

# POSTEMERGENCE WEED CONTROL IN SUGAR BEETS

Corey V. Ransom and Joey Ishida  
Malheur Experiment Station  
Oregon State University  
Ontario, Oregon, 1997.

## Introduction

Trials were conducted to determine the effect of application timing on Betamix and Progress herbicide treatments alone and in combinations with Upbeet and Stinger, and to determine if increased rates of Betamix and Progress could provide weed control similar to lower rates applied at the earlier time.

## Methods

Sugar beets were planted on May 2 on a 3-inch spacing in 22-inch rows. Counter CR was applied over the row at 3.8 oz/1000 ft of row. Beets were sidedressed with 91 lb N/acre as urea on June 12. Postemergence herbicide treatments were applied starting at 2-leaf sugar beets on May 21.

Sequential herbicide applications were made approximately every 7 days. Comparisons were made between treatments applied to 2-leaf sugar beets and those first applied one week later to 4-leaf sugar beets. In addition, Betamix and Progress rates were increased in certain treatments to determine if increased rates would provide weed control similar to lower rates applied a week earlier. For the herbicide application to 2-leaf sugar beets, weeds were 0.25 to 1 inch tall. For the herbicide application to 4-leaf sugar beets, weeds ranged from 1 to 4 inches tall. Plots were 7.3 wide by 30 feet long. Treatments were broadcast with a backpack sprayer delivering 20 gpa at 30 psi and were replicated four times. Weed control was evaluated visually June 28. Weed biomass was determined July 30.

## Results

Betamix and Betamix Progress applied alone as repeated sequential treatments beginning at 2-leaf sugar beets provided similar control of common lambsquarters, barnyardgrass, and hairy nightshade. However, Betamix alone provided greater control of redroot pigweed than Progress alone. Redroot pigweed control was reduced when Stinger was added to Betamix. Barnyardgrass control was also reduced when Stinger was tank mixed with Betamix or Progress. Redroot pigweed and hairy nightshade control were generally lower when treatments were applied at the 4-leaf stage than when applied at the 2-leaf stage. In all cases, increasing the rate of Betamix and Progress resulted in control similar to applications made to 2-leaf sugar beets. When

applied at the 2-leaf stage, tank mixtures of Betamix with Upbeet plus Poast or Stinger plus Poast provided better redroot pigweed control than similar tank mixtures with Progress. When applied at the 4-leaf stage, redroot pigweed control was greater when Progress (0.25 lb ai/acre) was combined with Upbeet than when it was combined with Stinger. The reverse was true for hairy nightshade; the addition of Stinger to Progress provided greater control than the addition of Upbeet. Biomass of common lambsquarters was reduced by all herbicide treatments. With the exception of the Progress (0.25 lb ai/acre) plus Upbeet and Poast treatment applied at the 4-leaf stage, biomass of hairy nightshade was also reduced by all treatments. All treatments reduced redroot pigweed biomass. Progress plus Stinger and Poast applied at the 4-leaf stage had higher pigweed biomass than any other herbicide treatment. Many of the other treatments applied at the 4-leaf stage also had higher biomass of redroot pigweed than the same treatments applied at the beginning at the 2-leaf stage, which emphasizes the importance of timely herbicide applications in sugar beets.

### Conclusions

As expected, weed control was greatest when sequential herbicide treatments were begun early. When the initial herbicide application was delayed, triple the rate of Betamix and Progress was required to provide control similar to sequential applications begun one week earlier.

Table 1. Visual estimates of weed control on June 28 and weed biomass on July 30 in sugar beets with sequential herbicide treatments, Malheur Experiment Station, Oregon State University, Ontario, Oregon, 1997.

Treatment <sup>1</sup>	Rate	Timing	Weed control				Weed biomass			
			Redroot pigweed	Lambs-quarters	Barnyard-grass	Hairy nightshade	Redroot pigweed	Lambs-quarters	Barnyard-grass	Hairy nightshade
			Leaves	%				g/ft <sup>2</sup>		
Betamix	0.33	2	86	95	73	88	1	0	2	0
Progress	0.25	2	68	95	59	86	10	0	2	1
Betamix + Upbeet	0.33 + 0.0156	2	95	95	93	90	0	0	0	1
Progress + Upbeet	0.25 + 0.0156	2	91	95	94	85	1	0	0	1
Betamix + Stinger	0.33 + 0.047	2	74	95	45	95	3	0	3	0
Progress + Stinger	0.25 + 0.047	2	66	95	30	90	6	0	3	0
Betamix + Poast	0.33 + 0.10	2	86	95	95	81	4	0	0	1
Betamix + Poast	0.33 + 0.10	4	53	94	84	66	14	0	1	2
Betamix + Upbeet + Poast	0.33 + 0.0156 + 0.10	2	95	95	95	93	0	0	0	0
Betamix + Upbeet + Poast	0.33 + 0.0156 + 0.10	4	60	93	65	34	13	0	1	3
Betamix + Upbeet + Poast	1.0 + 0.0156 + 0.10	4	94	95	88	95	1	0	1	0
Progress + Upbeet + Poast	0.25 + 0.0156 + 0.10	2	86	95	95	95	1	0	0	0
Progress + Upbeet + Poast	0.25 + 0.0156 + 0.10	4	61	78	77	30	6	0	1	8
Progress + Upbeet + Poast	0.75 + 0.0156 + 0.10	4	83	95	78	89	3	0	1	1
Betamix + Stinger + Poast	0.33 + 0.047 + 0.10	2	85	95	94	95	2	0	0	0
Betamix + Stinger + Poast	0.33 + 0.047 + 0.10	4	54	90	81	75	10	0	1	1
Betamix + Stinger + Poast	1.0 + 0.047 + 0.10	4	88	95	81	95	2	0	1	0
Progress + Stinger + Poast	0.25 + 0.047 + 0.10	2	65	95	95	95	12	0	0	0
Progress + Stinger + Poast	0.25 + 0.047 + 0.10	4	49	89	90	86	29	0	0	0
Progress + Stinger + Poast	0.75 + 0.047 + 0.10	4	80	95	88	95	4	0	0	0
Untreated			0	0	0	0	43	2	3	11
LSD (0.05)			8	8	22	17	6	1	2	3

<sup>1</sup>Treatments first applied at 2 leaf sugar beets were applied three times. Treatments first applied to 4 leaf sugar beets were applied twice.