2017 Weeds Research Update

Mike Ostlie – Research Agronomist, Carrington Research Extension Center

Topics I won’t be covering but would be happy to discuss

- Carinata herbicide options
- Fababean herbicide options
- Dicamba drift to field peas and dry beans
- Fall applications of herbicides for kochia
- Drones as a weed management tool

- Later today – tissue tests for dicamba residue and soybean drift injury

2016-2017 wheat herbicide residual study

Identify in-season wheat herbicides that increase risk to cover crop establishment following wheat harvest

Wheat herbicide residues and cover crops

- Conducted at 3 locations (Carrington, Fargo, Hettinger)
- Compared combinations of 9 cover crops and 9 herbicides (81 combinations)
  - Wheat sprayed at 3-4 leaf and CC planted within 10 days of wheat harvest
- Chose a range of active ingredients with potential residuals of >60 days
  - High-end rates were used for all products
- Cover crops no-till seeded into wheat stubble
- Measured injury to each cover crop and assigned a risk score to each cover crop/herbicide combination
  - LR – 0-20% damage — safe
  - MR – 21-50% damage — might be ok
  - HR – 51-100% damage — not ok

Wheat herbicide injury to cover crops

Risk of cover crop injury based on highest damage recorded between five ND locations in 2016 and 2017								
Herbicide	Radish	Turnip	Field Pea	Lentil	Flax	Oats	Barley	Dwarf Essex Rape
Widematch	MR	MR	HR	~~HR~~	LR	LR	LR	MR
Huskie	LR	LR	LR	MR	MR	LR	LR	MR
Everest 2.0	MR	MR	LR	MR	LR	LR	LR	MR
Supremacy	LR	LR	LR	LR	LR	LR	LR	LR
Quelex	MR	MR	LR	LR	LR	LR	LR	LR
Powerflex	LR	LR	LR	MR	MR	LR	LR	MR
Goldsky	MR	MR	LR	LR	MR	LR	LR	LR
Varro	MR	LR	LR	LR	LR	LR	MR	LR
Clarity	MR	~~HR~~	LR	MR	MR	LR	MR	MR
2,4-D	MR	LR	LR	LR	LR	LR	LR	MR

Cover crop labeling

- It is important to differentiate cover crops with forage crops
  - If the ‘cover crop’ is being harvested in some manner, it will be subject to herbicide plant-back restrictions, if indicated.
  - Meaning it could become off-label – aka illegal

  - Cover crops for soil health (all biomass left in the field) are considered exempt from label restrictions

Chart with grazing restrictions

Risk of cover crop injury based on highest damage recorded between five ND locations in 2016 and 2017									
Herbicide	Radish	Turnip	Field Pea	Lentil	Flax	Oats	Barley	Dwarf Essex Rape	Harvest?
Widematch	MR	MR	HR	~~HR~~	LR	LR	LR	MR	ok
Huskie	LR	LR	LR	MR	MR	LR	LR	MR	60 Days
Everest 2.0	MR	MR	LR	MR	LR	LR	LR	MR	ok
Supremacy	LR	LR	LR	LR	LR	LR	LR	LR	?
Quelex	MR	MR	LR	LR	LR	LR	LR	LR	ok
Powerflex	LR	LR	LR	MR	MR	LR	LR	MR	ok
Goldsky	MR	MR	LR	LR	MR	LR	LR	LR	ok
Varro	MR	LR	LR	LR	LR	LR	MR	LR	60 Days
Clarity	MR	~~HR~~	LR	MR	MR	LR	MR	MR	37-70 Days
2,4-D	MR	LR	LR	LR	LR	LR	LR	MR	ok

Rye with Soybeans: top reasons to consider

1. Soil coverage before and/or after soybean crop
    i. Soil stabilization in wet areas during planting

2. Managing herbicide resistant weeds

3. It can be planted late in the fall (after corn or soybean)

4. Additional source of livestock feed

My drive to work - 2016


JOHN DEERE
MoCo
956

Consider Varieties

ND Dylan

- 2016 release by NDSU
  - Developed at the CREC

- Among the most effective at suppressing kochia
- Among the most winter hardy
- Excellent grain yields

- Another rye variety in the pipeline for 2019

Dry beans growing through rye that was rolled


JOHN DEERE

When to terminate rye

- 2014
  - Highest soybean yields when rye was terminated 2 weeks prior to planting
    - (glyphosate was primary termination method all years; >1lb ae)
- 2015
  - Only yield reductions occurred when rye was not terminated
    - Rye growing to anthesis was among the top soybean yielders

When to terminate rye

- 2016 – site 1
  - Rye terminated after planting decreased soybean yield
    - Strip tilling reduced the yield loss
- 2016 – site 2 (planting date)
  - Rye terminated at or before planting was = to no rye check
  - With latest planting date there was no effect of removal timing

When to terminate rye

- 2017 – best strategy dependent on planting date
  - At earliest planting date (mid-May), yield was reduced unless rye was terminated prior to planting
  - In late May, yield was reduced only when rye was terminated two weeks after planting
  - In early June, yield was not affected by removal timing

Summary

average across years and planting dates	Yield	
No rye check	35.6	
Rye terminated prior to planting	35.5	
Rye terminated @ planting	33.1	1 crop failures
Rye terminated 2 weeks after planting	24.2	3 crop failures

9 evaluations

How long can PRE herbicides lay on soil without rainfall activation?

- 2016 – 2017
  - Conducted under a center pivot irrigation system
  - 0.5” rain added to activate products
  - Compared metribuzin, Spartan, and Fierce – representing most of the common soybean PRE active ingredients
  - Compared instant activation, to a 7 day delay, to rotary hoeing, to no activation

Picking the right time to apply!

2016

Rain	in. rain	DAT
3-Jul	0.07	10
5-Jul	0.01	12
6-Jul	0.04	13
9-Jul	1.49	**16**

2017

Rain	in. rain	DAT
30-Jun	0.01	1
5-Jul	0.11	6
6-Jul	0.08	7
8-Jul	0.02	9
9-Jul	0.03	10
14-Jul	0.04	15
16-Jul	0.01	17
17-Jul	0.03	18
21-Jul	0.79	**22**

Weed control as a result of activation strategy

Activation	Redroot Pigweed	Lambsquarters	Kochia
	% control	% control	% control
Irrigation 1 DAT	91.5	92.6	54.6
Irrigation 7 DAT	85.0	89.3	60
Rotary Hoe 7 DAT	64.3	72.5	32.1
No Water	73.1	75.0	26.3
LSD (0.05)	6.8	8.3	7.3

Activation	Herbicide	Redroot Pigweed	Lambsquarters	Kochia
		% control	% control	% control
Irrigation 1 DAT	metribuzin	85.4	92.3	38.8
Irrigation 7 DAT	metribuzin	77.0	86.3	38.8
Rotary Hoe 7 DAT	metribuzin	25.8	36.3	71.3
No Water	metribuzin	49.6	55.6	40.0
Irrigation 1 DAT	Fierce	96.1	87.5	62.5
Irrigation 7 DAT	Fierce	85.8	86.9	71.3
Rotary Hoe 7 DAT	Fierce	89.9	88.1	22.5
No Water	Fierce	88.8	84.4	15.0
Irrigation 1 DAT	Spartan	92.9	98.0	62.5
Irrigation 7 DAT	Spartan	92.1	94.9	70.0
Rotary Hoe 7 DAT	Spartan	77.0	93.0	2.5
No Water	Spartan	80.8	85.0	23.8
LSD (0.05)		8.4	9.7	12.7

Summary

- Metribuzin activity started to decline 7 DAT with RR pigweed
  - All other products and combinations were fine 7 DAT
- Kochia activity declined sharply with no activation
  - Kochia may have already germinated due to smaller rainfall events
- With RR pigweed and lambsquarters, Fierce was the most stable
  - Spartan activity started to decline sometime after 7 DAT
- Rotary hoeing only worked to activate Spartan in 2016
  - In all other cases, rotary hoeing did not appear to activate these products


Questions?