

DEXTER, ALAN G*, and JOHN L. LUECKE, North Dakota State University and the University of Minnesota, Fargo, ND 58105. **Herbicide combinations for kochia and common lambsquarters control.**

ABSTRACT

The objective of this research was to identify herbicide combinations and rates to improve total control of kochia and common lambsquarters in sugarbeet. Herbicide treatments were applied at seven locations from 150 miles north to 120 miles south-east of Fargo, ND in 2004. The POST micro-rate treatments were applied three or four times and consisted of desmedipham & phenmedipham & ethofumesate (Progress) + triflusalufuron (UpBeet) + clopyralid (Stinger) + clethodim (Select) + methylated seed oil adjuvant (MSO) at 0.08 + 0.004 + 0.03 + 0.03 lb/A + 1.5% v/v. The POST conventional-rate treatments were applied three or four times and consisted of desmedipham & phenmedipham & ethofumesate (Progress) + triflusalufuron (UpBeet) + clopyralid (Stinger) + clethodim (Select). Triflusalufuron was applied at 0.008 lb/A, clopyralid at 0.06 lb/A and clethodim at 0.047 lb/A in each conventional-rate application. The conventional-rate of desmedipham & phenmedipham & ethofumesate was 0.25 (Time 1)/0.33 (T2)/0.5 (T3) lb/A with three applications and was 0.25 (Time 1)/0.33 (T2-T4) lb/A with four applications. Oil adjuvant was not used with the conventional-rate treatments. The first POST herbicide treatments were applied to cotyledon to two-leaf sugarbeet with subsequent treatments at 7- to 9-day intervals. Nearly 100% of the kochia in the treated area was resistant to ALS-inhibitor herbicides such as triflusalufuron.

The micro-rate applied four times gave only 48% kochia control averaged over the Grand Forks and Reynolds locations. The conventional-rate applied four times gave 76% kochia control. Adding extra ethofumesate (Nortron) at 0.09 lb/A to each application of the micro-rate increased kochia control from 48% to 58% and adding metamiltron (Goltix) at 1.46 lb/A increased kochia control from 48% to 85%. The micro-rate + metamiltron gave more sugarbeet injury than the micro-rate alone. PRE ethofumesate (Nortron) at 3.0 lb/A followed by the micro-rate applied four times gave 72% kochia control. The best kochia control was 94% and was from PRE ethofumesate at 3 lb/A followed by the POST conventional-rate applied four times. However, even 94% control was not adequate in the dense populations of kochia at these two locations.

Common lambsquarters control was 99 to 100% from the micro-rate or the conventional-rate treatments at five of the six locations infested with common lambsquarters. At Morris, the micro-rate applied four times only gave 80% control of common lambsquarters. The reason for poor control at Morris is not known since spray timing and environment at Morris were similar to the other five locations. The micro-rate plus ethofumesate (Nortron) at 0.09 lb/A applied four times gave 93% control of common lambsquarters at Morris and the conventional-rate applied three times gave 99% control. The micro-rate plus metamiltron (Goltix) at 1.46 lb/A gave 100% common lambsquarters control. PRE ethofumesate (Nortron) at 3.0 lb/A followed by the micro-rate applied four times gave 99% common lambsquarters control.

Control of common lambsquarters at Morris was improved by increased POST herbicide rates, adding metamiltron (Goltix) to POST treatments, and PRE ethofumesate (Nortron) ahead of POST treatments. Kochia control also was improved by the same modifications but even the most rigorous tested treatment of PRE ethofumesate at 3.0 lb/A followed by the POST conventional-rate applied four times (broadcast treatment cost \$270/A) on two dense kochia populations failed to give control adequate to prevent sugarbeet yield loss from kochia competition.