



PFI Trials Update &
Cover Cropping Experiences

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What we're going to cover:

- Cereal Rye: The Good, The Bad, & The Ugly
- PFI Trial Update: Cereal Rye Termination Date
- Interseeding: Experiences from 2016 & 2017
- PFI Trial Update: Interseeding

What is Interseeding?

- EARLY INTERSEEDING: Seeding a cover crop into a growing cash crop prior to canopy closure.
 - Typically performed with a modified drill, rotary hoe, or simply broadcast.
 - Goal is to get root system established enough to survive under a dense, closed canopy later in the season.
- LATE INTERSEEDING: Seeding a cover crop into a maturing cash crop as the canopy is re-opening.
 - Typically performed with a highboy, airplane, etc.

Interseeding Equipment

- Purpose Built Equipment: NICE, but not NECESSARY
 - Learn the basics before spending big \$\$\$
- Our Interseeding Rig: John Deere 750
 - 20' wide
 - Twin row configuration (16 row units)
 - Wide dish hubs
- Get creative!
 - Modified Old Rotary Hoe w/ Mounted Air Seeder
 - What do you have laying around collecting dust?

The Beginning: Interseed16

- 1st year Corn planted Mid-April 2016.
- Interseeded mix on June 3, 2016
 - Annual Ryegrass
 - Red, Crimson, & Balansa Clovers
 - Hairy Vetch
 - Daikon Radish & Dwarf Essex Rapeseed
- Herbicide Program:
 - ½ rate Pre-Emerge (0.8# Atrazine, 1.5# Acetachlor)
 - RoundUp Post-Emerge day before interseeding.



June 3



June 7



June 10



June 17



July 9



July 15



October 1



October 16



November 5

November 9

Interseed17: Pushing the Limit

- Field 1: Long Term Corn on Corn (My backyard)
 - 50# Cereal Rye drilled in early Nov 2016
 - 150# Fall NH³ in early Dec 2016
 - Planted on April 20, 2017 (50# UAN w/ planter)
- Field 2: 2nd Year Corn on Corn
 - Fall strip tilled (40# NH³), Sidedress (120# UAN)
 - Planted on April 21, 2017 (50# UAN w/ planter)
- Burndown with RoundUp on May 6, 2017
- Interseeded 11 species mix on May 9, 2017
- Weed control goal was to get covers established quick & apply Warrant (acetachlor) in late May for residual waterhemp control.

Interseed17 – The Mix

- Warm Season Grass
 - Corn – Pfister 71C1 (upright) & 3366 (broad) (35k)
- Cool Season Grass
 - Annual Ryegrass (2#) & Oats (5#)
- Cool Season Broadleaf
 - Clovers: Red(.75), Crimson(2.5), Balansa(.25), Sweet (.5)
 - Daikon Radish (1#) & Mustard (0.5#)
 - Flax (0.5#) & Phacelia (0.5#)
- Warm Season Broadleaf
 - Cowpeas (Iron & Clay) (4#)



May 5



May 9



May 9



May 17



May 22



May 28



June 4



June 8



June 12



June 14



Mustard Boltin



June 17



June 19



June 21



June 23



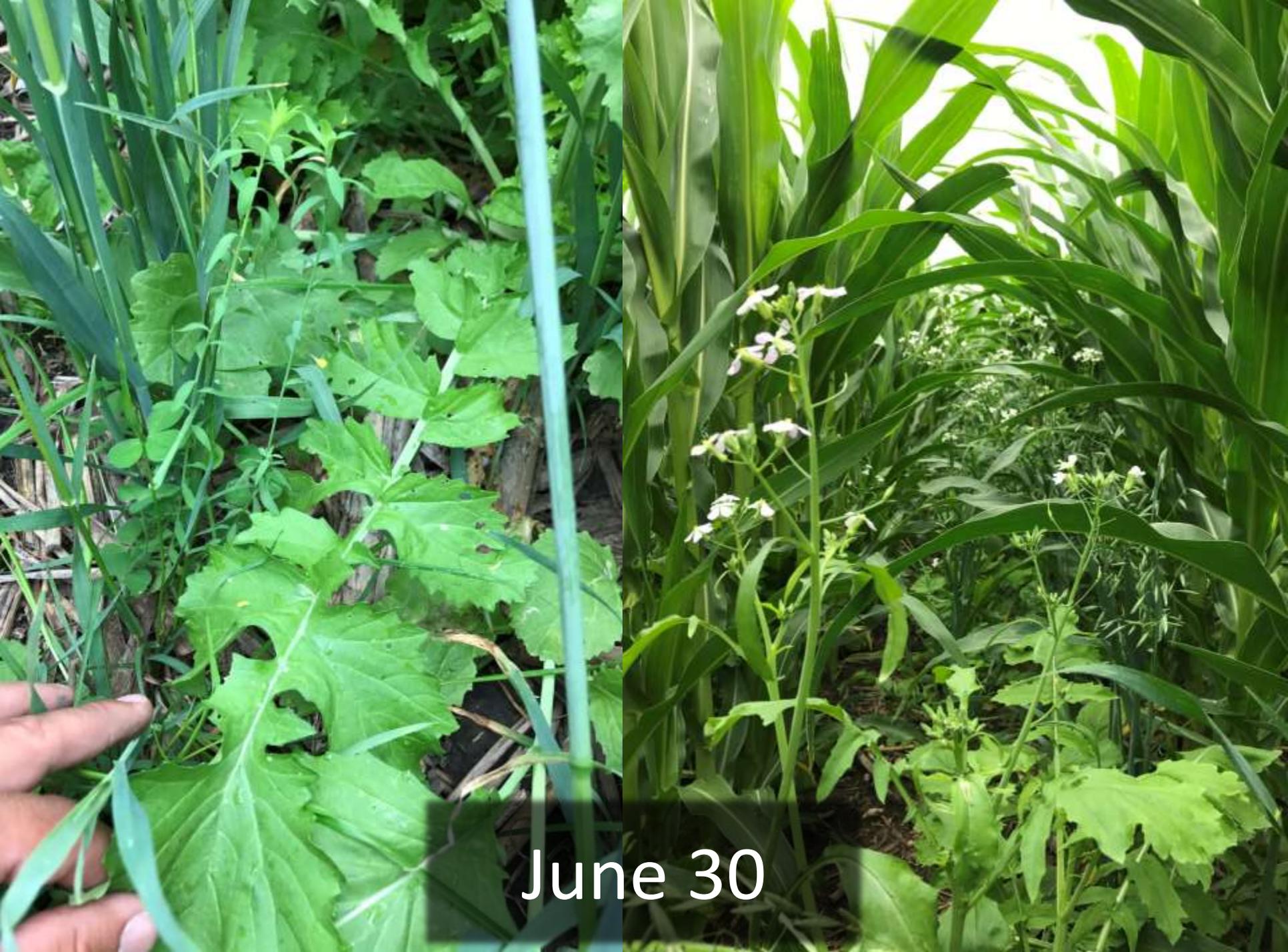
June 26



June 26



June 30



June 30

July 4





July 4



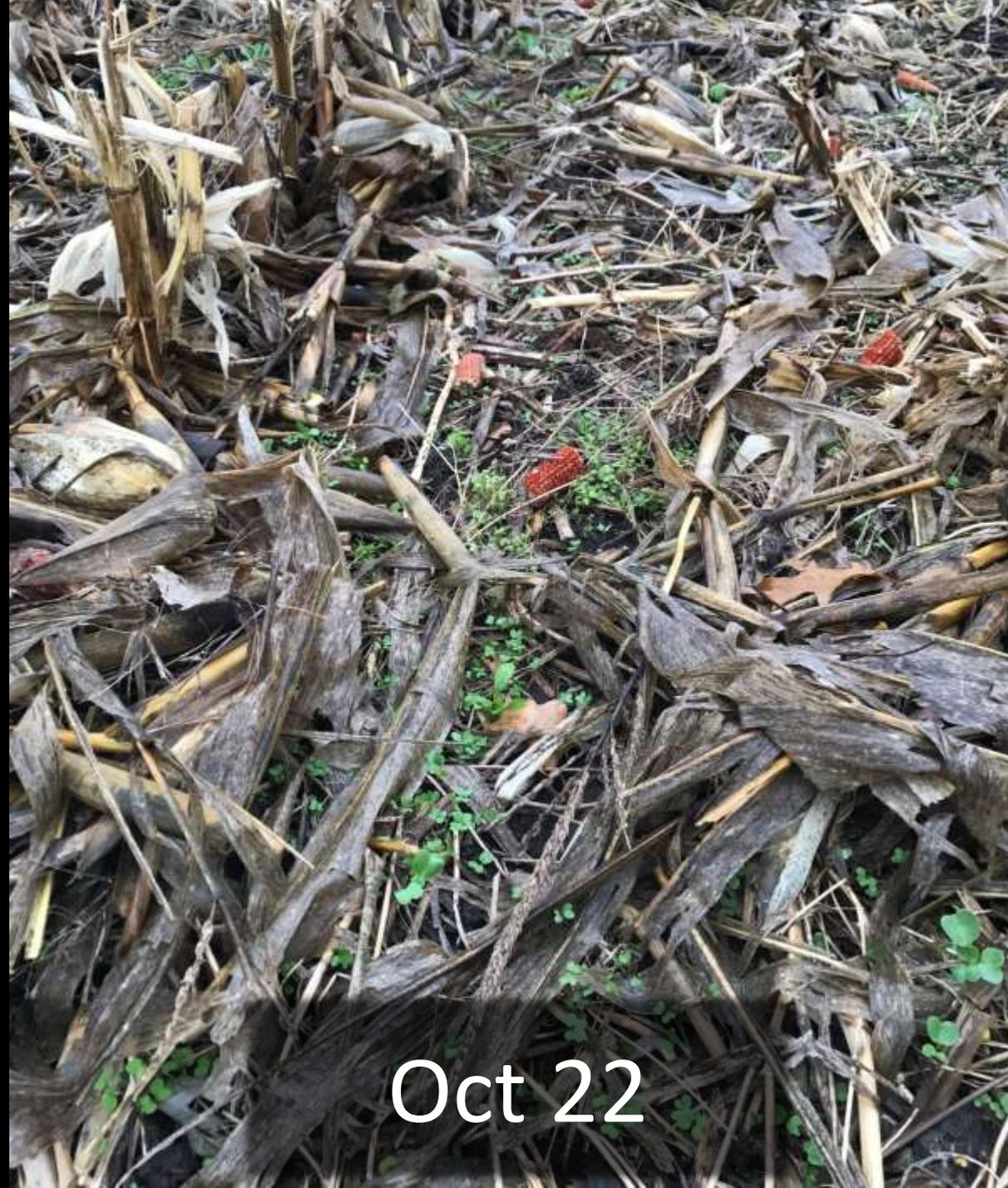
July 20



July 26



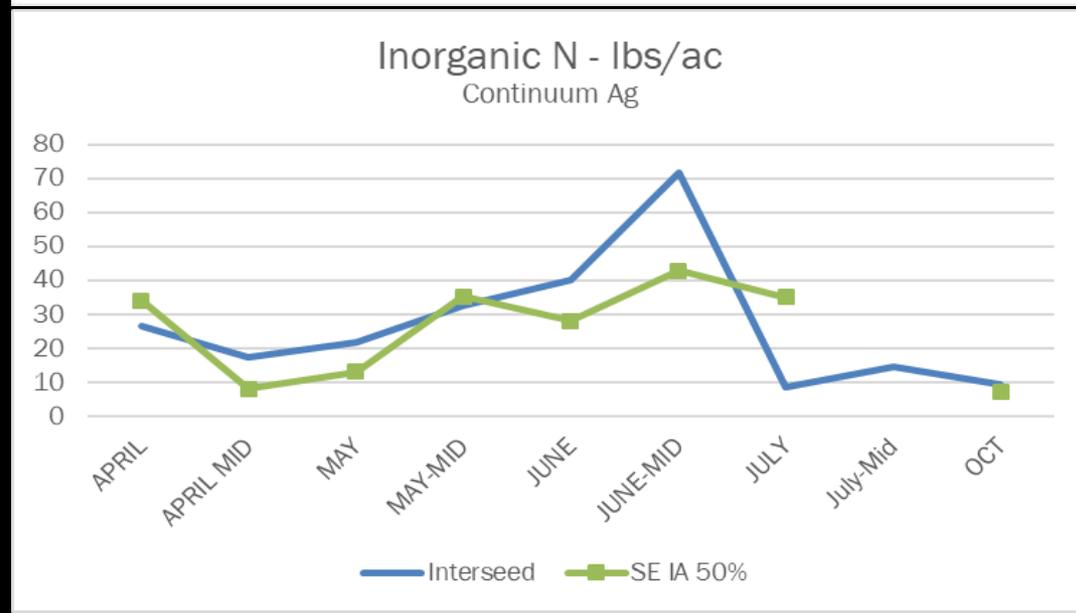
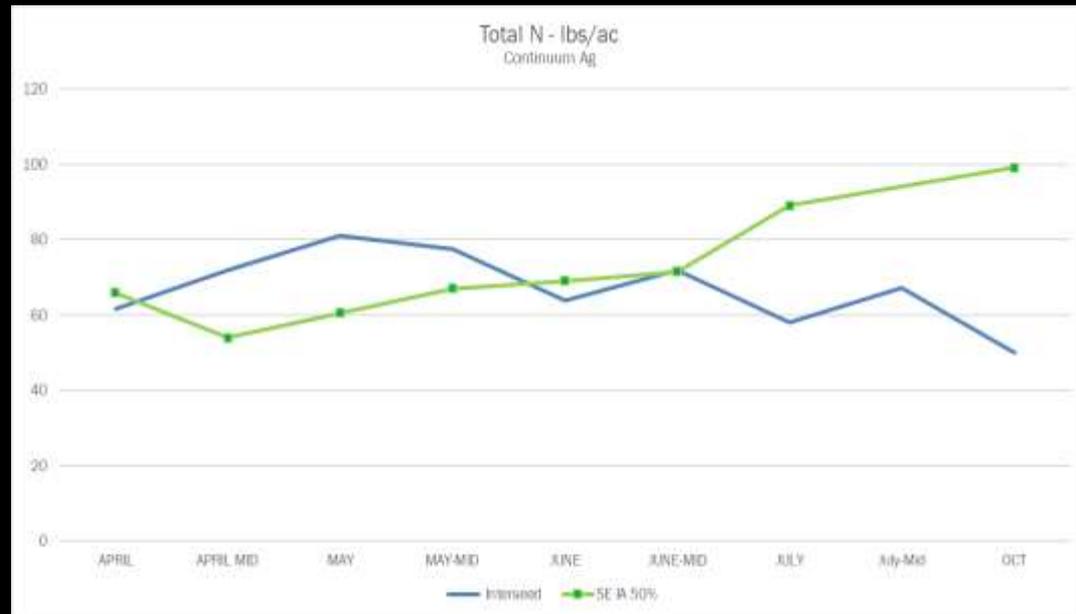
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Oct 22

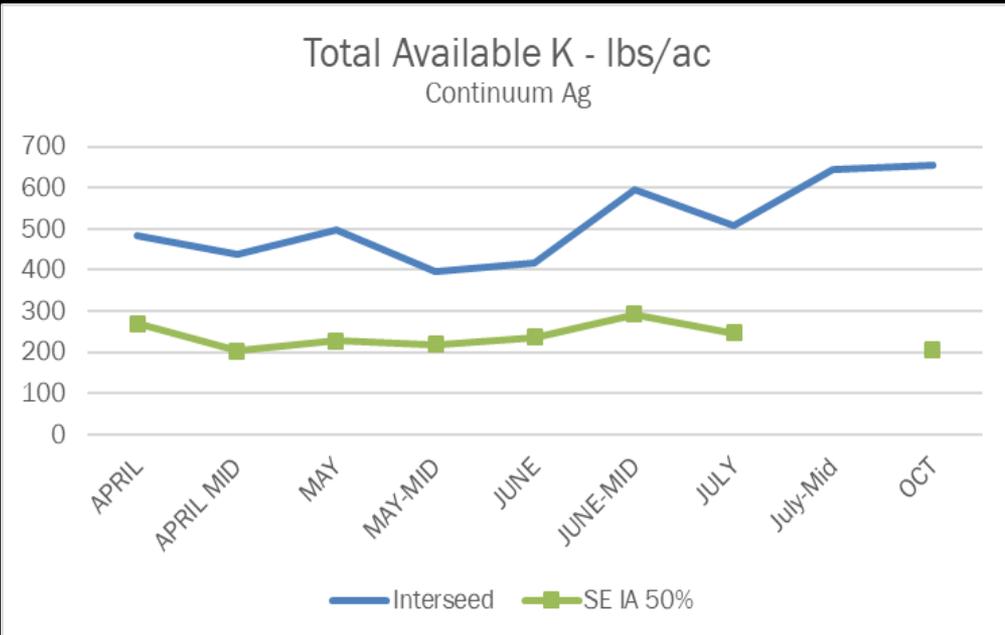
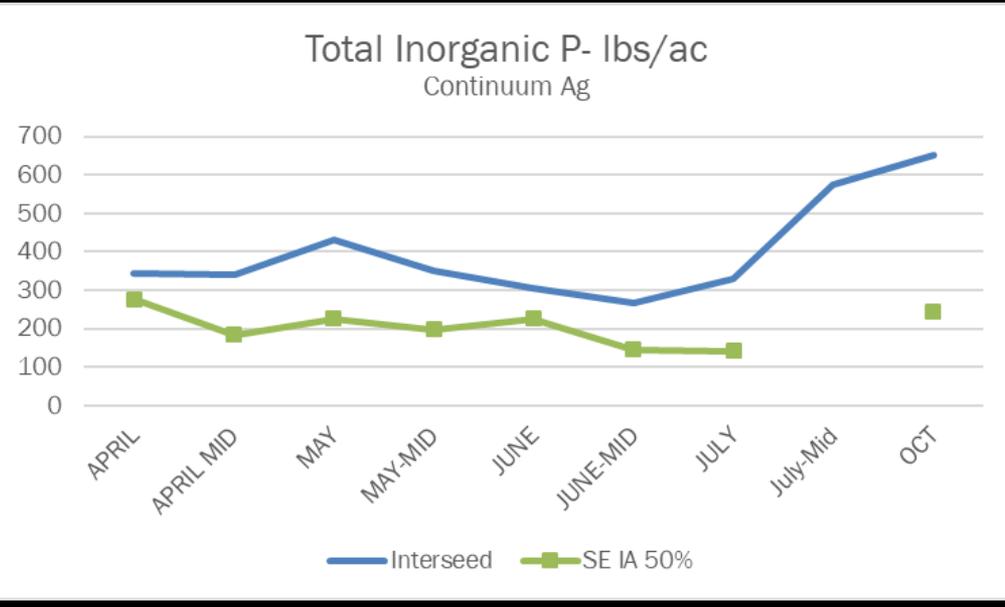
Haney Test Results - Nitrogen

- Nitrogen levels were good early, but lacking later in the season.
 - Brassica Competition
- Early levels were high enough to prevent legumes from nodulating.
 - Not fixing biological N.
 - Focus on N placement.



Haney Test Results – P & K

Total Exchange Capacity (ME/100 g)		24.63		
pH (H ₂ O 1:1)		6.5		
Organic Matter (360°C LOI) %		4.27		
Estimated Nitrogen Release	lb/A	93		
ANIONS	SOLUBLE SULFUR*	ppm	14	
	PHOSPHORUS	MEHLICH III	lb/A P as P ₂ O ₅	1049
			ppm of P	229
		BRAY II	lb/A P as P ₂ O ₅	1099
			ppm of P	240
	OLSEN	lb/A P as P ₂ O ₅		
		ppm of P		
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	6456	
		ppm	3228	
	MAGNESIUM*	lb/A	788	
		ppm	394	
	POTASSIUM*	lb/A	1602	
	ppm	801		
	SODIUM*	lb/A	46	
		ppm	23	



Lessons from 2017

- Brassicas: A little goes a long way
 - Not recommended if interseeding before V3.
- Keep covers & weeds off corn rows.
 - Attention to detail while drilling.
 - Banding herbicide on row with planter.
- Master the Mixes
 - Learn what species can dominate mixes, cut rates.
 - Focus mix on legumes & other mycorrhizal species
- Nitrogen Placement
 - Index to the row. Don't make corn go through covers.

2018 PFI Trial Update:

Interseeding Corn

- Objective: Determine if a mix of cover crops interseeded into corn in late spring can survive until fall and have any effect on corn yield.
- Corn Planting Date: April 27
- Interseeding Date: May 24
- Herbicide Program: Pre: 1.5 qt Acuron*
Post: 44oz Glyphosate

*1.5 qt Acuron = 3oz Callisto, 12oz Atrazine, 13oz Dual, ?? Bicycloprone

2018 PFI Trial Update:

Interseeding Corn

- Warm Season Grass

- Corn – Pioneer 1197AMXT (35k)

- Cool Season Grass

- Annual Ryegrass (2#) & Oats (4#)

- Cool Season Broadleaf

- Clovers: Red (1#), Crimson (3#), Balansa (1#), Sweet (1#)

- Rapeseed (0.3#), Buckwheat (1#), Flax (1#)

- Spring Lentils (3#), Spring Peas (0.5#)

- Warm Season Broadleaf

- Cowpeas (Iron & Clay) (4#)



May 24



May 24



May 30



June 2



June 4



Spring Peas



Cowpeas, Oats, etc



Buckwheat



June 4



June 10



June 15



June 15



June 18



June 20



June 25

Observations from 2018

- Larger seeded species (Peas, Oats, Buckwheat) handling residual herbicides better than smaller seeded species (Clovers, Lentils, Flax, etc)
- Waterhemp is still hard to control with glyphosate.
- Warm season legumes will nodulate in standing corn if Nitrogen is indexed to corn rows.
- Push seeding date earlier if conditions are favorable for rapid corn growth.



Questions?

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Spring Seeded Cover Crop Mixes

- Objective: Establish a diverse mix of cover crop species before planting corn later than normal.
- Spring Cover Seeding Date: March 15
- Corn Planting Date: May 24
- Interseeding Date: June 17
- Herbicide Program:
 - Burndown/Pre: 32oz Liberty & 20oz Dual
 - Burndown Rescue: 32oz Glyphosate
 - Post: 44oz Glyphosate + 32oz Liberty

Spring Seeded Cover Crop Mixes:

- Rate: 35-45# Acre
- Warm Season Grass
 - None
- Cool Season Grass
 - Spring Barley (10#) & Spring Oats (10#)
- Cool Season Broadleaf
 - Buckwheat (4#), Flax (3#), Vol. Mustard, Vol. Radish
 - Spring Lentils (5#), Spring Peas (6#)
 - Clovers: Berseem (2#), Balansa (2#), Crimson (2#)
- Warm Season Broadleaf
 - None



March 15



May 2



May 5



May 13



May 17



May 17



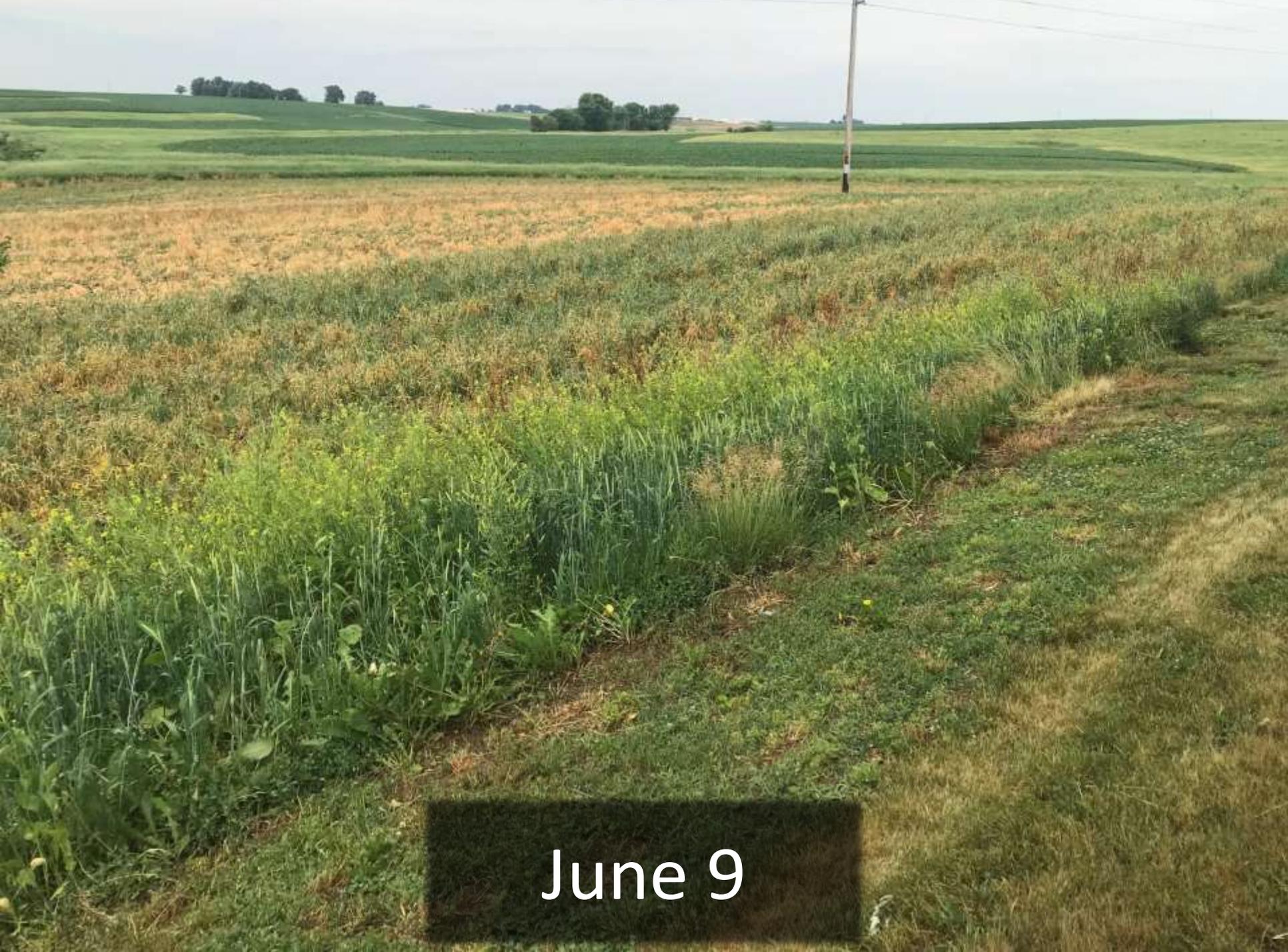
May 21



May 24



May 31



June 9



June 12



June 15



June 17



June 25



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