

YELLOW NUTSEDGE CONTROL IN MINT

Corey V. Ransom and Joey Ishida
Malheur Experiment Station
Oregon State University
Ontario, OR, 1998

Introduction

Yellow nutsedge is a perennial weed that is difficult to control. It continues to spread in the Treasure Valley and affects many crops including mint. Several herbicides provide yellow nutsedge control, but these herbicides have not been evaluated for yellow nutsedge control in mint under local conditions.

Methods

Two trials were established on cooperators' fields to evaluate herbicides for yellow nutsedge control in mint. Except for weed control treatments, all other practices were conducted by the cooperators. Trials were arranged in a randomized complete block designs with treatments replicated four times. Herbicide applications were made with a CO₂-pressurized backpack sprayer calibrated to deliver 20 gpa of spray at 30 psi pressure. Both locations were planted to 'Scotch' spearmint variety. Yield samples from each location were placed in burlap bags and allowed to dry before distillation. Data were analyzed using ANOVA, and means were separated by a protected LSD at the 5 percent confidence level.

Location 1

At location 1, the trial was conducted on an established mint field. Herbicide treatments were applied while the mint was still dormant February 25. Plots were 9-ft wide and 30-ft long. Since the yellow nutsedge did not begin to appear until just before harvest, postemergence herbicide treatments were not applied at this site. Mint injury, height, and shoot number were evaluated at this location, and mint yield was taken July 20. Yields were obtained by harvesting a 2 ft strip from the center of each plot with a flail harvester. Yellow nutsedge control was not evaluated at this location because of the sparse population.

Location 2

The second location had been harvested for root stock and replanted and was similar to a new planting in its emergence and growth. At this location, three preemergence herbicides and two postemergence herbicides were applied. Preemergence applications were made March 8, and postemergence treatments were applied on May 30 when mint was 5-in tall and yellow nutsedge plants averaged 2.5-in tall. Plots were 10-ft wide and 30-ft long. Mint was harvested July 23 by cutting a 3.3-ft swath from the center of each plot with a sickle bar mower. At this location, mint injury and shoot height was evaluated. Yellow nutsedge control was evaluated throughout the season,

and yellow nutsedge density was determined by counting the number of shoots in a 1-ft² quadrat.

Results and Discussion

Location 1

At this location there was significant visual injury for plots treated with Dual II, Frontier, and Authority (Table 1). Dual II and Authority also reduced mint height compared to the untreated check. Large differences in the number of mint shoots were not significantly different because of high levels of variability. As the season progressed, symptoms became less apparent, and differences among treatments were not discernable. Fresh hay yields ranged from 12,760 to 14,271 lb/acre and were not different between treatments. Mint-oil yields were also not different between treatments and ranged from 25 to 28 lb/acre. The mint yields from the research plots did not correlate with production yields in the same field, which were greater than 100 lb/acre.

Location 2

At this location, Dual II, Frontier, and Authority all caused injury to mint with Frontier applications resulting in greater injury than Dual II or Authority on May 30 and June 11 (Table 2). Dual II and Frontier also reduce mint shoot numbers on May 30. Mint injury from applications of Basagran or Tough was not observed. Frontier had among the lowest fresh hay yields and oil yields probably because of the injury to the mint. Tough had among the highest fresh hay yields and oil yields, even though it provided among the lowest yellow nutsedge control. Yellow nutsedge did not compete well with the mint at this location and probably had little effect on yields. Other weeds present at this location, redroot pigweed, common lambsquarters, and barnyardgrass, probably caused the lower yield in the untreated plot. Mint-oil yields at this location ranged from 27 to 49 lb/acre and again were below the commercial average on this field which was greater than 100 lb/acre.

Dual II, Frontier, and Authority all reduced yellow nutsedge density and provided greater than 60 percent control on May 30 (Table 3). Basagran also provided among the highest level of yellow nutsedge control, while Tough had among the lowest. Yellow nutsedge did not appear to be very competitive with mint and had less effect than herbicide injury on mint yields. Basagran appears to provide effective yellow nutsedge control without causing injury to mint and is currently registered for use in mint. The soil-active herbicides evaluated provided effective control of yellow nutsedge but caused considerable injury early in the growing season.

Table 1. Mint injury, height, shoot number, and yield in response to preemergence herbicides, Location 1, Nyssa, OR, 1998.

Treatment†	Rate	Injury			Height		Shoot number ^b	Yield [‡]	
		3-25	4-13	4-30	4-13	4-30		Fresh hay	Oil
	lb ai/acre	-----%-----			----inches---		no/ft ²	-----lb/acre-----	
Dual II	2.0	40	18	16	3.6	6.2	114	13,985	28
Frontier 6.0	1.17	41	24	16	3.9	6.4	85	14,271	26
Authority	0.5	64	63	36	2.0	4.9	82	12,964	27
Untreated	-	0	0	11	4.8	6.7	129	12,760	25
LSD (0.05)		23	17	NS	0.9	NS	NS	NS	NS

†Treatments were applied on February 25.

^bMint shoot number was measured April 25, and mint was harvested July 20.

Table 2. Mint injury, shoot number, and yield in response to preemergence and postemergence herbicide applications, Location 2, Nyssa, OR, 1998.

Treatment	Rate	Timing†	Injury				Shoot number [‡]	Yield [‡]	
			5-30	6-11	7-11	7-23		Fresh hay	Oil
	lb ai/acre		-----%-----				no/ft ²	-----lb/acre-----	
Dual II	2.0	PRE	39	45	35	25	3.1	10,668	43
Frontier 6.0	1.17	PRE	66	60	56	20	1.8	8,583	27
Authority	0.5	PRE	46	39	51	11	4.3	15,450	47
Basagran	2.0	POST	0	0	0	0	5.3	13,979	40
Tough	1.0	POST	0	0	0	3	4.5	16,063	49
Untreated	-	-	0	0	0	0	5.5	11,404	34
LSD (0.05)			17	8	16	17	2.1	2,978	8

†Preemergence treatments were applied on March 8, and postemergence treatments were applied May 30.

[‡]Mint shoot number was measured May 30, and mint was harvested July 23.

Table 3. Yellow nutsedge density and control in mint, Location 2, Nyssa, OR, 1998.

Treatment	Rate	Timing†	Yellow nutsedge	Yellow nutsedge control			
			density [‡]	5-30	6-11	7-11	7-23
	lb ai/acre		no/ft ²	-----%-----			
Dual II	2.0	PRE	0.4	61	91	95	95
Frontier 6.0	1.17	PRE	0.7	80	83	75	36
Authority	0.5	PRE	1.0	69	75	74	70
Basagran	2.0	POST	10.2	0	74	76	85
Tough	1.0	POST	6.5	0	36	53	18
Untreated	-	-	11.3	0	0	0	0
LSD (0.05)			4.7	26	10	32	28

†Preemergence treatments were applied on March 8, and postemergence treatments were applied May 30.

[‡]Yellow nutsedge density was measured May 30.