

Managing Wild Oat Resistance

Public Value Statement

Helping farmers to sustainably control weeds supports the economic health of North Dakota.

The Situation

Wild oat resistance to grass herbicides has become a major problem throughout North Dakota. Previously, wild oat has been a problem in wheat due to resistance to Group 1 herbicides (ACCase inhibitors). However, resistance to Group 2 herbicides (ALS inhibitors) used in wheat, as well as Group 1 herbicides used in broadleaf crops, also has been documented recently.

Wild oat emerges very early in the season and is very competitive with crops. One study showed that nine wild oat plants per square foot can reduce wheat yields 40 to 63 percent. 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 screened 67 wild oat populations that were submitted from across North Dakota in fall 2018 by Extension agents and agronomists. The herbicides tested included (Group 1's) Puma, Axial XL, Assure II and Select; and (Group 2's) Everest, GoldSky, Varro and Beyond. The 67 populations were compared to a known susceptible population. Wild oat populations were rated as susceptible, slightly resistant, moderately resistant or resistant.

Impacts

This Extension Center research led to a greater understanding of wild oat resistance to Group 1 and Group 2 herbicides across the state. Wild oat populations showed 85, 48, 78, and 7 percent resistance to Puma, Axial, Assure II and Select, respectively. Wild oat populations showed 76, 87, 96 and 45 percent resistance to Everest, GoldSky, Varro and Beyond, respectively.

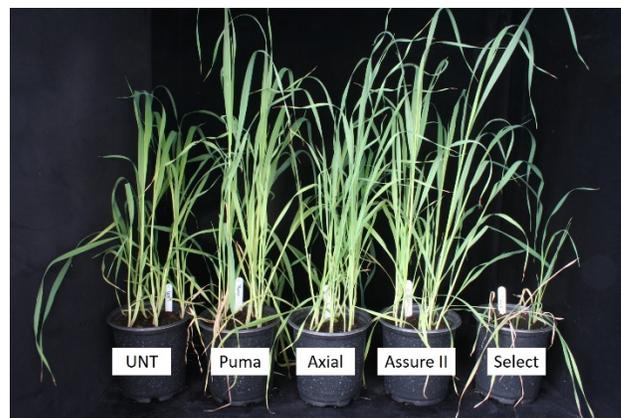
This information demonstrates the serious nature of wild oat resistance facing North Dakota farmers.

With no new herbicides available in the foreseeable future, farmers must implement diverse crop rotations combined with multiple cultural practices to minimize yield loss due to wild oat competition.

These diverse practices include rotating cool vs. warm-season crops, short-season vs long-season crops, fall vs spring planted crops, and annual vs. perennial crops. Other cultural practices may include changing planting dates, decreasing row spacing to shade out weeds, higher seeding rates, cover crops, cultivation, layering herbicides, hand weeding, etc. Farmers must use soil-applied herbicides and carefully evaluate herbicide modes of action used, combined with crop rotation and cultural practices to manage weeds.

Feedback

- An increase in phone calls and information requests from growers and agronomists indicate they are addressing the weed resistance issue.
- More growers are sending in weed seed samples to test for resistance.



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