

# **Evaluation of Potential New Insecticides and Fungicides for Honey Bee Repellency in Seed Carrots**

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## **Abstract**

To insure honey bee safety during crop pollination, potential new products were screened for bee repellency. This research was conducted in a carrot steckling field at the Central Oregon Agricultural Research Center (COARC). Bee visits were counted beginning one day after bees were brought into the field and continued for a total of four counts. There was no statistical difference between treated and untreated plots, indicating no detrimental effect on bee activity from these products.

## **Introduction**

Honey bee activity and pollination of carrots grown for seed is critical to both yield and quality. It is imperative that potential new products that would be applied shortly before or during bee activity in carrot seed fields be screened for bee repellency. Products of current interest include penthiopyrad (Fontelis), abamectin (Agri-Mek) and sulfoxaflor (Transform).

## **Methods and Materials**

Carrot stecklings were used to establish a carrot field at COARC for the honey bee repellency research. Stecklings were planted on April 27, 2016 using hand labor on a commercial sled designed for that purpose. The plot area used for this research was reduced from the original size due to an inadequate carrot stand in the western portion of the field that created more stand variability than desired. To fit the project into a smaller area plots were reduced from 300 ft rows to 150 ft and the replications reduced from four to three.

Treatments were applied on July 5, 2016 using a CO<sub>2</sub> powered backpack sprayer, hand-held boom, 8002 Teejet nozzles 18 inches apart, 40 psi and a carrier rate of 20 gal/acre. Cool weather delayed bloom following the July 5 application. Therefore treatments were re-applied July 11 to ensure there was adequate product residue present when bees were brought in on July 18. Plots were evaluated for honey bee activity by counting how many bees were making flower visits in the two nearest rows while walking down one side of the 4 row plots and back up the other side. Counts began one day after bees arrived on July 19 and continued on July 21, July 22 and July 25, 2016. Counts were made early afternoon each day for consistency. Statistical analysis of these data was provided by Jeremiah Dung using Tukey's comparisons.

## **Results and Discussion**

There were no statistical differences between treated and untreated plots (Table 1). This lack of positive data is a good thing in this situation, and indicates that these products should be safe and not cause bee repellency issues in carrots grown for seed in central Oregon.

Table 1. Evaluation of potential product bee repellency following application on July 5 and 11 by counting honey bee visitation on carrots during flowering at COARC, Madras, OR.

Treatment	Rate/A	Honey Bee Visits/Plot			
		July 19	July 21	July 22	July 25
Fontelis	30 fl oz	477	707	763	904
Agri-Mek	3.5 fl oz	517	748	789	974
Transform	2.75 oz	502	889	830	959
Untreated	---	493	539	707	788

\*NIS at 1 qt/100 gal

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