

# **Carrot Tolerance to Pendimethalin and Mesotrione Broadcast at Layby**

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## **Abstract**

The objective of this trial was to determine carrot tolerance to pendimethalin and mesotrione applied as an over-the-top broadcast treatment at layby. A single trial was conducted in a commercial hybrid carrot field near Culver, Oregon. Mesotrione caused severe carrot injury (Table 1). Pendimethalin injury was not visible at the initial and final evaluations, 8 and 29 days after application, respectively. An unusual growth form was observed 16 days after application in the pendimethalin plots, but it is unclear if the growth form was herbicide injury.

## **Introduction**

Pendimethalin (Prowl<sup>®</sup>, BASF) is currently registered for use in carrot seed as a directed spray at layby. This application technique requires special spray equipment that can make the application complicated. Pendimethalin would be more useful as an over-the-top broadcast treatment at layby, however it is unknown if this type of application is safe. Also, mesotrione (Callisto<sup>®</sup>, Syngenta) is a herbicide that has been reported to have some safety on carrots. The objective of this trial was to determine carrot tolerance to pendimethalin and mesotrione applied as an over-the-top broadcast treatment at layby.

## **Methods and Materials**

A single trial was conducted in a commercial hybrid carrot field in the female rows near Culver, Oregon. The carrots were 'Carota' type and were steckling planted. Herbicide treatments were applied on June 15, 2006 to carrots that were 12 to 24 inches in height and beginning to flower. Plots were 10 ft by 25 ft with four replications arranged as randomized complete blocks. Treatments were applied with a CO<sub>2</sub> backpack sprayer delivering 20 gal/acre operating at 20 psi and 3 mph. Crop injury was determined by making visual evaluations on a percentage scale.

## **Results and Discussion**

Mesotrione cause severe carrot injury (Table 1). Pendimethalin injury was not visible at the initial and final evaluations, 8 and 29 days after application, respectively.

Some carrot injury was observed at the second evaluation, but the symptoms were not typical for herbicide phytotoxicity. The peduncles (that is the flower stem) of this type of carrot ('Carota') had a tendency to fuse together. This phenomenon was evident in the checks, but it appeared to be more evident in the pendimethalin-treated plots and was noted as injury. The visual evaluations did not reveal any relationship between pendimethalin rate and fused peduncles. At the final evaluation, the fused peduncles in pendimethalin-treated plots were the same as in the checks. It is unclear whether the

fused peduncles should truly be considered crop injury or an unusual characteristic that pendimethalin accentuated for a short period of time.

Table 1. Carrot injury following herbicide treatments applied on June 15 near Culver, Oregon, 2006.

Treatments	Rate (lb ai/acre)	Carrot injury		
		June 23	July 1	July 14
		----- % -----		
Pendimethalin	0.95	0	8	0
Pendimethalin	1.9	0	5	0
Pendimethalin	3.8	0	5	0
Mesotrione	0.25	41	70	48