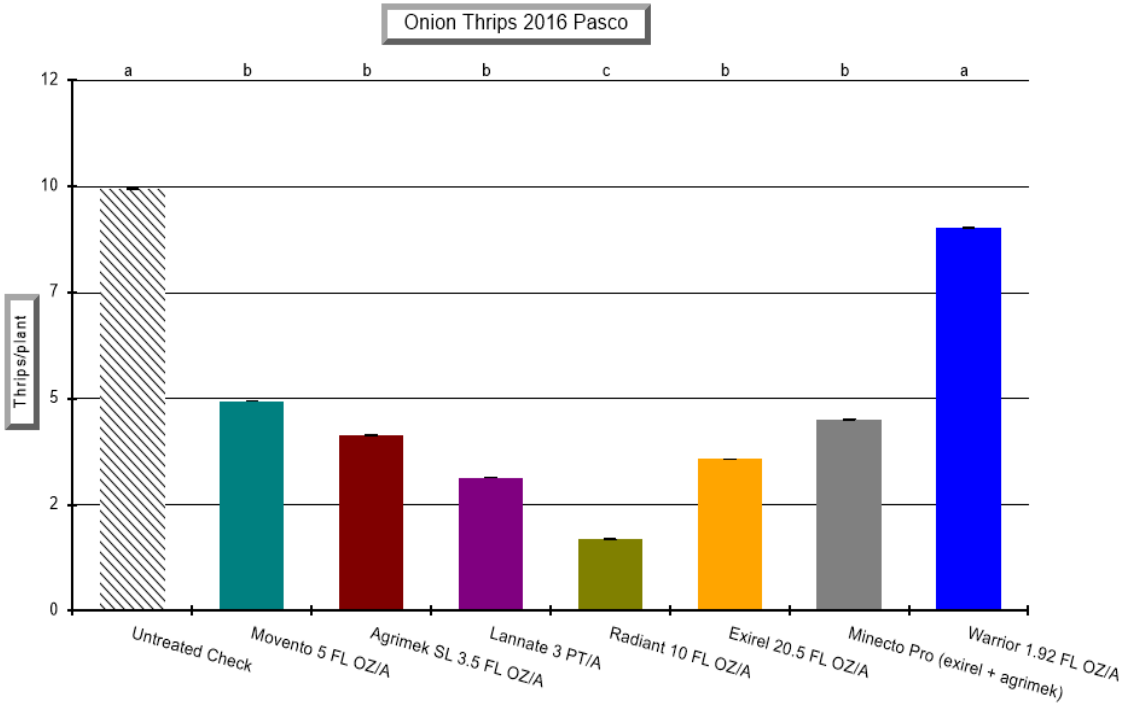

Figure 4. Thrips per plant for foliar application. Treatments with the same letters are not statistically different from one another (P=0.05 Student-Newman-Keuls test)