Understanding and Managing Green Foxtail Weed Resistance

The Situation
Green foxtail resistance to herbicides has been identified frequently in North Dakota, but the extent across the state is unknown. In Canada, 22 and 44% of fields surveyed contained green foxtail resistant to Group 1 herbicides in 2002 and 2008, respectively. Such a survey has never been conducted in North Dakota.

Green foxtail is not as competitive as wild oat, but can cause significant yield losses. Wheat, barley, and broadleaf crops such as dry pea, lentil, chickpea, sunflower, and flax depend on Group 1 herbicides to control grassy weeds. However, repeated use of the same herbicides in combination with less diverse crop rotations has led to development of weed resistance.

Extension Response
The North Central Research Extension Center received a grant to screen green foxtail populations from across the state. Thirty-five green foxtail samples were submitted from across North Dakota in Fall 2015 by Extension agents and agronomists. The herbicides tested included Puma, Axial XL, Discover, Assure II, Select, Everest, GoldSky, Huskie Complete, Beyond, and Roundup. The 35 populations were compared to a known susceptible population. Green foxtail populations were rated as susceptible (S), slightly resistant (SR), moderately resistant (MR), or resistant (R).

Impacts
This NCREC research led to a greater understanding of Group 1 and Group 2 resistance across the state. Populations resistant to Puma tended to also be resistant to Discover, Axial XL, and Assure II. Only two populations were SR to Select, but nine populations were MR to R to Assure II. None of the populations were resistant to Beyond. At least eight populations were SR to R to the Group 2 herbicides.

Based on this information, farmers should not wait until they have resistance to change modes of action and alter crop rotations. Delaying these changes will create more selection pressure and increase the likelihood of resistance to another mode of action. Farmers may consider using Clearfield wheat variety to enable the use of Beyond, which did not show resistance in any of the populations.

Feedback
• An increase in phone calls and requests for presentation information from growers and agronomists indicate they are trying to address the weed resistance issue.
• More growers are sending in weed seed samples to test for resistance.

Public Value Statement
Helping farmers to sustainably control weeds supports the economic health of ND.

Contact
Dr. Brian Jenks
Weed Scientist
North Central Research Extension Center
5400 Highway 83 South
Minot, ND 58701
Phone: 701-857-7677
E-mail: brian.jenks@ndsu.edu