

Evaluation of Herbicides on Coriander Grown for Seed

Richard Affeldt

Introduction

Prometryn (Caparol[®]) is currently the only herbicide registered for use on coriander. Prometryn is effective on many broadleaf weeds, but it is not effective on grasses and in many situations it alone is not adequate for weed control in commercial seed production. Linuron (Lorox[®]) and quizalofop (Assure[®] II) are both likely candidates for registration on coriander but the necessary tolerance data for a coriander seed crop is not established.

Methods and Materials

Two field trials were conducted in commercial fields of coriander grown for seed near Madras, Oregon; one trial was in the Mud Springs area and the other trial was in the Little Plains area. Herbicide treatments, application timings, and growth stages are listed in Tables 1 through 3. Plots were 10 ft by 20 ft with 4 replications arranged as randomized complete blocks. Treatments were applied with a CO₂-backpack sprayer delivering 20 gal/acre operating at 40 psi and 3 mph. Quizalofop treatments at Mud Springs were sprayed with prometryn on June 28, 2010 because of severe broadleaf weed competition.

Coriander injury and weed control were determined by making visual evaluations on a percentage scale. Coriander seed germination was determined by AMM Seed Testing, Inc., Santa Barbara, California. Seed germination data are not replicated. Seed was hand-harvested from each plot for a given treatment and combined into one sample for testing.

Results and Discussion

Seed germination at Mud Springs was low in the untreated check, and 0.5 lb of linuron preemergence (PRE) treatment, probably because of extremely high weed pressure. Because the quizalofop treatments were sprayed with prometryn on June 28, 2010, germination was not impacted by weed competition as it was in the above-mentioned treatments.

Preemergence applications of linuron and early postemergence (EPOST) applications of quizalofop did not visually injure the coriander. Postemergence applications of linuron differed little from prometryn in crop injury and germination. The linuron application timings used here may not be the most appropriate for use on a seed crop. These treatments are similar to a regional protocol that was developed for a Federal Section 3 registration of linuron on coriander. However, a PRE application of linuron (once it is registered) followed by a POST application of prometryn and/or quizalofop (once it is registered) would likely be an effective overall program for weed management in coriander grown for seed.

Table 1. Treatment application dates and growth stages for herbicides on coriander near Madras, OR, 2010.

Application timing	Application code	Mud Springs		Little Plains	
		Application date	Coriander stage	Application date	Coriander stage
Preemergence	PRE	Apr-23-10	Preemergence	May-07-10	Preemergence
Early postemergence	EPOST	Jun-01-10	2 to 5 leaf	Jun-17-10	2 to 5 leaf
Late postemergence	LPOST	Jun-21-10	6 to 8 inch	Jul-09-10	10 to 14 inch, early bolt

Table 2. Coriander injury and seed germination from herbicides near Madras, OR, 2010.

Treatment ¹	Rate (lb/acre)	Timing ²	Mud Springs			Little Plains		
			Injury		Germination	Injury		Germination
			Jun-28-10	Jul-22-10		Jun-16-10	Aug-13-10	
			----- % -----					
Linuron	0.5	PRE	0	0	47	1	0	80
Linuron	1.0	PRE	0	0	63	5	0	75
Quizalofop ³	0.0825	EPOST	0	0	68	0	0	75
Quizalofop ³	0.165	EPOST	0	0	80	0	0	76
Linuron + linuron ⁴	0.5 + 0.5	EPOST + LPOST	19	0	76	13	0	82
Linuron + linuron ⁴	1.0 + 1.0	EPOST + LPOST	26	3	77	21	0	75
Prometryn ⁴	1.0	EPOST	14	0	72	11	0	74
Check	---	---	0	0	43	0	0	73

¹ Linuron = Lorox (50% w/w), quizalofop = Assure II (0.88 lb ai/gal), prometryn = Caparol (4 lb ai/gal).

² See Table 1 for application dates and growth stages.

³ Applied with methylated seed oil at 1% v/v.

⁴ Applied with non-ionic surfactant at 0.25% v/v.

Table 3. Weed control from herbicides in coriander near Madras, OR, 2010.

Treatment ¹	Rate (lb/acre)	Timing ²	Mud Springs ³						Little Plains ⁴
			POLAV ⁵	CHEAL ⁶	SOLSA ⁷	SSYAL ⁸	CAPBP ⁹	AGRRE ¹⁰	SOLSA ⁷
			----- % control -----						
Linuron	0.5	PRE	30	35	90	100	100	0	96
Linuron	1.0	PRE	38	70	88	100	100	13	99
Quizalofop ¹¹	0.0825	EPOST	0	0	0	0	0	99	0
Quizalofop ¹¹	0.165	EPOST	0	0	0	0	0	98	0
Linuron + linuron ¹²	0.5 + 0.5	EPOST + LPOST	60	100	100	100	100	75	100
Linuron + linuron ¹²	1.0 + 1.0	EPOST + LPOST	85	100	100	100	100	78	100
Prometryn ¹²	1.0	EPOST	75	100	100	100	85	38	100

¹ Linuron = Lorox (50% w/w), quizalofop = Assure II (0.88 lb ai/gal), prometryn = Caparol (4 lb ai/gal).

² See Table 1 for application dates and growth stages.

³ Visual rating on June 28, 2010.

⁴ Visual rating on July 16, 2010.

⁵ POLAV = Prostrate knotweed (*Polygonum aviculare*).

⁶ CHEAL = Common lambsquarters (*Chenopodium album*).

⁷ SOLSA = Hairy nightshade (*Solanum sarrachoides*).

⁸ SSYAL = Tumblemustard (*Sisymbrium altissimum*).

⁹ CAPBP = Shepherd's purse (*Capsella bursa-pastoris*).

¹⁰ AGRRE = Quackgrass (*Elytrigia repens*).

¹¹ Applied with methylated seed oil at 1% v/v.

¹² Applied with non-ionic surfactant at 0.25% v/v.