



# New Cover Crop Strategies for 2026 & Beyond

TJ Kartes & Brian Wieland



# Who is Saddle Butte

- Base in the Willamette valley in Oregon
- Family owned and operated farm and seed company
- One major cleaning plant and warehouse in Oregon
- 4 Midwest mixing facilities and warehouse
- 4 U.S. representative



# Who is T.J.Kartes and what area do I cover

- I grew up working with my uncle on the family farm in southern Minnesota
- Went to the University of Minnesota/ Waseca
- Worked in the corporate feed and seed world for 20 plus years
- I cover the upper Midwest





Novel solutions for growing concerns.





34<sup>th</sup> Annual  
**NATIONAL NO-TILLAGE CONFERENCE**  
January 6-9, 2026 • St. Louis, Mo.



**The Andersons**



**Yetter**  
FARM EQUIPMENT  
SINCE 1930



**GO Seed**  
Semences, Semilla, Saad  
Novel solutions for growing concerns.



**40 YEARS** TOTAL FARM MARKETING  
BY STEWART-PETERSON



**BioTill** Cover Crops  
Our Roots Run Deep  
**CopperheadAg** PRODUCTS



MidWest Bio-Tech Inc.  
**VULCAN** EQUIPMENT



**TTAN**



Martin Till



**HORIZON**



**HORSCH**  
**Ag Leader**

# How did we start, and where we are now

- A lot of planes
- No till drill and vertical tillage
- Tried to make interseeding work
- Moved to after short season crops
- Advanced to drones, precision placement and species



# What species have we used

- Winter and spring cereal grain
- Winter and annual brassicas
- Winter and annual legumes
- Annual ryegrass





Novel solutions for growing concerns.





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# New Cover Crop Strategies for 2026 & Beyond

TJ Kartes & Brian Wieland



# B&R Wieland Family Farm

- Peoria Co., IL (Akron Twp.) – North of Peoria
- Corn, Soybeans, Small Grains, Pumpkins
- Strip Till/No-Till/Min. Till
- 100% Cover Crops (10+ years)
- Beef Cattle (freezer beef)



**Cover Crops – Why?**

**Benefits to Achieve  
Goals**

# COVER CROPS – SO MANY BENEFITS

WHAT OTHER CROP INPUT OFFERS THIS MANY BENEFITS?



# Goals...Going to Vary

- Location (General/Field Specific)
- Soil Type (General/Field Specific)
- Topography
- Tillage (No-Till/Strip-Till/Min. Till/ Conventional)
- Farming Type - Conv./Regenerative/Organic
- Livestock - Forage needs?

# Bottom Line.....

- All Want to be good stewards of the Land and Water
- All Want to Improve overall Soil Health
- All Want to be Profitable

# What Guides Cover Crop Decisions?

- Own Farm Experiences
- Neighbors/Peers/Others Experiences
- University/Independent Trials
- Industry Plots/Trials
- Farmer Plots/Trials
- Government Programs – NRCS/CSP/CRP/Other



Seeded Oct 1-3, 2024

- Evaluated thru out the Fall of 2024 and Spring of 2025



For complete plot videos go to:  
[saddlebutte.com](https://saddlebutte.com)  
and follow links





Vital Hairy Vetch Seeded Oct. 3, 2024 – JD 750 drill



May 10<sup>th</sup> – just terminated



May 5<sup>th</sup> – Hairy Vetch Nodules

Corn planted April 30, 2025

Winter Camelina Seeded Oct. 3, 2024 – JD 750 drill



Next Spring  
April 2, 2025

After  
cold/open  
winter



# Spring Barley

Seeding Date: 10/02/2024



**Date of Picture:** 11/18/2024  
**Height:** 5-7 in.



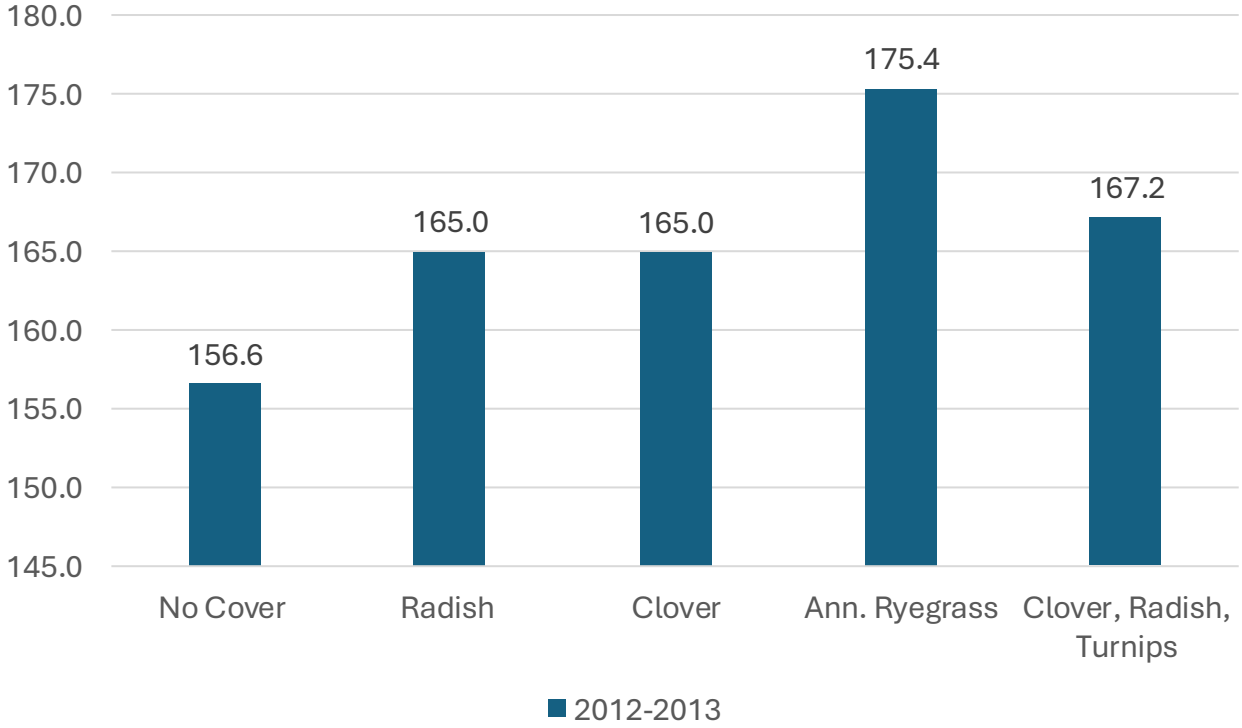
**Date of Picture:** 12/09/24

# Summary of Fall Seeded Cereals

Species	Seeding Date	Height (in.) 11/18/24	After Hard Freeze 12/09/24
Spring Oats	10/2/24	4-5	Brown, dying
Black Oats	10/2/24	3	Mostly green, alive
Winter Oats	10/2/24	2-3	Mostly green, alive
Spring Barley	10/2/24	5-7	Brown, dying
Winter Barley	10/2/24	2.5-3.5	Mostly green, alive
Spring Triticale	10/2/24	5-8	Mostly green, alive
Winter Triticale (VNS)	10/2/24	1-3	Green, alive
Winter Triticale (Ace)	10/2/24	2-3 in	Green, alive

\*\*\*Fall 2024 very dry (Oct), but mild temperatures, followed by good late rain (Nov) – then turned cold (Dec)

### Corn Yield and Cover Crops



Source: Becks Hybrids- IL

# **WHY ANNUAL RYEGRASS**

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**Good for the Soil \* Good For the Crop**

**INCREASES CORN AND SOYBEAN YIELDS OVER TIME**

- ★ **Deep rooting channels- for corn and sb roots to follow**
- ★ **Good C:N ratio and non alleopathic - corn friendly**
- ★ **Improves soil tilth and soil structure**
- ★ **Breaks compaction both physical (roots) and chemical (root exudates)**
- ★ **Supports wheel traffic**
- ★ **Increases organic matter**
- ★ **Creates excellent environment for microbes and earthworms**
- ★ **Scavenges nutrients and releases to cash crop during growing season**
- ★ **Protects soil and controls soil erosion**
- ★ **Soybean cyst nematode suppression\***
- ★ **Helps weed control especially winter annuals**
- ★ **Excellent forage source**
- ★ **Economical -reasonably priced, high seeds/lbs.**
- ★ **Can be mixed with:**

**Legumes (clovers, vetches, peas)**

**Brassicas (camelina, radish, rapeseed, cabbage, kale)**

**Other Grasses (Oats, triticale, barley)**

**Mixes enhance diversity, spread risk and help condition/weather proof  
to make cover crop program more successful**

# Annual Ryegrass vs Cereal Rye

**Bounty**  
Annual Ryegrass



	Annual Ryegrass	VS	Cereal Rye
Increase Corn Yields	++		-/+
Increase Soybean Yields	++		+
Weed Control (winter ann.)	++		+++
C:N ratio (corn friendly)	++		-
Winter Hardy	++		+++
Nutrient Scavenger	+++		+++
Reduce SB Cyst Nematode*	++		+
Deep Rooting	+++		++
Breaks Compaction	+++		++
Forage Tonnage	++		+++
Forage Value	+++		+
Approx. Cost / Acre	\$8 - \$20		\$8 - \$20
Approx. Plant Date Window**	Aug 15 - Oct 10		Sept 1-Dec 1
Min. Germination Temp.	40° F		34° F
Seeds / Lbs.	162,000		18,000

\*preliminary data

\*\* please refer to local info



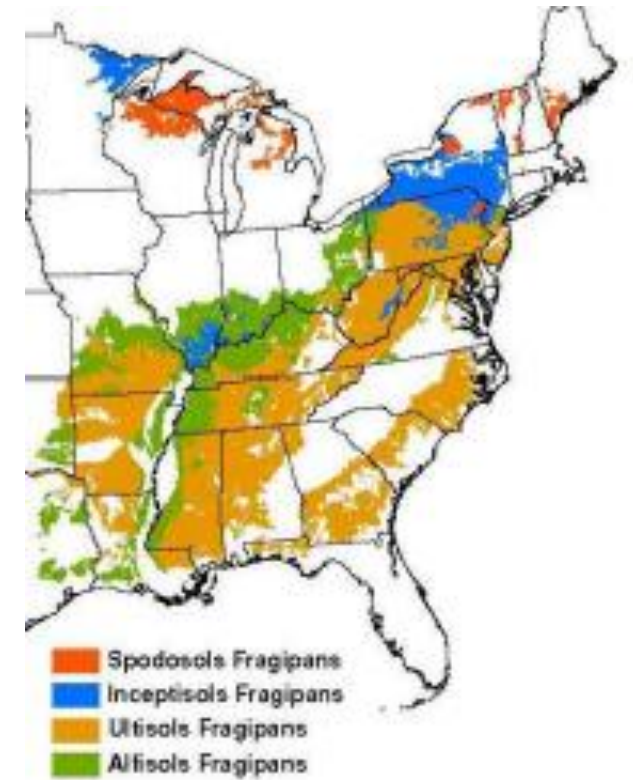
# Remediation of the Fragipan Using Annual Ryegrass

Lloyd Murdock, A.D. Karathanasis, Chris Matocha, John Grove, and Dottie Call, Plant and Soil Sciences



## Murdock/UK – Research findings:

- 10 years ARG in row crop rotation
- Fragipan layer was completely gone in the treated fields
- Corn yields increased by an average of 50+ bushels per acre and soybean yields jump to the mid-80s bushels per acre, far exceeding county averages.



The seven years of testing with annual ryegrass degraded the fragipan and increased yields more effectively than any other chemical or plant alternative and has shown good potential as a practical remedy.

Kentucky – Fragipan Soils  
Spring 2025

Annual Ryegrass  
10+ Years

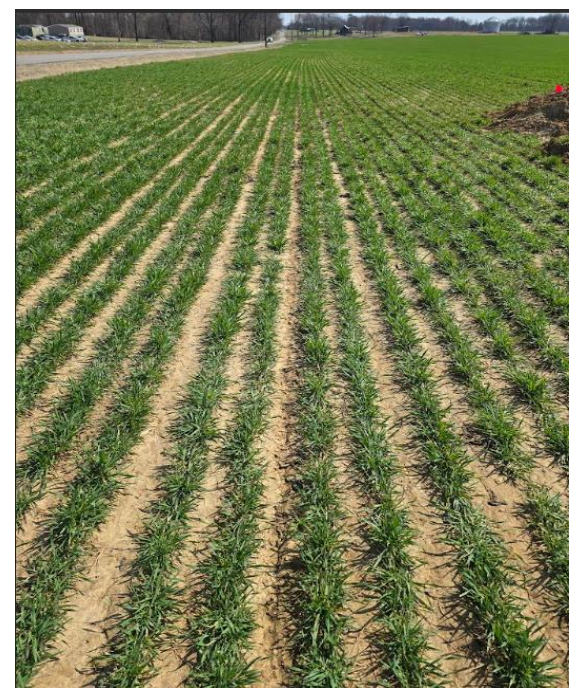
No ARG  
C/SB/W

**Annual Ryegrass 30% better vs  
county average  
(approx. 30-50 bu/ac- research)**

**Dry year (farmer data)  
Co. Average 75-80 bu/ac  
10+ years ARG 245 bu/ac**

ARG roots  
penetrate deep  
into fragipan  
soils (creating  
earthworm  
channels and  
soil mixing)

Wheat roots  
only penetrate  
top part of soil-  
not getting thru  
fragipan (very  
hard blocky  
soil – no soil  
mixing or  
earthworms)



# Great Podcast on Annual Ryegrass – Breaking Compaction How its Done and the Benefits



**BREAKING the Fragipan has Been Broken**

 Farm4Profit Podcast  
64.2K subscribers

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# What About Precision Planting Cover Crops?

Some – Followed  
by Strip-Till

- Increase row crop yield
- Strips dry out faster/Earlier Planting
- Less Risk
- Multi-Species Combinations
- Overwinter/Winter Kill Combinations
- Opportunity for Bio Strips
- Wider window for termination
- Opportunity for delayed termination (for Legumes to grow longer into Spring)
- Potential to Reduce Pest Risk – Disease / Insects / Other

Cover crop mix drilled Sept 18-25 2015 (plugged cups over soybean stubble rows)  
Pic Nov 2015 – Central IL



To Corn in 2016

Annual Ryegrass

Triticale

Radish

Rapeseed

Crimson clover

Corn Row (old Soybean Row)

– no cover crops



Pike/Upton trials – Springerton, IL – Multi-Year Study (2015-2023)

## Fall Growth of Radish



- Radish/oat mix winter kills for low residue corn planting



Photos courtesy of John Pike

**Youtube.com - Virtual Farm Visit - Precision Cover Crops / Bio Strip-Till with John Pike**

Precision planting cereal rye – Kentucky  
Large Scale



Photo courtesy of John Pike



Precision planted Winter Triticale  
Chapin, IL – Fall 2025  
Large Scale/Equipment



# 2018 Yield Data

## Precision Planted Cover Crops

### Springerton, IL (Southern IL)

In Row	By Row	Middle of Row	Yield (bu/ac)
Check – No-till/No Cover	No Cover	No cover	147.6
Radish (winterkill)	No Cover	ARG+CR+Vetch	197.9
Radish (winterkill)	Hairy Vetch	ARG+CR+Vetch	192.8
No Cover	Balansa Clover	ARG+CR+Crims on Clover	193.6
Cereal Rye	Cereal Rye	Cereal Rye	163.9

Top 3 cover crop treatments vs no cover check and solid seeded cereal rye  
 All cover crop treatments out yielded no cover crop check in 2018 data

**Youtube.com - Virtual Farm Visit - Precision Cover Crops / Bio Strip-Till with John Pike**

# Multi - Year Yield Data (2018-2019)

## Precision Planted Cover Crops – Averages

### Springerton, IL (Southern IL)

Treatment	Yield Bu/Ac 2018-2019
No-Till / No Cover Crops	166.2
All Cover Crop Treatments (precision planted)	206.4
Top 3 Cover Crop Treatments (precision planted)	222.6

# A Place for Dwarfs in your cover crop tool box?

- Dwarf Cereal Rye
- Dwarf Triticale
- Dwarf Wheat
- Dwarf Barley

# Reasons For Dwarfs

- Less Bio Mass
  - Less challenging for row crops
  - Less challenging for equipment
  - Less residue “tie up”
- Bigger window for termination – less risk
- Allows better opportunity for other species in a mix



36"

24"

Dwarf Cereal Rye 5/6/25  
Late Veg/Early Heading



24"

12"

Dwarf Wheat 5/6/25  
Late Vegetative



May 22, 2025 – Central IL



38"

26"

15"

8"

June 18, 2025 – Central IL

July 20, 2022 (OR)

36"

30"



Dwarf Rye – 30 - 36"



Conventional Rye - 60"

April 7, 2025



Dwarf Rye – Increase (OR)

# Systems with Cover Crops - Profitability

March 18, 2021



April 6, 2021



April 22, 2021



April 28, 2021



No Covers-  
Worked Ground

April 28, 2021



Winter Triticale and Annual Ryegrass

April 29, 2021



May 5, 2021



May 5, 2021



May 14, 2021



76 bu/ac Soybeans

# Profitability (own farm- Soybeans)

- Strip Till vs Conventional - saves \$20- \$25/ac
- No Residual vs Residual - saves \$20-\$25/ac
- 1 less Herbicide Spray Trip (app+prod) - saves \$35/ac
- Reduced Fertilizer (1/2 rate – in Strips) - saves \$40/ac
  
- Total Savings - \$115-\$125/ac
  
- Add Cover Crops plus Seeding Cost + \$38
  
- **Net GAIN from Strip-Till and Cover Crops = \$77/ac - \$87/ac**

# SB Stubble – Cover Crop Seeding - Air app. Aug. 26, 2016 (Pic Nov. 1, 2016)

Annual Ryegrass 9.4 lbs/ac  
Triticale 18.6 lbs/ac  
Oats 9.8 lbs/ac  
Hairy Vetch 5.45 lbs/ac  
Crimson Clover 3.75 lbs/ac  
Bayou Kale .5 lbs/ac  
Radish 2.5 lbs/ac  
Buckwheat 1.25 lbs/ac



# SB Stubble – Cover Crop Seeding - Air app. Aug. 26, 2016 (Pic Feb. 27, 2017)

Annual Ryegrass 9.4 lbs/ac  
Triticale 18.6 lbs/ac  
Oats 9.8 lbs/ac  
Hairy Vetch 5.45 lbs/ac  
Crimson Clover 3.75 lbs/ac  
Bayou Kale .5 lbs/ac  
Radish 2.5 lbs/ac  
Buckwheat 1.25 lbs/ac



# Soybeans – Cover Crop Seeding - Air app. Aug. 26, 2016 (Pic April 14, 2017)

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Oats 9.8 lbs/ac  
Hairy Vetch 5.45 lbs/ac  
Crimson Clover 3.75 lbs/ac  
Bayou Kale .5 lbs/ac  
Radish 2.5 lbs/ac  
Buckwheat 1.25 lbs/ac



Cover Crop Seeding - Air app. Aug. 26, 2016 (Pic April 20, 2017- After Burndown)



Annual Ryegrass 9.4 lbs/ac  
Triticale 18.6 lbs/ac  
Oats 9.8 lbs/ac  
Hairy Vetch 5.45 lbs/ac  
Crimson Clover 3.75 lbs/ac  
Bayou Kale .5 lbs/ac  
Radish 2.5 lbs/ac  
Buckwheat 1.25 lbs/ac

Burndown April 14, 2017  
Buccaneer Plus 57 oz (3 lbs ai/gal)  
2-4D 1 pt  
Sharpen 1 oz  
AMS 18.5 lbs/100 gal.  
Applied at 12 gal/ac

# Corn Planted April 25<sup>th</sup> into Strips and Covers – Pic. May 22, 2017

6" rain  
April 29-May 1



# Corn Harvest

(after covers seeded  
Sept 28, 2017)

108-110 day corn

Yield = 255 bu/ac  
20.5 % moisture



# Profitability (own farm- Corn)

- Strip Till vs Conventional - saves \$20/ac
- No N Stabilizer (use cover crops instead) - saves \$15/ac
- Lower Herbicide Cost – saves \$15/ac
- Reduced Fertilizer (1/2 rate – in Strip) - saves \$47/ac
- Total Savings - \$97/ac
  
- Add Cover Crops plus Seeding Cost + \$44/ac
  
- **Net GAIN from Strip-Till and Cover Crops = \$53/ac**

## Cover crops reduce Nitrates into water supply

Table 3.11. Example statewide results for nitrate-nitrogen reductions with shading to represent in-field, edge-of-field, land use, and point source practices or scenarios.

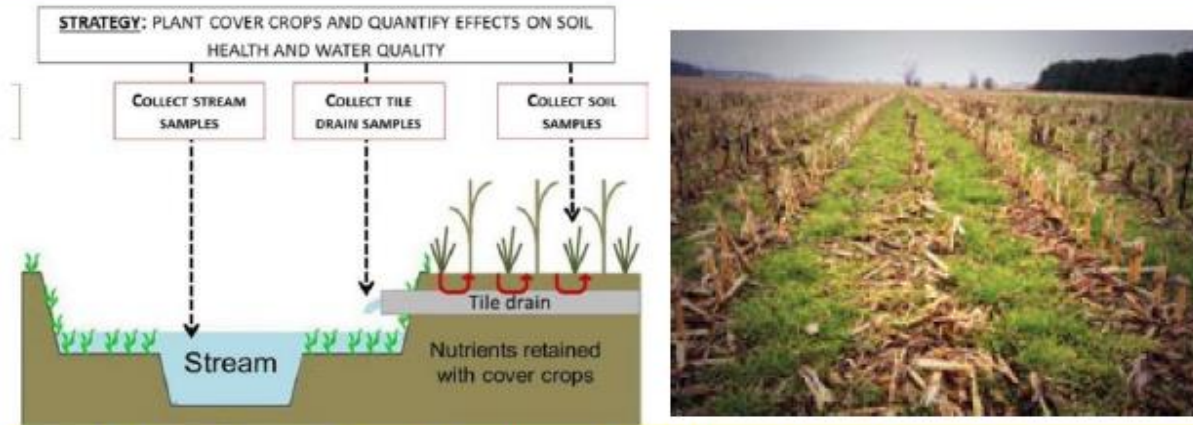
Practice/scenario	* Nitrate-N reduction per acre (percent)	* Nitrate-N reduced (million lb)	Nitrate-N reduction from baseline (percent)	Cost (\$/lb removed)
✓ Reducing N rate from background to MRTN on 10 percent of acres	10	2.3	0.6	-4.25
✓ Nitrification inhibitor with all fall-applied fertilizer on tile-drained corn acres	10	4.3	1	2.33
✓ Split application of 50 percent fall and 50 percent spring on tile-drained corn acres	7.5-10	13	3.1	6.22
✓ Spring-only application on tile-drained corn acres	15-20	26	6.4	3.17
✓ Split application of 40 percent fall, 10 percent pre-plant, and 50 percent side dress	15-20	26	6.4	
* <u>Cover crops</u> on all corn/soybean tile-drained acres	30	84	20.5	3.21
* <u>Cover crops</u> on all corn/soybean non-tiled acres	30	33	7.9	11.02

# Planting cover crops to reduce nutrient loss from agricultural fields and improve water quality

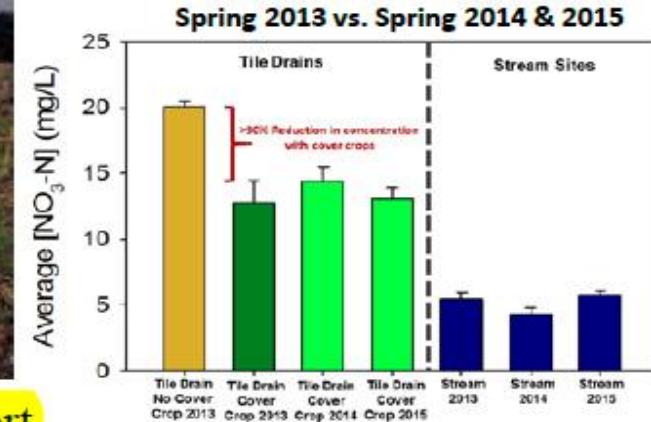
Laboratory of Jennifer L. Tank, Dept. of Biological Sciences, University of Notre Dame

## Problem of Excess:

- Channelized agricultural streams and ditches export excess nitrogen (N), phosphorus (P), and sediments to sensitive downstream ecosystems where they contaminate drinking water, fuel downstream algal blooms with “dead zones”, and harm sensitive fish and mussels.



**Goal: Retain nutrients/soils on fields, and reduce stream export.**

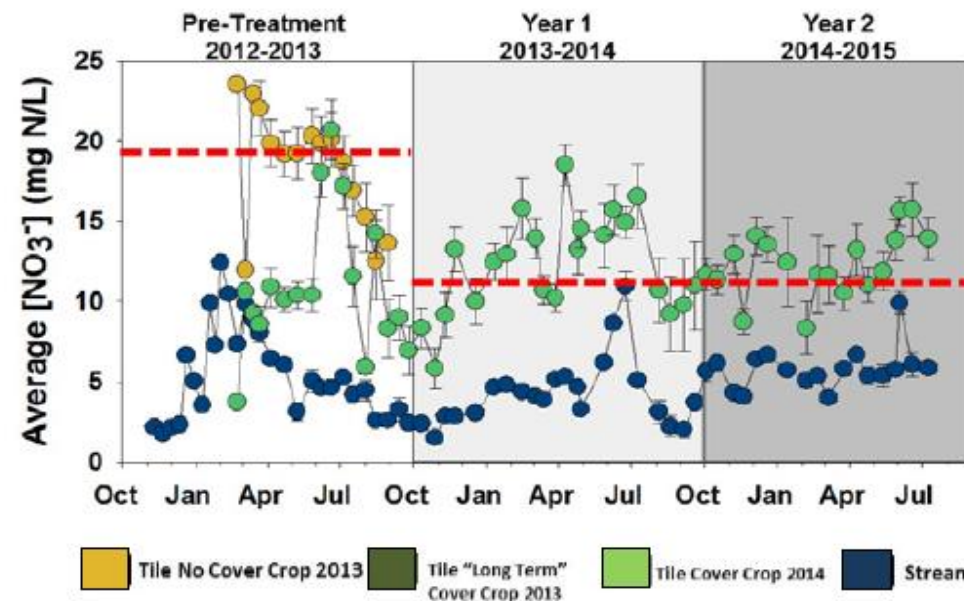


- Excess fertilizer nutrients often enter streams and ditches via tile drains, especially during Winter and Spring when fields are bare.

## Cover crops can reduce nutrient loss:

- Cover crops, like ryegrass, are planted after cash crop harvest and their growth coincides with critical times for nutrient export from tiles to streams/ditches.

## Nitrate-N export from tile drains is lower with cover crops



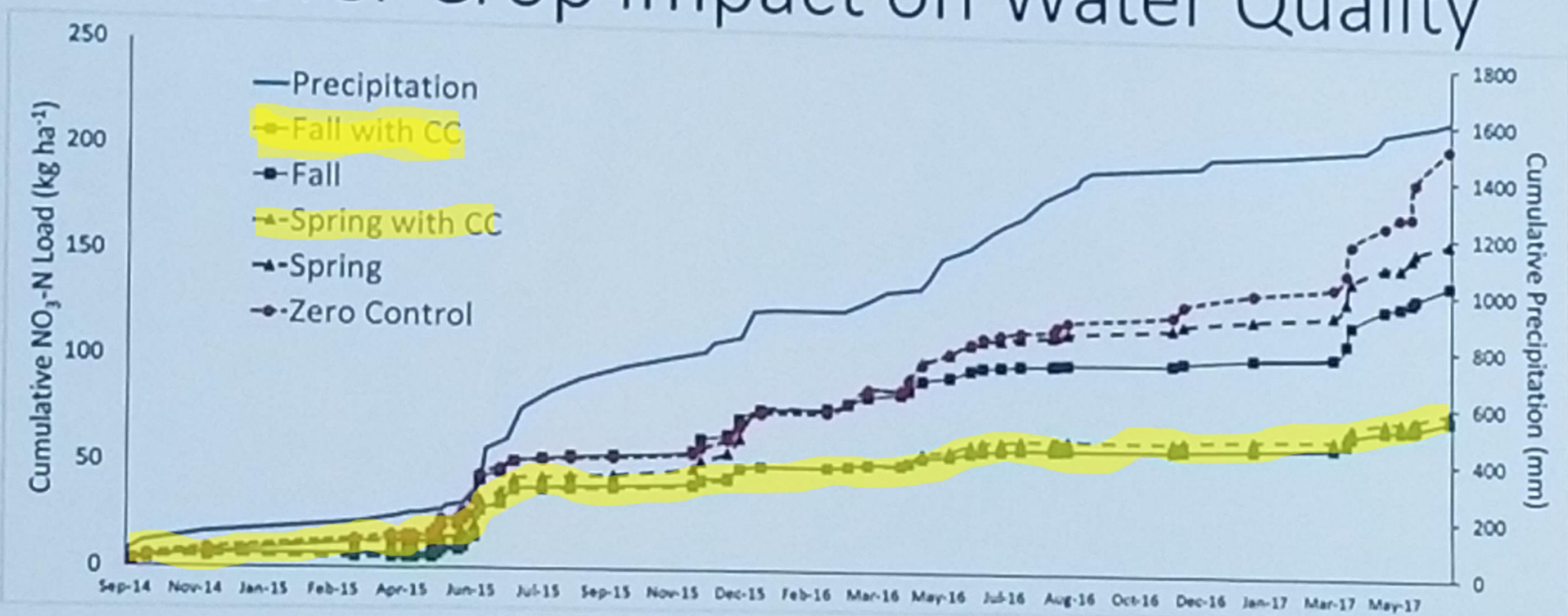
- Year 1 and Year 2 planting suggests that the planting of cover crops reduces tile drain nitrate concentrations by ~30%.

- Our data suggest that cover crops have the potential to significantly reduce N export from tile drain outlets.

## Conclusions:

- Cover crops provide a field-scale management solution that reduces nutrient loss to tile drains and keeps fertilizer on fields.

# Cover Crop Impact on Water Quality



**Precipitation**  
 Total = 63 inches  
 Annual Average = 25

**N Loading Treatment Comparison**

Fall N	52 kg ha <sup>-1</sup> year <sup>-1</sup> (46 lb/A)
Fall N + CC	30 kg ha <sup>-1</sup> year <sup>-1</sup> (27 lb/A) 42% ▼
Spring N	60 kg ha <sup>-1</sup> year <sup>-1</sup> (53 lb/A)
Spring N + CC	30 kg ha <sup>-1</sup> year <sup>-1</sup> (27 lb/A) 50% ▼

**N Loading Trends**

- Fall N vs. Spring N = Equal
- Fall N vs. Spring N + CC = 42% ▼
- Spring N vs. Fall N + CC = 50% ▼
- Spring N + CC vs. Fall N + CC = Equal

# Summery

## Cover Crops

### 2026 and Beyond

- Connect with someone with **experience** – farmer, educator, seed representative
- Research good data - multiple years and locations with different conditions to see how cover crops and crop yields respond
- Look at multiple seeding methods and species for diversity to increase success (cover crops and row crop yields)
- Focus on a “systems approach” for overall stewardship, soil health benefits and profitability
- Most challenges (cover crop success or row crop yield issues) can be over come with management