

MICKELSON, JAMES A.^{1*}, ALAN G. DEXTER², ABDEL O. MESBAH³, STEPHEN D. MILLER⁴, SCOTT J. NISSEN⁵, COREY V. RANSOM⁶, DONALD L. VINCENT III², and ROBERT G. WILSON⁷, ¹Montana State University, Southern Ag Research Center, 748 Railroad Hwy, Huntley, MT 59037, ²North Dakota State University, Fargo, ND 58105, ³University of Wyoming, Powell, WY 82435, ⁴University of Wyoming, Laramie, WY 82071, ⁵Colorado State University, Ft. Collins, CO 80523, ⁶Oregon State University, Malheur Experiment Station, 595 Onion Ave., Ontario, OR 97914, ⁷University of Nebraska, Panhandle Station, 4502 Ave. I, Scottsbluff, NE 69361. **Effect of fluroxypyr on *Beta vulgaris* and *Kochia scoparia*.**

ABSTRACT

ALS-inhibitor herbicides are used extensively in sugar beet and rotational crops to control kochia. Reliance on this mode of action has led to widespread development of kochia populations that are resistant to ALS- inhibitor herbicides. Fluroxypyr is effective at controlling ALS resistant kochia. Field experiments were conducted in 2000 at eight sites in the U.S. to evaluate sugar beet response and kochia control with fluroxypyr. Each treatment contained desmedipham + phenmedipham applied three times at 0.25 lb ai/A. A single application of fluroxypyr at 0, 0.016, 0.032, 0.063, or 0.125 lb/A was applied either with or approximately 7 to 10 days following the last application of desmedipham + phenmedipham. Kochia control and sugar beet response to fluroxypyr was rate dependent and varied among sites. Sugar beet injury following the early application was similar to or less than injury following the late application within each rate at all locations. Sugar beet injury following fluroxypyr application at the early timing ranged from 1 to 47%, 2 to 37%, 8 to 63%, and 10 to 80% at rates of 0.016, 0.032, 0.063, or 0.125 lb/A, respectively. Kochia control at sites with high kochia populations ranged from 34 to 60%, 60 to 80%, 72 to 87%, and 57 to 100% following fluroxypyr application at the early timing at rates of 0.016, 0.032, 0.063, or 0.125 lb/A, respectively. Sugar beet yield from early application treatments ranged from 12 to 31, 8 to 25, 7 to 22, and 2 to 21 tons/acre for fluroxypyr rates of 0.016, 0.032, 0.063; or 0.125 lb/A, respectively. At four of the seven sites with yield data, no yield loss was detected in early application fluroxypyr treatments at rates 0.016, 0.032, or 0.063 lb/A. Fluroxypyr applied at 0.032 to 0.063 provided the best compromise between sugar beet tolerance and kochia control. The potential for use of fluroxypyr in sugar beet may depend on the severity of the ALS resistant kochia problem and the risk and effectiveness of using other alternative strategies for managing resistant kochia.