

## GLYPHOSATE-RESISTANT KOCHIA IN THE WESTERN SUGAR GROWING REGION

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*Kochia* (*Kochia scoparia* (L.) schrad.) continues to be one of the most problematic weeds to control in sugarbeet. In the past, kochia has developed resistance to photosystem II inhibitors (atrazine), ALS inhibitors (triflurosulfuron), and synthetic auxin (dicamba) herbicides. More recently, kochia has developed resistance to glyphosate (EPSPS inhibitor). Initial reports of glyphosate-resistant kochia were confirmed in Kansas in 2007. Since then glyphosate-resistance has spread and now has been observed in Colorado, Montana, Nebraska, and North Dakota. Experiments were initiated in Nebraska and Wyoming in 2012 to examine methods for controlling kochia in glyphosate-resistant sugarbeet and corn. In addition, 56 *Kochia* accessions were collected by Western Sugar agronomists during the fall of 2012 and plant accessions were screened for tolerance to glyphosate and triflurosulfuron (UpBeet). A series of dose response experiments were conducted in the greenhouse utilizing glyphosate (Roundup PowerMAX) plus ammonium sulfate and nonionic surfactant at rates of 0, 0.21, 0.43, 0.86, 1.73, and 3.46 kg/ha. *Kochia* plants were grown in a 50/50 mixture of potting soil and field soil. *Kochia* plants were treated when they were 8 cm tall and evaluated at 7, 14, and 20 days after treatment. The lethal dose of glyphosate required to provide 90% control (LD90) was calculated for each of the accessions (populations). In Montana LD90 values ranged from 0.98 to 2.52 kg/ha, in Wyoming from 0.94 to 8.50 kg/ha, in Nebraska from 0.47 to 1.73 kg/ha, and from 1.10 to 12.56 kg/ha in Colorado. The recommended rate of glyphosate for weed control in sugarbeet is 1.26 kg/ha so 58% of the kochia populations would not have been suppressed by this dose of glyphosate. Glyphosate-tolerant populations are spread throughout the Western Sugar growing region. Approximately 50% of the above kochia populations also demonstrated resistance to triflurosulfuron. Sugarbeet growers need to consider the utilization of ethofumesate at planting and mixtures of triflurosulfuron plus glyphosate postemergence for kochia control in the sugarbeet crop but of more importance is the utilization of herbicides providing kochia control, other than glyphosate in corn, dry beans, and small grains.