



Onion Weed Control Trial 2007

University of California Cooperative Extension

420 South Wilson Way

Stockton, California 95205-6243

Nutsedge control in onions with Outlook® (dimethenamid), 2007

Yellow nutsedge (*Cyperus esculentus*) is a weed problem that is on the increase in San Joaquin County, and until recently there were no herbicides registered for use in onions that adequately control it. However, the herbicide Outlook® (dimethenamid) was registered for use in California onions this year. This study was conducted to evaluate the efficacy and crop safety of this herbicide under local conditions.

The trial was located between Farmington Rd. and Mariposa Rd., just east of Stockton, CA (N 37° 56" W 121° 11'). The trial was within a commercial field and managed by the grower using practices standard for this area. In addition to the experimental treatments, the trial area was treated with Round-up (glyphosate) at planting and multiple sprays of Goal (oxyfluorfen) and Buctril (bromoxynil) when the onions were past the 2-leaf stage. The onion variety 'Expression' (Bejo Seeds) was direct-seeded on December 20, 2006. The field was sprinkler-irrigated when rainfall was not sufficient for crop needs. Bed width was 40", with four seed lines per bed. Individual plots were one bed by 40 feet long and each treatment was replicated four times in a randomized complete block design. Unsprayed buffer rows were located between sprayed rows. Experimental applications were made with a CO₂ backpack sprayer at 32 psi, using a boom equipped with two flat fan nozzles (TeeJet 8003VS). Spray volumes were equivalent to 30 gallons of water per acre. Applications were incorporated by sprinkler irrigation on the day following the herbicide application. Conditions were moderate at the time of application, with an air temperature around 57° F and relative humidity of 75%. Soil type at the trial site was Jack Tone clay.

This trial compared a full-rate application (21 oz product per acre) with a reduced rate application (14 oz product per acre) or a nontreated control. The application was made on April 25th (four months after seeding). On that date, most of the onions had 6 to 7 leaves and were 20+ inches in height. The nutsedge was well-emerged and of variable maturity, with plants having 2 to 10 leaves present, measuring from ½ to 6 inches tall. The density of nutsedge was also variable across the trial, ranging from two to fifty nutsedge per square foot. Plots were rated for weed control in mid-June. At this point, the non-treated plots and border rows had filled in completely with nutsedge (Figure 1). Nutsedge control in the dimethenamid-treated plots averaged 85 and 91%, in the reduced rate and full rate treatments, respectively.

Growth reduction in the onions was visually estimated on May 25th, based on the height of the majority of the onions in the plot relative to nontreated onions. Growth reduction was estimated to be none to very slight in the dimethenamid-treated plots. The plots were hand harvested on June 22nd at the same timing as the commercial harvest of the field. Within each plot, a 20 foot section was harvested by hand, graded by USDA size standards, and weighed. Yields were not different between treatments (table 1) (analysis of variance for yield, $P = 0.33$), nor was the onion size distribution significantly different (Pearson chi-square, d.f. = 4, $\chi^2 = 4.623$, $P = 0.33$).

In conclusion, Outlook (dimethenamid) was effective in controlling nutsedge in onion, even exhibiting significant activity on emerged nutsedge. Notwithstanding this demonstration of some post-emergence activity on nutsedge, it is advised that Outlook be used prior to nutsedge emergence for best results. Outlook exhibited very good crop safety when applied under these conditions to 6 to 7 leaf onions. However, Outlook should not be applied prior to the two true leaf stage, as per label directions, or crop injury may result.

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Table 1. Effect of dimethenamid (Outlook®) on nutsedge control and onion yield and size. Values are means of four replications.

Treatments	Active ingredient per acre	Yellow nutsedge control	Onion yield*	Onion size*			
		%	Tons/Acre	small %	medium %	large %	colossal %
1. Non-treated	-----	0	22.19	6.6	68.2	25.1	0
2. Full rate (21 oz)	0.98 lb	91	22.59	8.1	61.2	30.2	0.6
3. 2/3 rate (14 oz)	0.66 lb	85	20.43	7.8	71.4	20.8	0

* Differences in yield and size distribution were not statistically significant (at 5% significance level)



Figure 1. Nutsedge control trial, located near Stockton, CA. In the background is an untreated plot, while in the foreground is an Outlook-treated plot. Photo taken on June 22nd, after mechanical topping just prior to harvest.

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