Effect of Kochia Control in Corn on Kochia Density in Sugarbeet the Following Year

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Introduction

Previous research has indicated that excellent weed management in one crop can reduce the number of germinating weeds the following year by as much as 50%. Kochia, a weedy annual tumbleweed, has a relatively short-lived seed (only two to three years); therefore, if kochia can be successfully controlled in other crops in the rotation (most notably corn), the remaining kochia population should decline and be more manageable in the sugarbeet crop. If kochia is not controlled in previous crops, however, the prolific seed production may result in a dramatic number of seedlings the following year.

Objectives

This study is being carried out in Wyoming and Nebraska to determine the impact of kochia control in corn on kochia seedling density the following year.

Materials and Methods

In 2012, herbicide treatments were applied in corn that allowed rotation to sugarbeet. Kochia density was evaluated in the corn crop after all treatments had been applied. Kochia plants that survived herbicide treatments were allowed to produce seed. In 2013, sugarbeet was planted in the same location. Kochia density in the sugarbeet crop was then evaluated to determine the effect of kochia control in corn on kochia density in sugarbeet the following year.

Results and Discussion

Kochia control in the 2012 corn crop was strongly correlated with kochia density in the 2013 sugarbeet crop (p<0.001; correlation coefficient=0.48). On average, each kochia plant that survived treatment in 2012 resulted in a more than 100-fold increase in the number of seedlings the following year (Figure 1). Kochia can produce many thousands of seeds per plant if uncontrolled, and this result emphasizes the impact that good kochia control in corn can have on weed control the following year. Preventing kochia seed production should be a top priority in all crops.
Figure 1. Effect of kochia density in corn (2012) on kochia seedling density in sugarbeet the following year (2013).

Acknowledgments
The study was funded by the Western Sugar Cooperative Grower Joint Research Committee.

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Key words: kochia, sugarbeet, corn
PARP: I:3, III:1,7, X:1