

Field evaluation of registered insecticides for managing aphids on celery

Aphid infestations present an annual challenge to Michigan's celery growers. Aphid infestations can be spotty, making scouting difficult and time intensive. Once present, aphid numbers can increase rapidly and lead to significant problems. They feed on the new growth, causing curled foliage that can stunt the plant. If aphids are present at harvest, it can lead to the rejection of a load for the fresh market.

Aphid control is difficult, especially since they situate themselves on the underside of the leaves and deep down in the heart of the plant where it's difficult to get good insecticide coverage. Nevertheless, current control practices rely heavily on insecticides, making it important to evaluate registered products for their efficacy in the field.

METHODS

Seven treatments including an untreated control were tested on a commercial farm in southwest Michigan for aphid management; all of the products tested are currently registered for use on celery. The study site was selected due to the presence of high aphid numbers. Celery plants at the time of the trial were about 5-6 weeks away from being harvested. Treatments were replicated four times in a randomized complete block design. Plots were 20 feet long and three rows wide.

Treatments were applied on 13 August 2013 using a single-nozzle hand-held boom (30 gallons/acre and 30 psi). Movento 240 SC (5 fl oz/A) was tested with five different brands of penetrating surfactants: Dyne-Amic, Silwet L77, Syl-Tac, HyperActive, and SuperSpread90. Two other treatments were an untreated control and a Movento 240 SC (5 fl oz/A) without surfactant.

For both trials, we made visual aphid evaluations on all the plants in the middle row of the plot. We counted the total number of plants as well as noted the rating of aphid damage on each plant. Plants were rated based on the number of aphids present; 0 = no aphids, 1 = aphids were present once, but they are all dead, 2 = more aphids, and 3 = fully developed colonies. Plants from each plot were evaluated 3, 8, and 13, days post-application. Plant ratings were transformed $\sqrt{x+0.1}$ prior to statistical analysis. Analysis of variance was used for data analysis and ad-hoc Tukey means separation was used to compare treatment means ($P < 0.05$).

RESULTS

Movento with any of the penetrating surfactants performed significantly better than the untreated control or Movento without surfactant (Fig. 2). Movento without a penetrating surfactant performed the same as the untreated control.

Among the surfactant treatments, Movento with Dyne-Amic and Syl-Tac significantly lowered aphid numbers compared to Movento+HyperActive, but these two treatments were not significantly different from the other surfactants (Fig. 2).

In this trial, we learnt that it's essential to apply Movento with a penetrating surfactant, and certain types of penetrating surfactant can improve the activity of Movento.

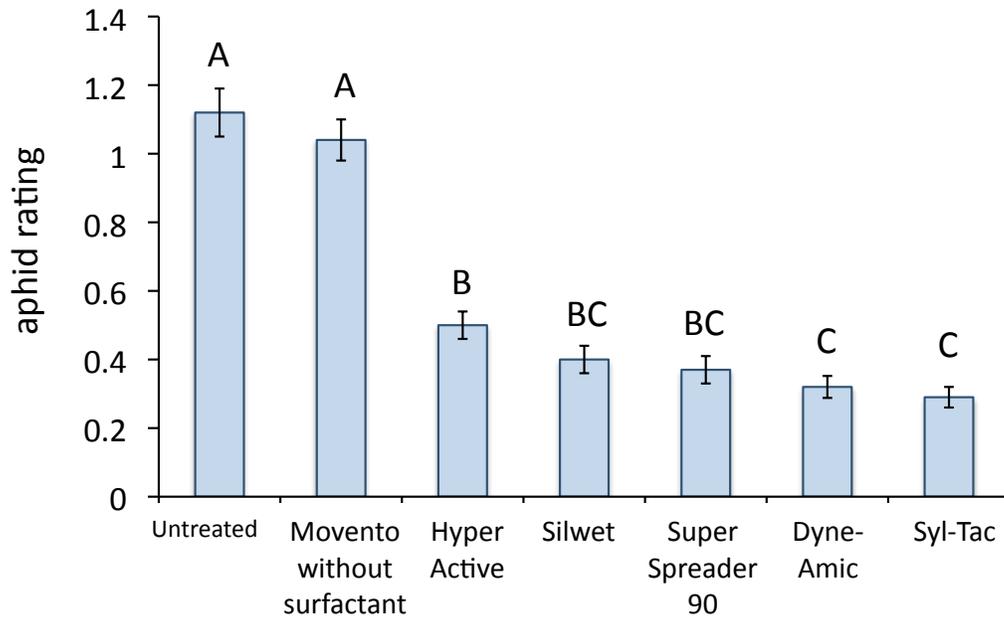


Figure 2. Insecticide trial in celery with Movento 240 SC and five penetrating surfactants. All the surfactant were applied with 5 fl oz/A Movento. Aphids were rated on the plants based on the following scale: 0 = no aphids; 1 = plant had aphids, but they all died; 2 = one/few live aphids; and 3= fully developed healthy aphid colonies. One foliar application was made on 8/13/13, and all plants in the middle row of the plot were checked for aphids 3, 8, and 13 days later.