HERBICIDE EFFICACY TRIALS ON SEED ONIONS, 1993

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Abstract

Herbicide trials were conducted on seed onions at three locations in central Oregon to evaluated Prefar alone, Prefar in combination with Dacthal, and a late application of Buctril at 8 oz/ac. Prefar was applied post-emergence at 4, 6 and 8 qt/ac to a fall, seed-planted field of onions on March 29, and pre-emergence to spring planted bulbs on April 23 . Prefar, in combination with Dacthal at 5 lb/ac, was applied pre-emergence to a seed-planted field on July 8. This was followed by an application of Buctril at 8 oz/ac on August 13. No phytotoxicity was observed at any of the locations. The weed spectrum at only one location included redroot pigweed and lambsquarter, weeds listed on the Prefar and Dacthal labels. Significant control of these two species was provided by Prefar at all three rates. Dacthal provided good control of lambsquarter, moderate control of redroot pigweed, and appeared to have some activity against puncturevine. Prefar and Dacthal were not effective against the remaining weed spectrum. Buctril at 8 oz/ac produced slight foliar burn, but did not control 4- to 6-inch high groundsel.

Introduction

Acreage of onions grown for seed continues to increase in central Oregon. Pesticide registration for vegetable seed crops, including onions, is very limited and registered materials can provide inadequate control. In response to the industry's continued search for efficacious materials with potential for registration, several herbicide trials were conducted on seed onions during the 1993 season. The objectives were to evaluate efficacy and potential phytotoxicity of Prefar alone, and in combination with Dacthal and Buctril, against the weed complex found in central Oregon seed onion fields.

Methods and Materials

Prefar at 4, 6 and 10 qt/ac was applied post-emergence on March 29 to a fall, seed-planted field farmed by Jim Carlson. The same treatments were applied pre-emergence on April 23 to a field of Loy Peterson's planted from bulbs, and applied pre-emergence on July 8 to an H & T field planted from seed. At the H & T location, Dacthal at 5 lb/ac was applied immediately following Prefar applications to one half of each plot, including untreated plots. This was followed by 8 oz/ac of Buctril applied August 13 to half the area treated with Dacthal. Depending on location, materials were applied to 9 x 20 ft or 9 x 16 ft plots with a CO_2 pressurized boom sprayer at 40 psi at a carrier rate of 20 gal/ac. Plots were replicated three

times in a randomized complete block design. Following application at the Carlson location there was ample precipitation to incorporate the Prefar. Plots at the Peterson and H & T locations were sprinkler irrigated following initial applications.

Informal visual evaluations for phytotoxicity were made several times at each of the three locations following herbicide applications. Formal evaluations of efficacy were made on May 7 at Carlson's, on July 14 at Peterson's and on July 28 at H & T's field. The weed complex at the Carlson location was primarily groundsel, vetch and mustard. There were scattered 6- to 8-inch high groundsel, with large a number of plants less than 3 inches high. The primary weeds at the Peterson location were groundsel, hairy nightshade and common mallow. Evaluation of the nightshade was divided into plants that were flowering and smaller vegetative plants. The weed complex at the H & T location included groundsel, redroot pigweed, hairy nightshade, lambsquarter, puncture vine, carrot volunteers and watergrass.

Of the weed complex observed at these three central Oregon locations, only lambsquarter and redroot pigweed are listed on the Prefar label, and those only for the southwest corner of the United States. The Dacthal label lists lambsquarter as susceptible, and redroot pigweed as moderately susceptible.

Results and Discussion

No phytotoxicity from any of the materials was observed at the three locations. As shown in Table 1, there were no statistically significant differences between the three rates of Prefar and the untreated plots at the Carlson location. From visual observation, variability in weed density appeared to be correlated with changes in stand density through the plots rather than treatments applied. Results of the Peterson location, shown in Table 2, indicate a statistical difference on mallow between the untreated plots and plots treated with Prefar at 10 qt/ac. There were also differences between Prefar at 6 qt/ac and the untreated plots for all weeds in the uncultivated area in the row. Whether control of all weeds within the row is indeed significant may be questionable, since Prefar at 10 qt/ac was not significantly different from the untreated plots. None of the weeds evaluated at either location are listed on the Prefar label.

There were statistically significant differences between all rates of Prefar and untreated plots for redroot pigweed and lambsquarter at the H & T location. Dacthal alone applied to half the untreated plots also appears to provide good control of lambsquarter and modertcontrol of redroot pigweed. In addition, Dacthal appears to be active against puncture vine. Results against hairy nightshade are inconclusive due to the small number of plants present. Neither Prefar nor Dacthal provided observable control against groundsel, watergrass or carrot volunteers. Although total pigweed and lambsquarter numbers were low, activity against these species is consistent with label information for both products.

Buctril applied at 8 oz/ac later in the season resulted in some foliar burn, but did not provide control of groundsel at the 4- to 6-inch stage.

Table 1. Efficacy of Prefar applied post-emergence to seed onions at the Carlson location, Culver, OR on March 29, 1993.

Treatments	Groundsel Small	Groundsel Large	Vetch	Mustard	In Row
	rating scale from 1 to 3				
Prefar 4 qts	2.0	1.0	0.7	0.3	1.6
Prefar 6 qts	2.0	0.3	0.3	0	1.6
Prefar 10 qts	2.0	0.7	0.3	0.7	1.6
Untreated	2.0	1.0	0.3	0	1.6

Key: 1 = few, 3 = many

Table 2. Efficacy of Prefar applied pre-emergence to seed onion bulbs at the Peterson location, Madras, OR on April 23, 1993.

Treatments	Nightshade Groundsel	Vegetative	Flowering	Mallow	In Row
	percent control				
Prefar 4 qts	33 a	50	17	43 ab	13 ab
Prefar 6 qts	60 a	30	33	27 ab	23 a
Prefar 10 qts	33 a	27	20	47 a	13 ab
Untreated	0 b	0	0	0 b	0 b

Percent control were statistically different with Duncan's Multiple Range test at P 0.01

Table 3. Efficacy of July 8, 1993 pre-emergence applications of Prefar, with Dacthal treated sub-plots, in seed onions at the H & T location, Culver OR.

Treatments	Redroot Pigweed	Lambs quarter	Carrot	Puncture Vine	Hairy Nightshade	Watergrass
	number of plants per plot					
Prefar 4 qts	0 b	0 b	2.3	0.3	0	0.7
+ Dacthal 5 #	0.7	0	4.7	0	0	0.3
Prefar 6 qts	0 b	0 b	2.0	1.0	0	0
+ Dacthal 5#	0	0	4.0	0	0	0.3
Prefar 10 qts	0 b	0 b	5.3	0.3	0.3	0.7
+ Dacthal 5[4]	0	0	5.7	0	0	0.3
Untreated	4.7 a	3.0 a	2.3	0.7	0.3	0.3
+ Dacthal 5#	1.0	0	1.7	0	0.3	0.7

Percent control were statistically different with Duncan's Multiple Range test at P_. 0.01