MSU Weed Science


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Michigan Wheat Program Wheat Field Day

Fall Herbicide Applications, Wheat Planting Date and Cover Crops…

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EARLY- AND LATE-PLANTED WHEAT AND FALL HERBICIDES

Problem Statement:

The planting window for winter wheat in Michigan can vary each year. Delays in harvest and rainy fall weather can push an ideal planting date of mid- to late-September into late-October or further. This range in planting dates could have an impact on how to best manage weeds. This window can affect both weed and winter wheat growth and where fall herbicide applications may best fit. As planting dates get pushed to later October there are questions regarding the benefits of fall herbicide applications. Also, with earlier planted wheat growers have asked: *Will fall herbicide applications eliminate the need for a spring herbicide application?* Fall herbicide applications may also become more important, as we have struggled over the past several years in finding the ideal time to apply wheat herbicides in the spring, due to colder weather.

Trial information:

- 'Wharf' soft red wheat was planted on Sept. 23 and Oct. 24, 2022 at 1.6 million seeds/A.
- Several fall herbicide applications were made to the early planted wheat on Oct. 4 (Feekes 2) and Nov. 9 (Feekes 3). Fall herbicide applications to the later planted wheat occurred on Dec. 1 (Feekes 2).
- Spring herbicide applications were made on April 27 to both planting dates. At this time wheat was 8-10 inches tall for the early planting and 6-8 inches tall for the later planted wheat.

Figure 1. (A) No herbicide, (B) fall-applied Huskie + Osprey in late-April for early planted wheat.

Key Research Findings:

- Fall treatments that contained Osprey or PowerFlex caused some injury to wheat (yellowing and stunting), 14 days after application. However, by spring this injury was not apparent.
- Fall herbicide applications provided greater control of winter annual weeds than applications made in the spring. Due to the excellent wheat growth very few summer annual weeds emerged.
- Fall applications, regardless of timing, of the combinations of Huskie + Osprey or Huskie + PowerFlex provided excellent control of all weeds, including annual bluegrass.
- Yield data will help determine if any of the fall herbicide applications impacted yield.
- We are planning on continuing this research during the 2023-2024 growing season.

COVER CROP TOLERANCE TO WHEAT HERBICIDES

Problem Statement:

Cover crops benefit cropping systems through erosion protection, nutrient mineralization, increased nitrogen availability (legume covers), suppression of plant pathogens and weeds, improved soil health, and beneficial insect attraction. Planting cover crops after wheat harvest provides farmers with an excellent opportunity to include cover crops in their crop rotation. One of the areas of cover crop information that is currently lacking is the tolerance of cover crops to herbicides. We are currently conducting our third year of research to answer the question, *"If I apply 'X' wheat herbicide, what cover crops can I safely plant after wheat harvest?".*

Key Research Findings:

- In 2021 and 2022, nine different cover crops were planted in late-July between 85-118 d after application of nine different spring wheat herbicides. These cover crops were evaluated for establishment and injury at three different locations with sandy clay loam, loam, and clay loam soils. Precipitation ranged between 4.78 to 15-inches between herbicide application and cover crop planting.
- All cover crops, with the exception of Austrian winter pea in 2021 established well at all locations by 28 days after planting (DAP).
- Huskie injury to red clover, 4 weeks after seeding, ranged from 0 to 40% across the 6 site-years. Injury consisted of bleaching around the outer leaf edges (Figure 2). This injury did not result in any reductions in stand or final biomass.
- Table 1 provides our current recommendations for planting cover crops after winter wheat herbicide applications after one year of research.

Figure 2. Clover injury 28 d after planting from Group 27 herbicides.

Table 1. Cover crops that can be safely planted after wheat harvest when various herbicides are spring-applied. Data is from two years. This research is being repeated in 2023.

Herbicide	Annual ryegrass	Cereal rye	Oats	Crimson clover	Red clover	Oilseed radish	Mustard Caliente	Dwarf Essex rapeseed	Austrian winter pea[2]
Axial Bold	Y[1]	Y	Y	Y	Y	Y	Y	Y	Y
Talinor	Y	Y	Y	Y	Y	Y	Y	Y	C
Huskie	Y	Y	Y	Y	C	Y	Y	Y	C
Affinity BroadSpec	Y	Y	Y	Y	Y	Y	Y	Y	C
Osprey[2]	Y	Y	Y	Y	Y	Y	Y	Y	Y
Osprey Xtra	Y	Y	Y	Y	Y	Y	Y	Y	Y
PowerFlex HL	Y	Y	Y	Y	Y	Y	Y	Y	Y
Quelex	Y	Y	Y	Y	Y	Y	Y	Y	Y
Stinger	Y	Y	Y	Y	Y	Y	Y	Y	Y

[1] Y = Yes cover crop can be seeded with no injury or impact on biomass; C = Caution should be taken with seeding (injury between 20%-50%; but no impact on biomass); N = No do not seed (injury > 50% or significant biomass reduction).
[2] Osprey and Austrian winter pea data are only from 2022.

Take Home Messages:

Fall applications particularly for early planted wheat may be a better option to control weeds as spring weather often impacts the time of herbicide application. Additionally, after two years of research many different cover crops can be planted after wheat harvest that have had winter wheat herbicides applied in the spring (prior to Feekes stage 6).