

What's the Cover Crops Craze



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Practical Farmers of Iowa

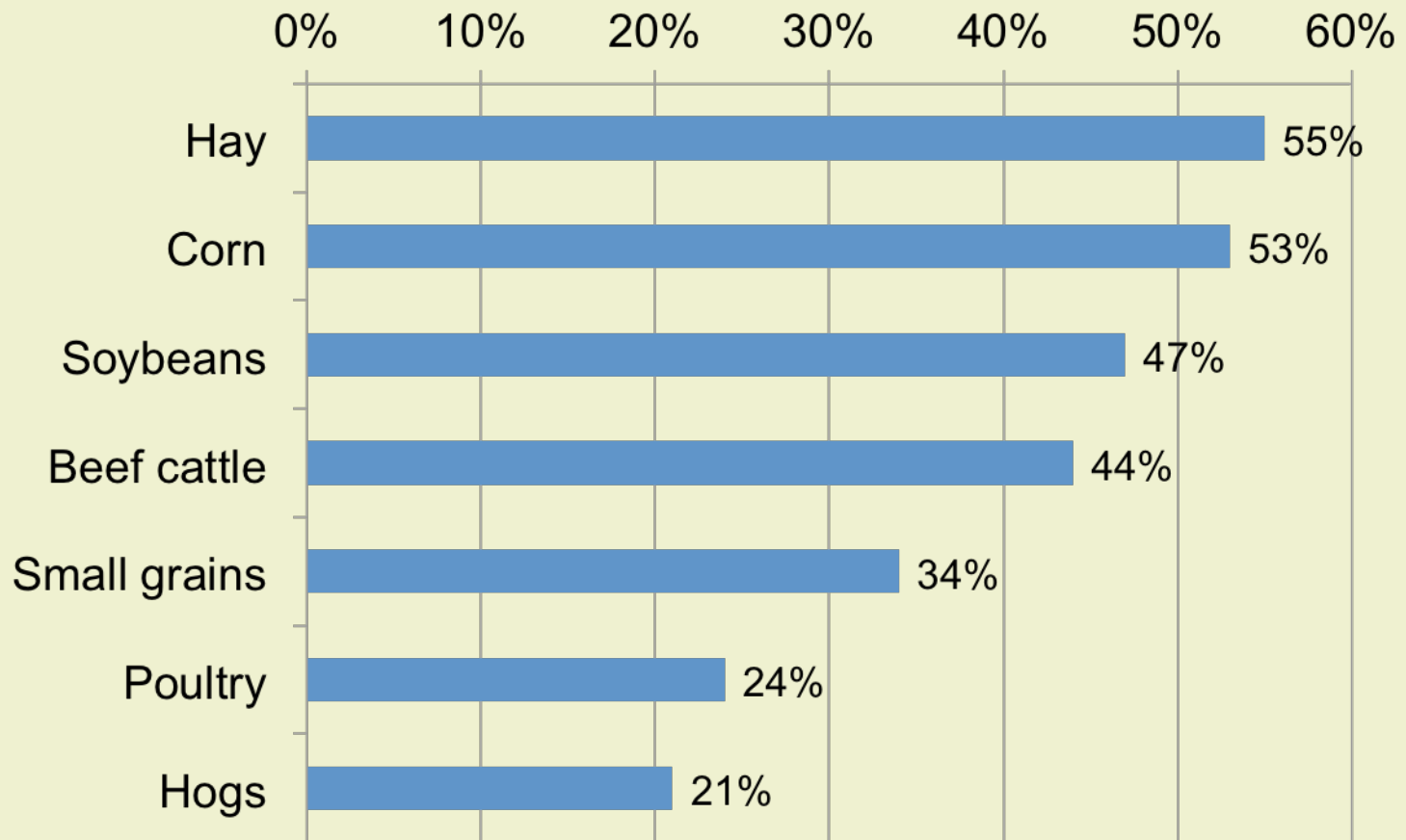
AGENDA

- *Who is Practical Farmers of Iowa (PFI)?*
- *What's Science Say @ Cover Crops*
- *A few basics*
- *Cover Crops in your business portfolio*



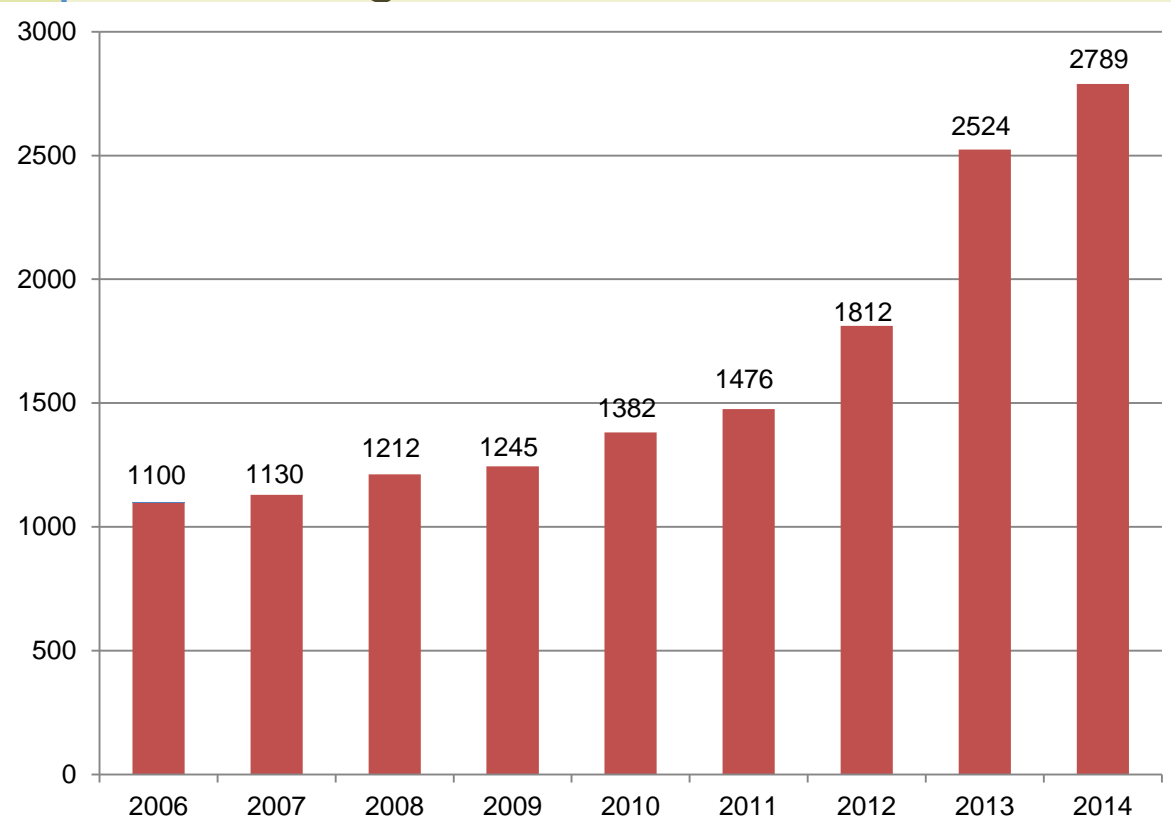
Who is Practical Farmers of Iowa?

Percentage of all farmer members



Who is Practical Farmers of Iowa?

Strengthening farms and communities through farmer-led investigation and information sharing.

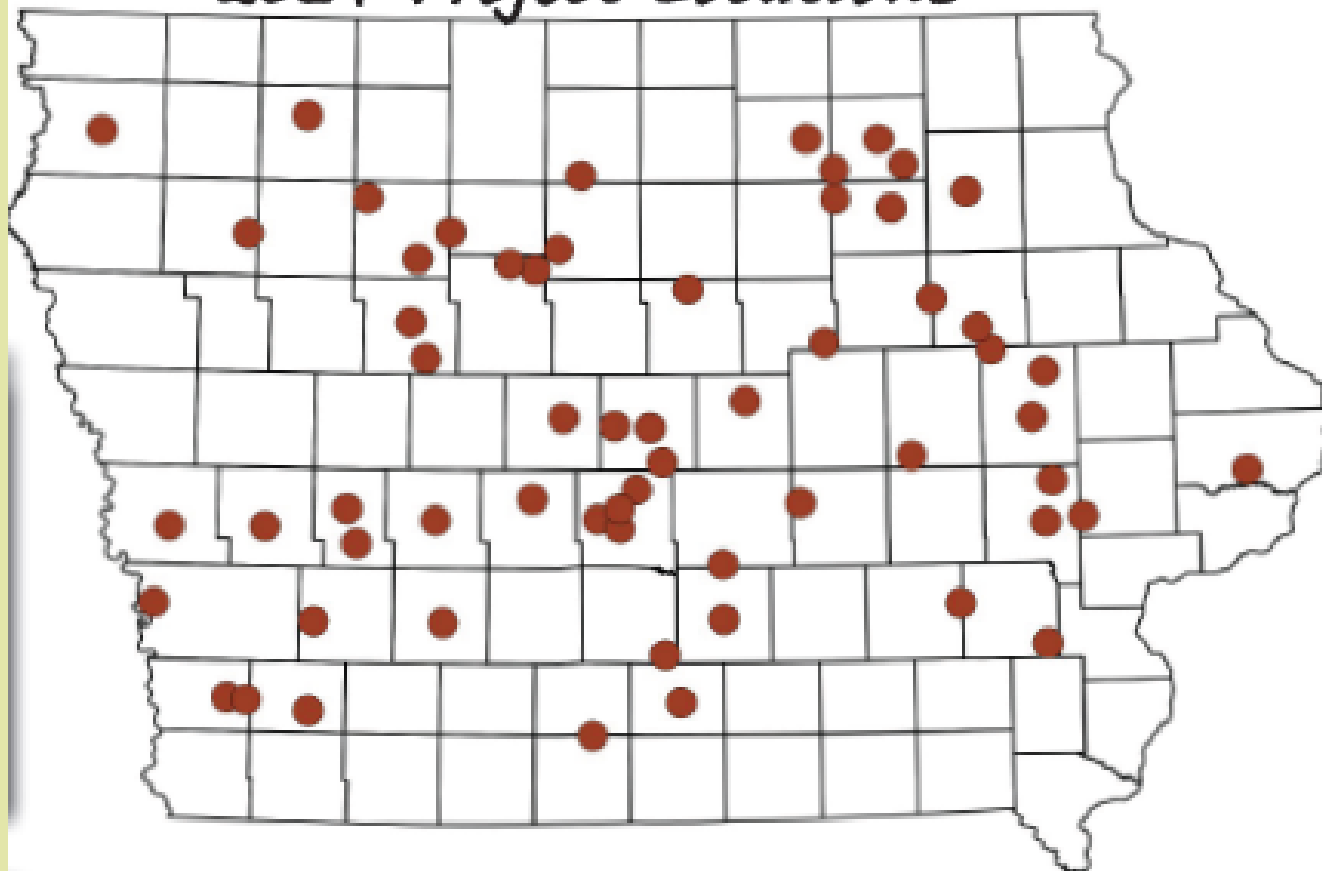


Achievements:

- About 90 events held each year
- 42 research projects by 65 farmers (2014)
- Members report increased on-farm stewardship, profitability, and efficiency

Cover	No Cover	Cover	No Cover	Cover	No Cover	No Cover	Cover
Rep 1		Rep2		Rep3		Rep4	

2014 Project Locations



of Farmer-
Cooperators
Participating

65

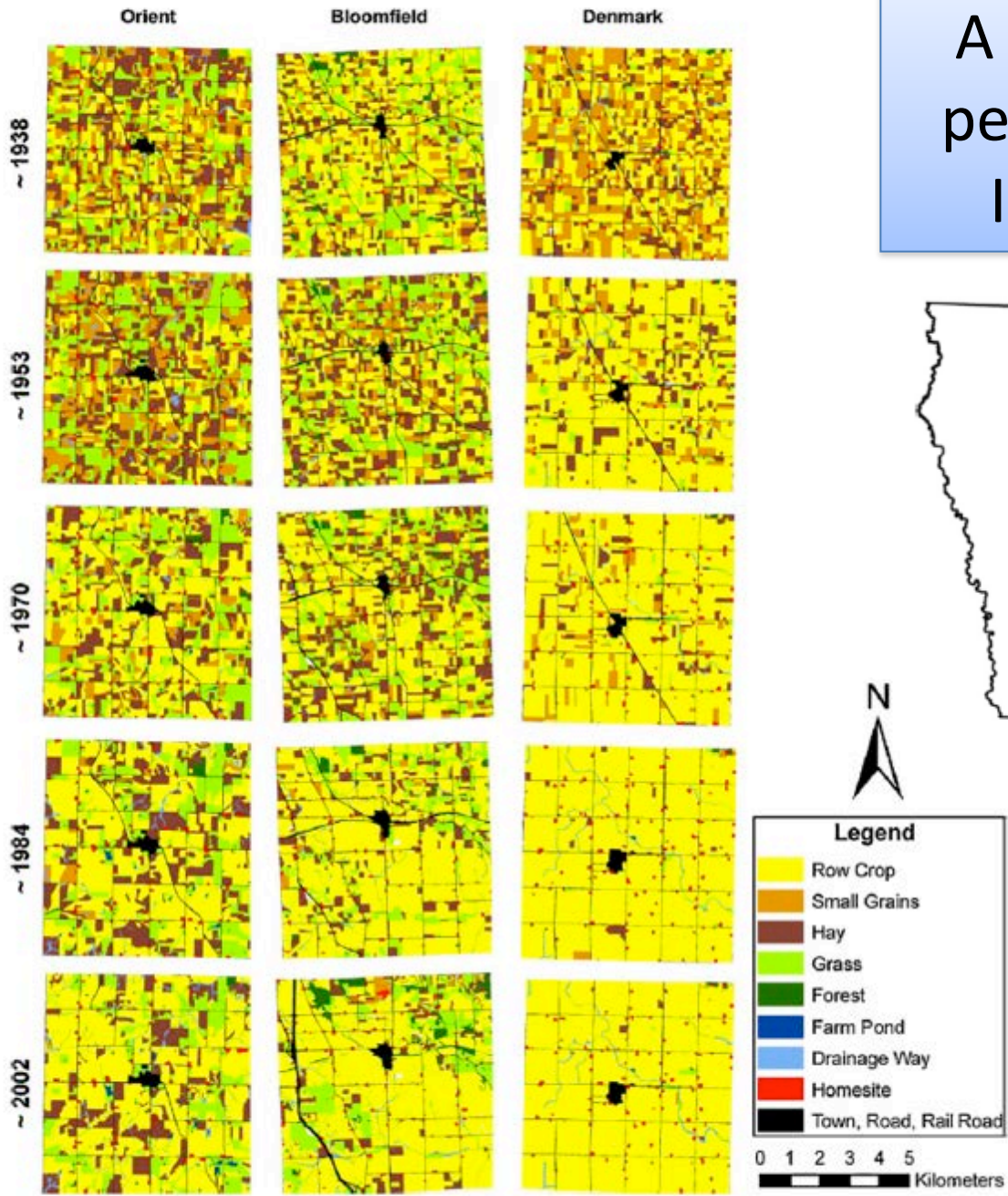
PROJECTS IN 2014
that concluded or are
On-Going

42

***17 Projects Specific to Cover Crops*

WHY COVER CROPS?

1 in 4 Iowa farmers
are using cover crops



A massive loss of perennial cover in Iowa farmland

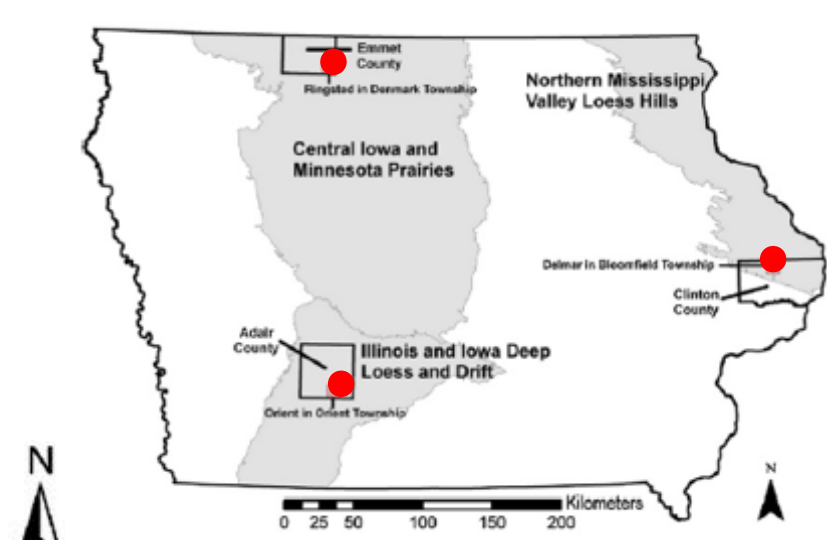
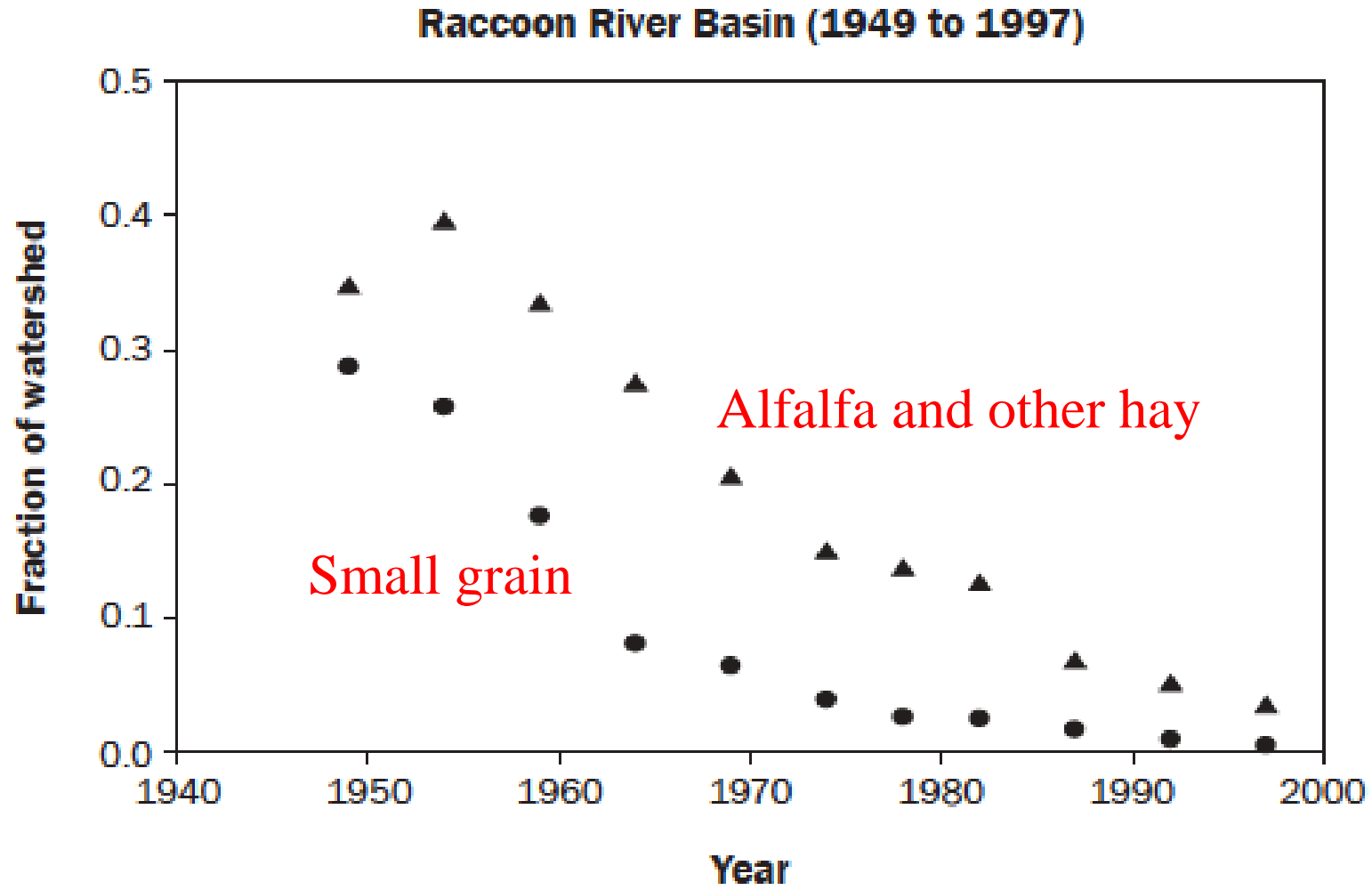


Fig. 2. Comparison of land cover change over time and among three agricultural landscapes in Iowa: Orient Township, Bloomfield Township, and Denmark Township.

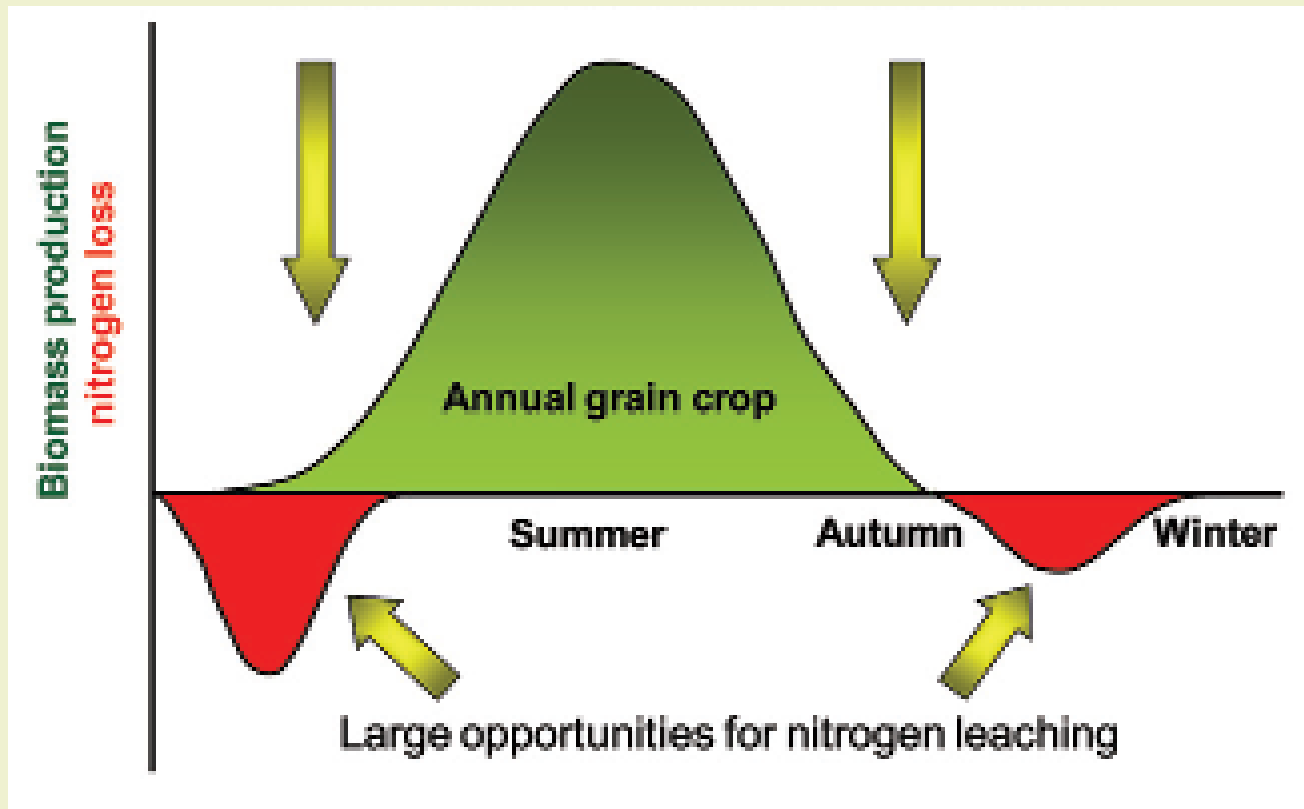
Figure 2

Change in area planted to small grains and alfalfa and hay crops (ha) within the Raccoon River Basin from 1949 through 1997.



Hatfield et al., 2009, JSWC

52% of precipitation occurs between Oct-May in central Iowa



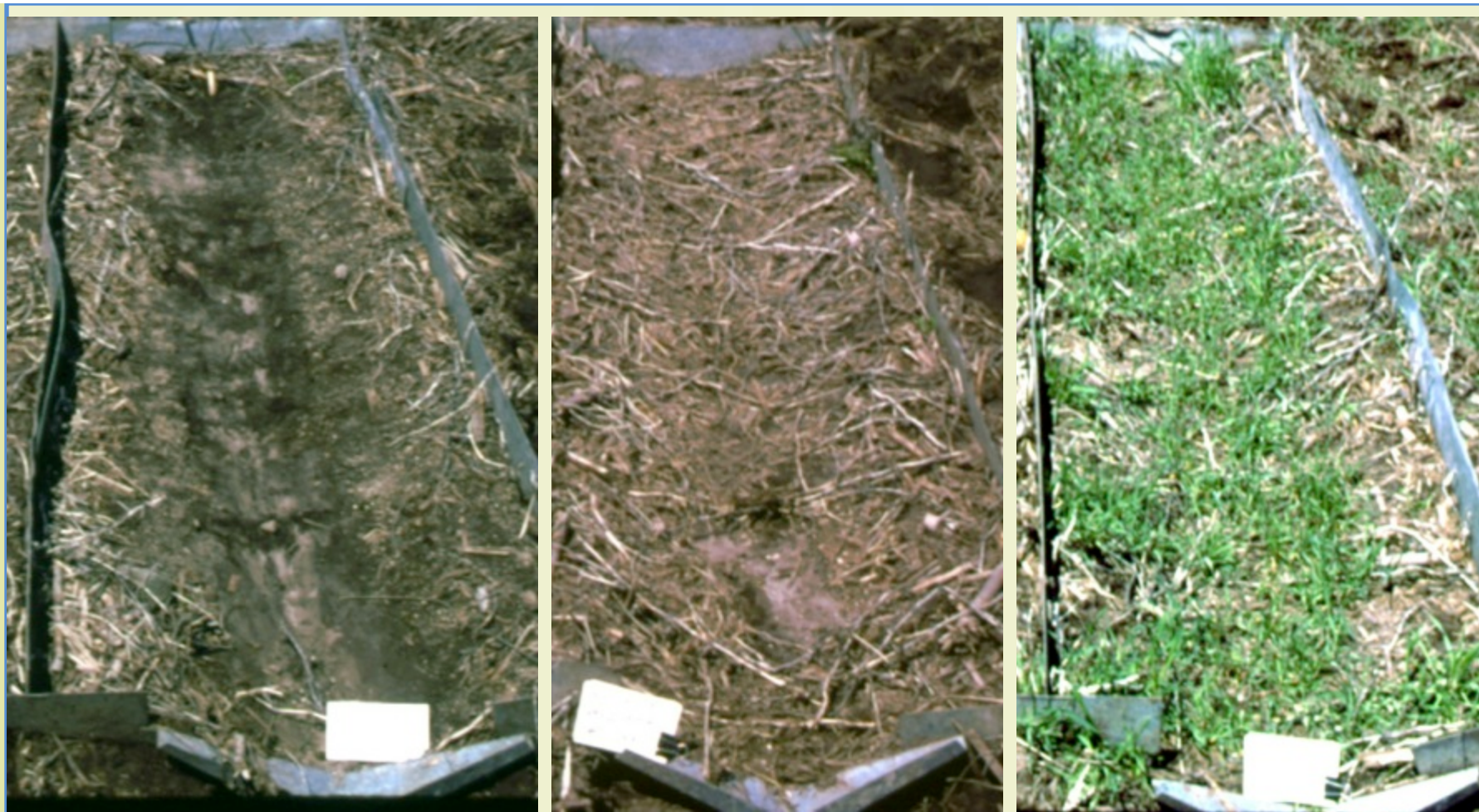
Heggenstaller et al. (2008)

*Greatest loss of nutrients is outside the cropping season
(Kaspar et al., 2007)*

A photograph of a field with a muddy path through cover crops. The field is covered in dense, golden-brown cover crops, likely a grass or legume. A muddy path, likely from a tractor, runs through the center of the field. In the background, there are some trees and a long, low building, possibly a barn or a greenhouse, under a cloudy sky.

What's Science Say @Cover Crops

REDUCE SOIL EROSION



NO COVER CROP

OAT COVER 25%

RYE COVER 50%

4.5in/hr rainfall rate; 5% slope

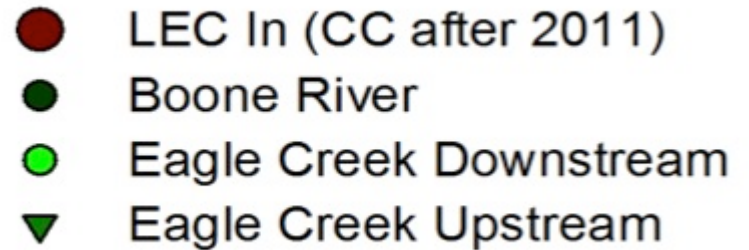
slide and data from Dr. Tom Kaspar, Ames, IA

NUTRIENT RETENTION & RECYCLING

- 29% Nitrogen reduction*
- 29% Phosphorus reduction*
- Cuts Soil erosion in half
- Greater H₂O infiltration

**State of Iowa*

Nutrient Reduction Strategy Science Assessment



Tile lines from corn/soybean farm

Cereal rye, aerial seeded 9/5/11



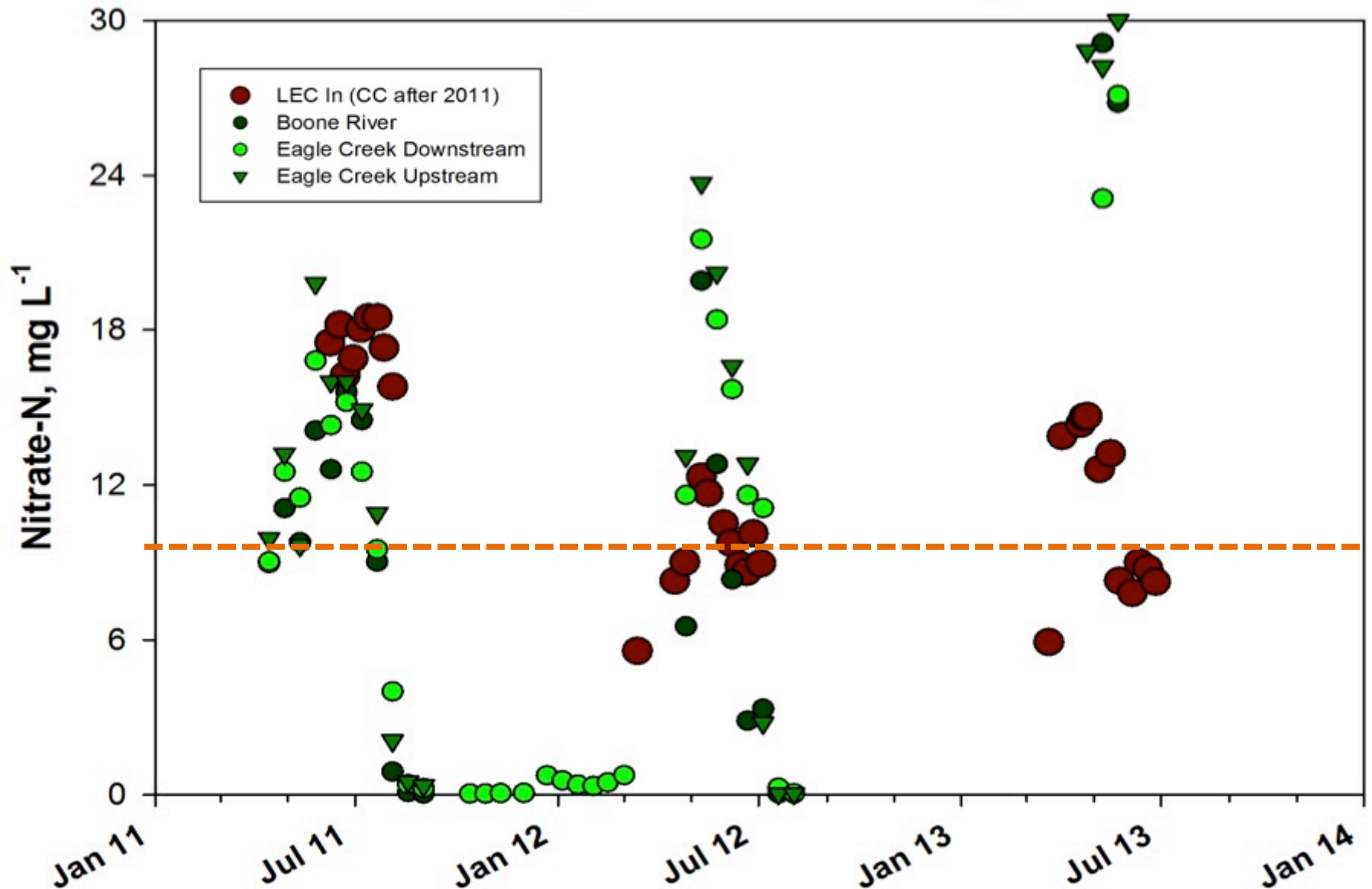
March 2012



2011

2012

2013









Highboy inter-seeding

Oats (52 lb) + radish (4 lb) + vetch (10 lb)

Highboy seeded: Sept. 18, 2014 Clarion, IA

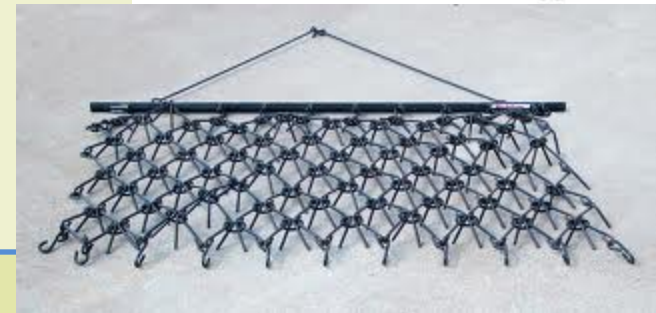


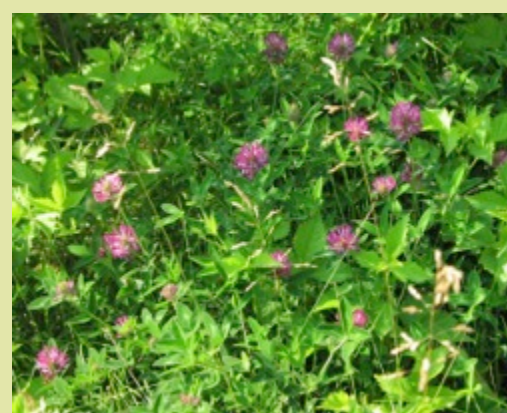
Aerial Seeded Cover Crops



Post-Harvest Seeding Options

- Drill
- Planter
- Broadcast + harrow or culti-pack
- Tractor fertilizer spreader





WHAT COVER CROPS TO PLANT?





GRASS:
Winter Cereal Rye

BRASSICAS:
Rapeseed



LEGUMES:
Hairy Vetch

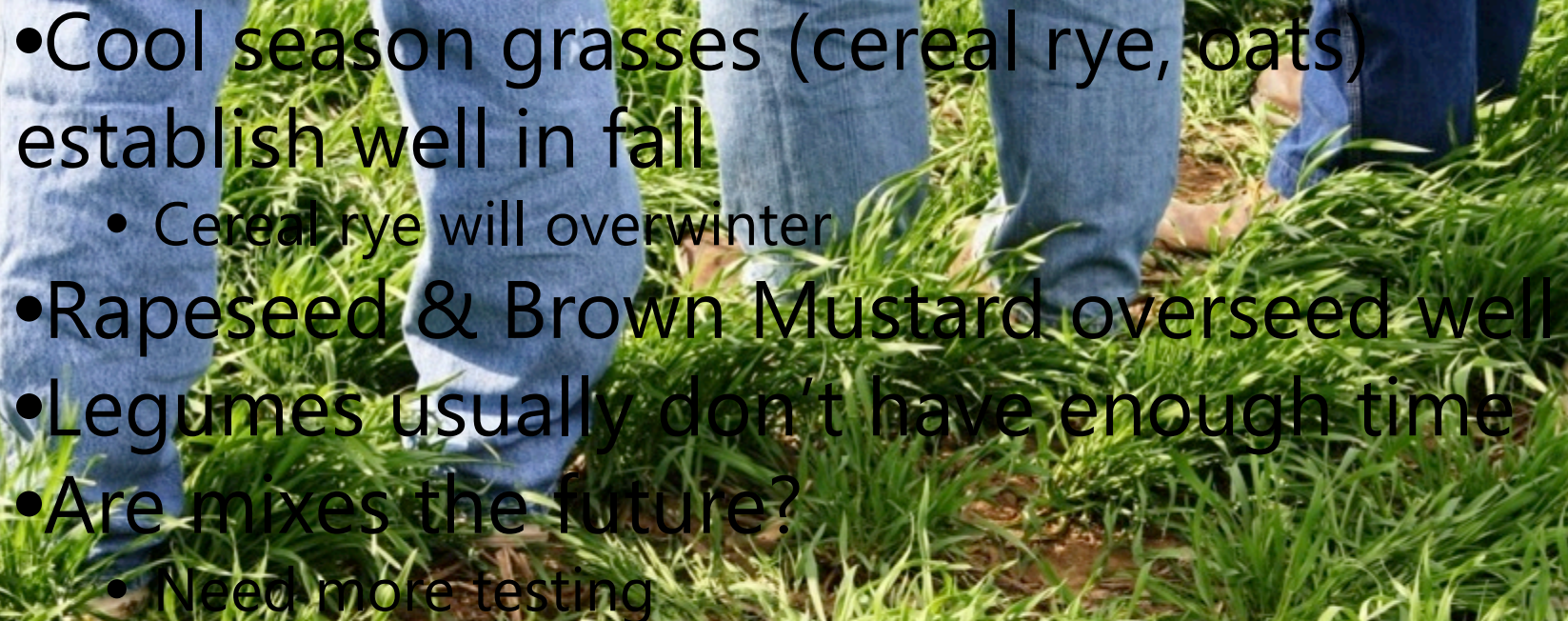
A photograph of a field with green cover crops. A dark metal implement, likely a moldboard plow, is shown in the process of turning over the soil and vegetation. The text "Cover Crop Termination" is overlaid in a white, cursive font.

Cover Crop Termination

Spring Termination Options

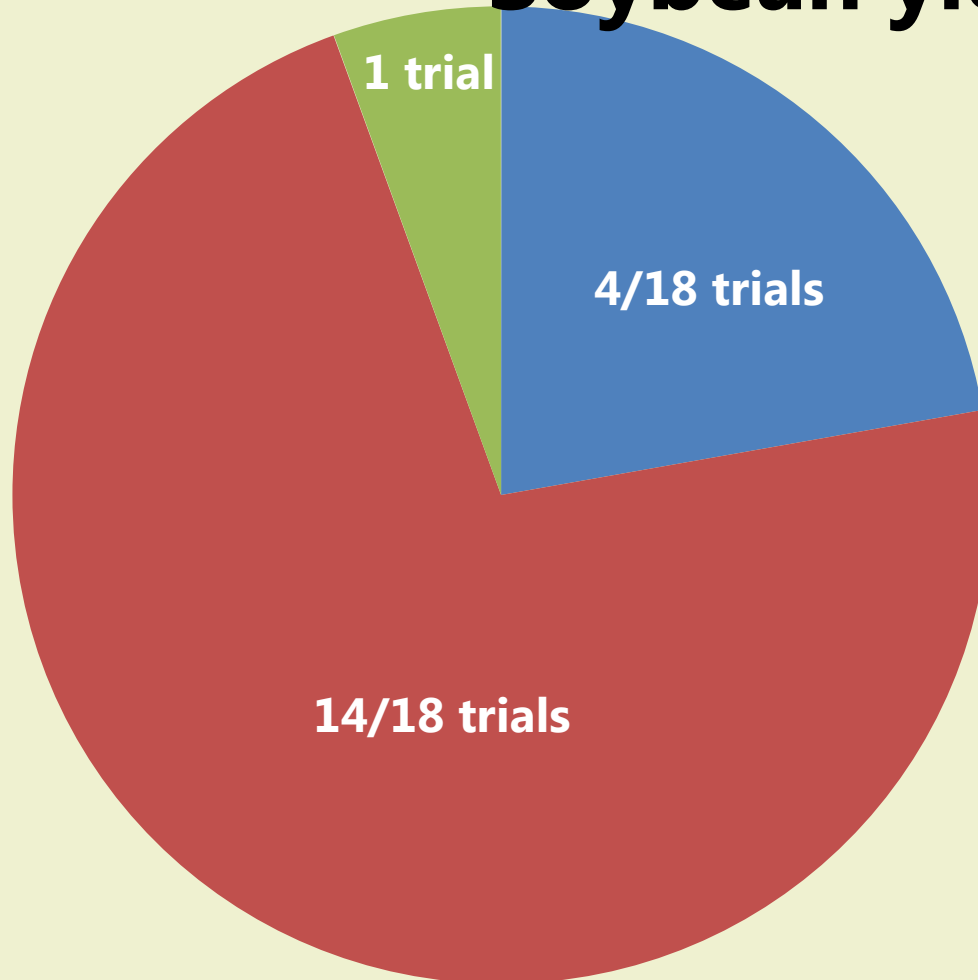


Northern Cornbelt Recommendations.....

- 
- Cool season grasses (cereal rye, oats) establish well in fall
 - Cereal rye will overwinter
 - Rapeseed & Brown Mustard overseed well
 - Legumes usually don't have enough time
 - Are mixes the future?
 - Need more testing

Winter rye cover crop effect on cash crop yields

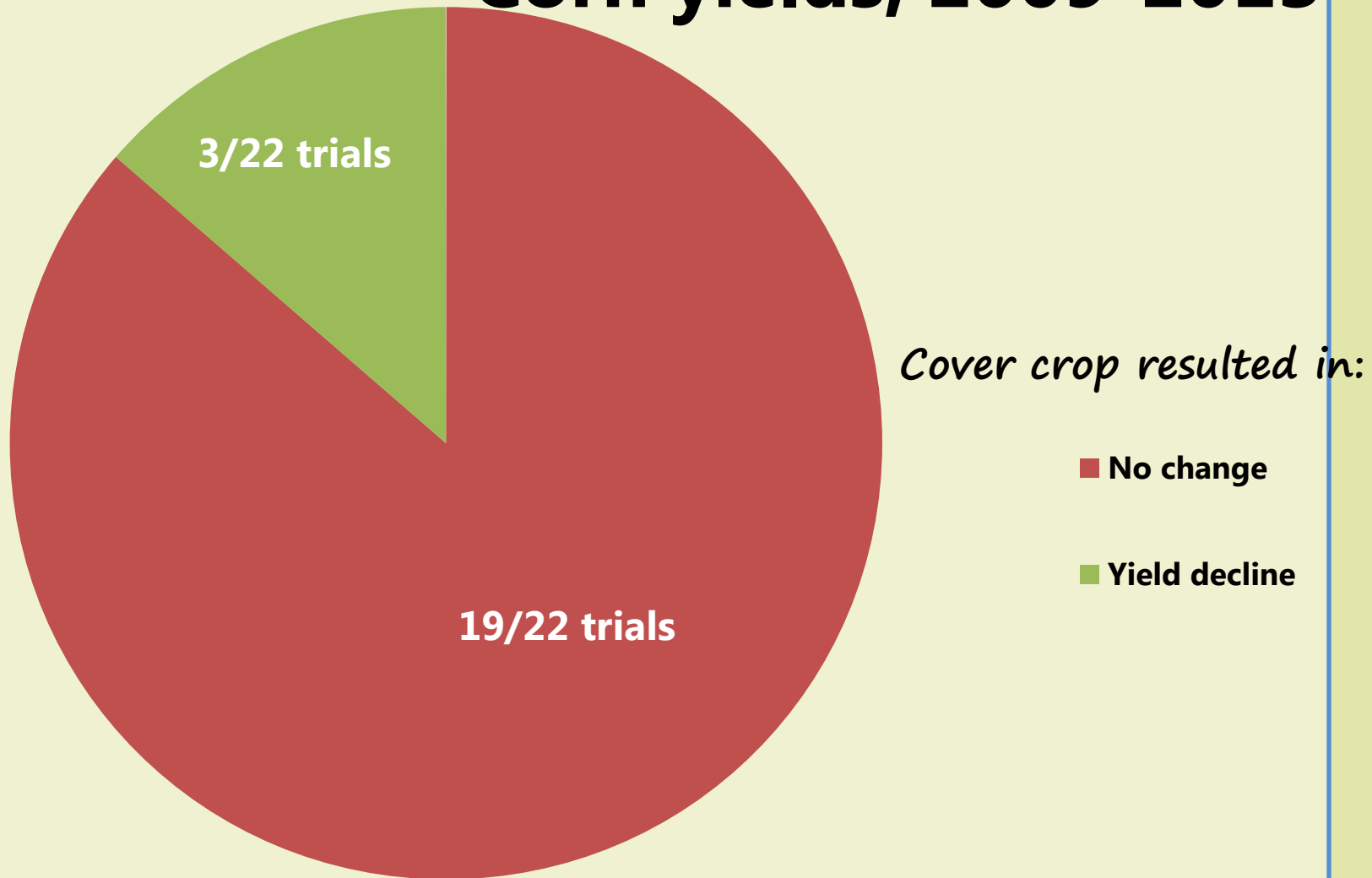
Soybean yields, 2009-2013



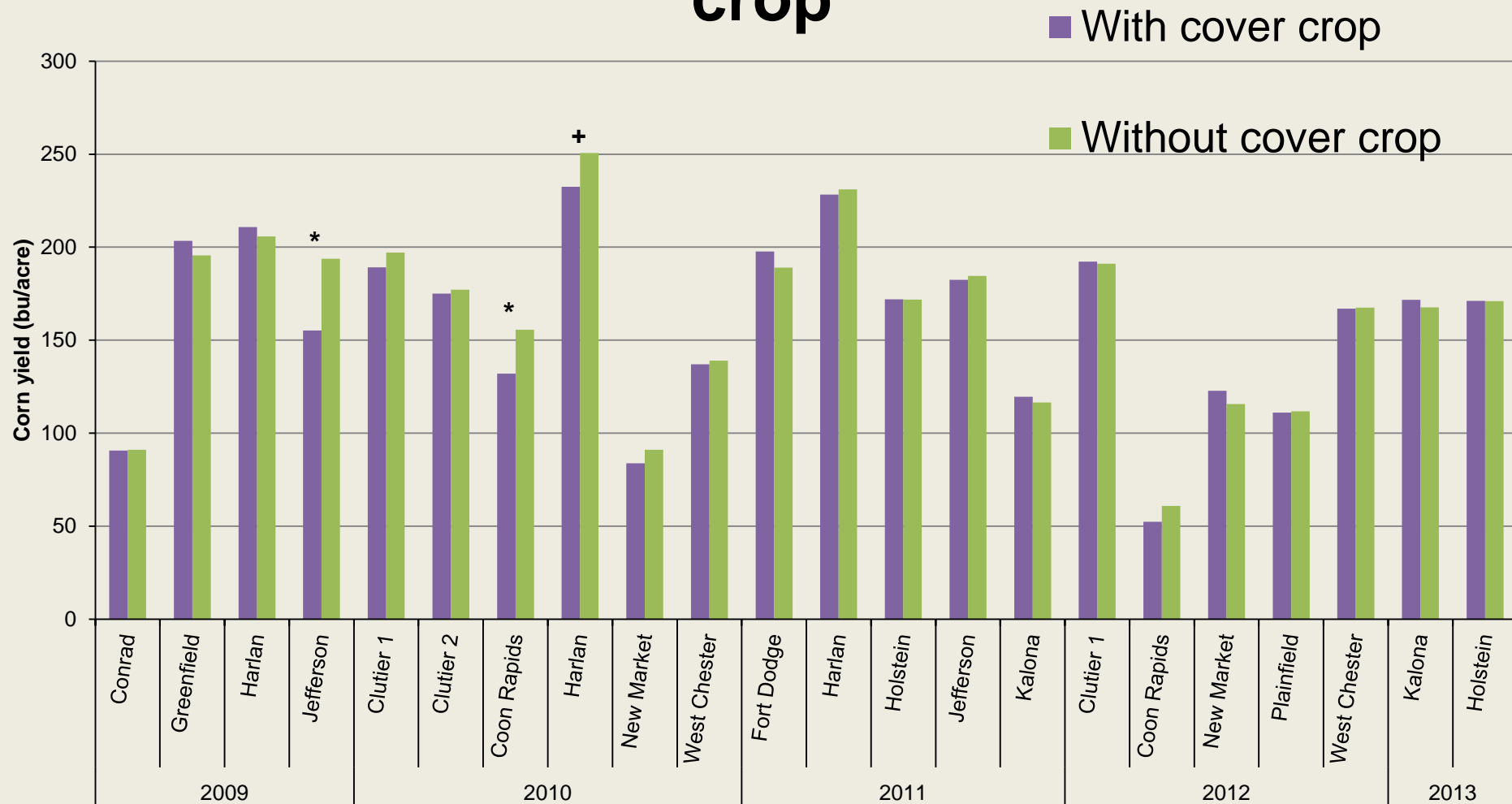
Cover crop resulted in:

- Yield improvement
- No change
- Yield decline

Corn yields, 2009-2013



Corn yields with and without cover crop



2 out of 22 corn yield decreased due to cover crop
 1 out of 22 corn yield decreased due to herbicide failure

Average Corn Yields by State With and Without Covers

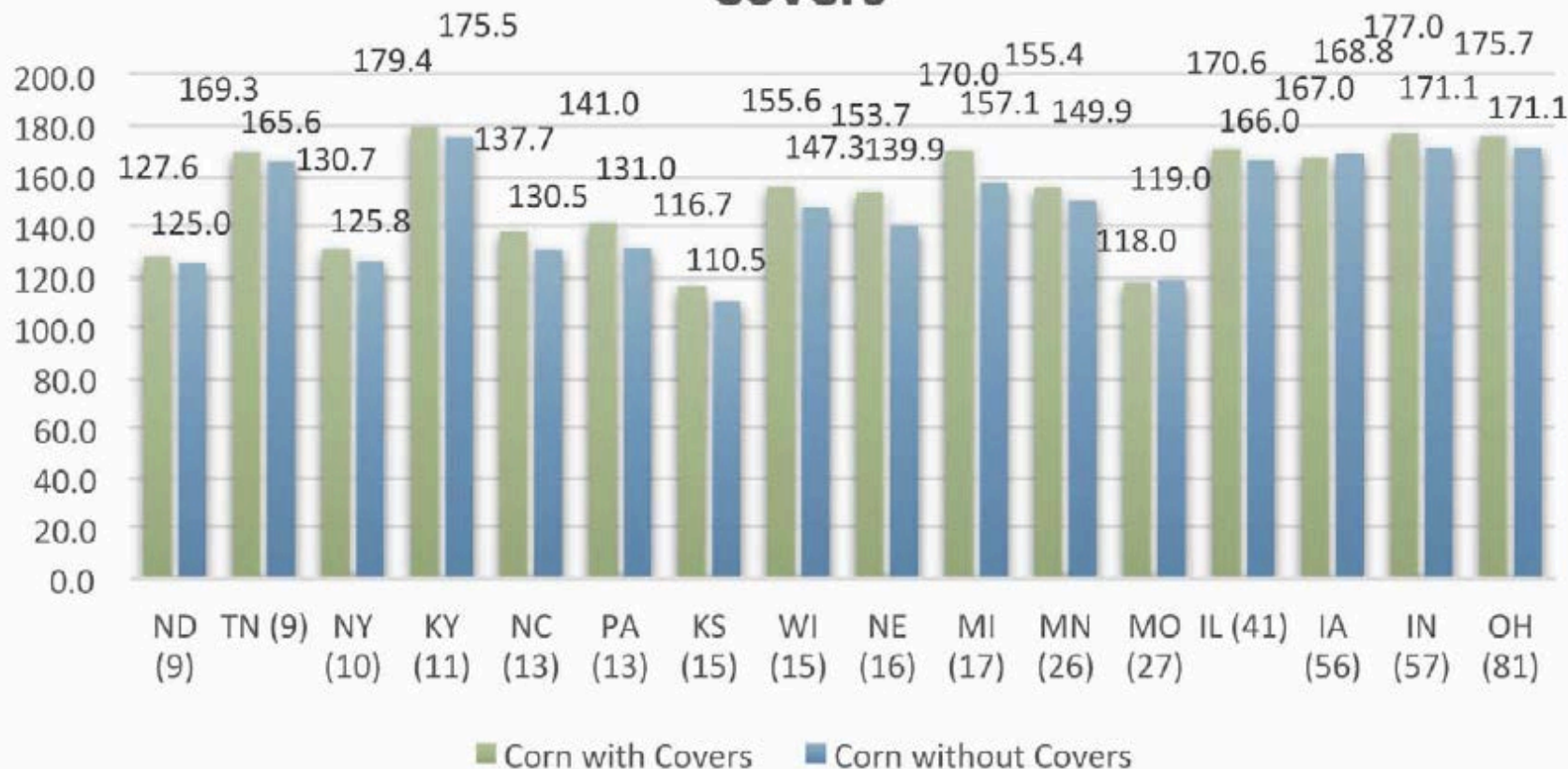


Figure 21. In every state shown but Missouri and Iowa, cover crops helped increase corn yields as reported by respondents to this survey.

Average Soybean Yields by State With and Without Covers

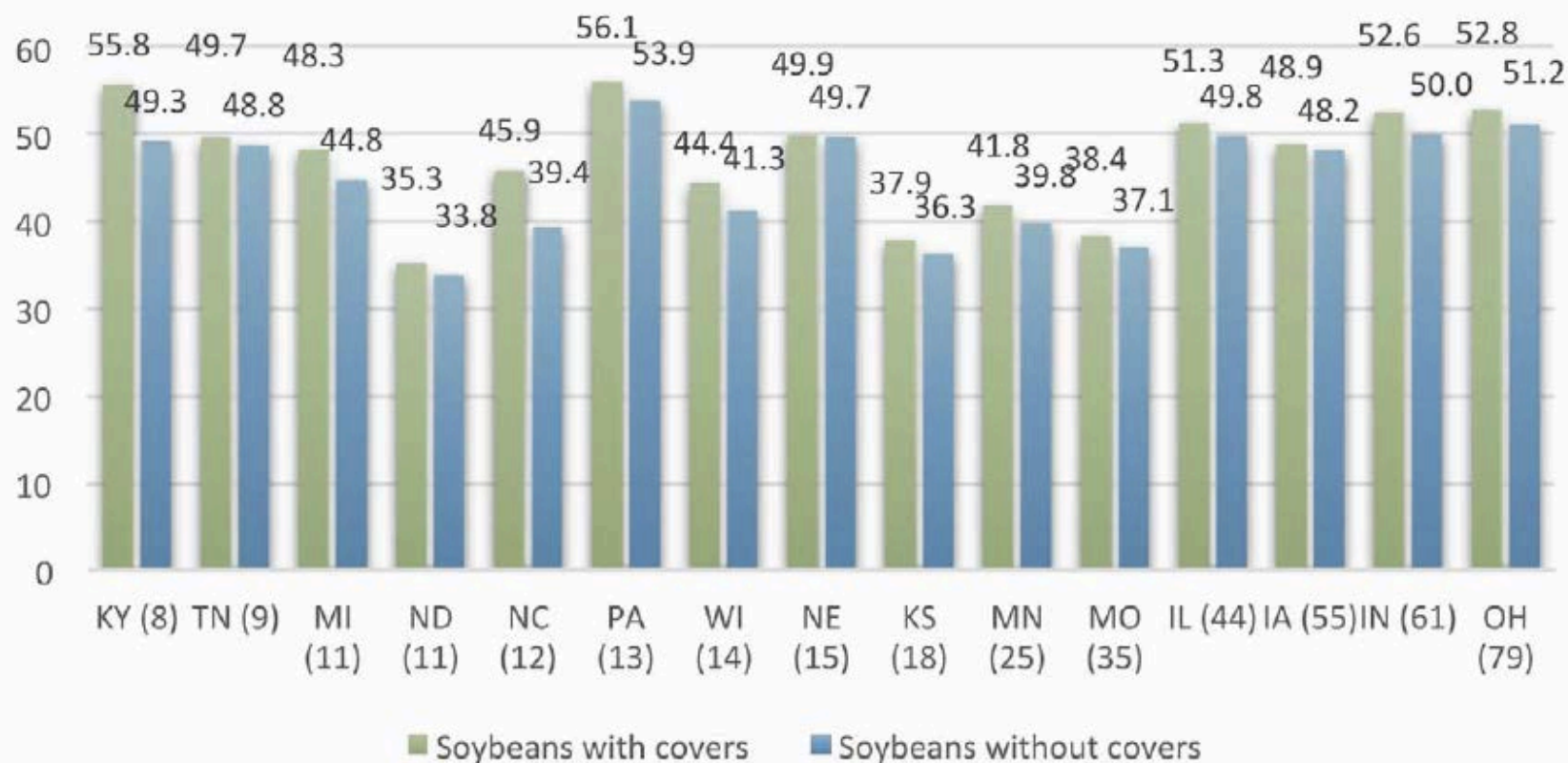
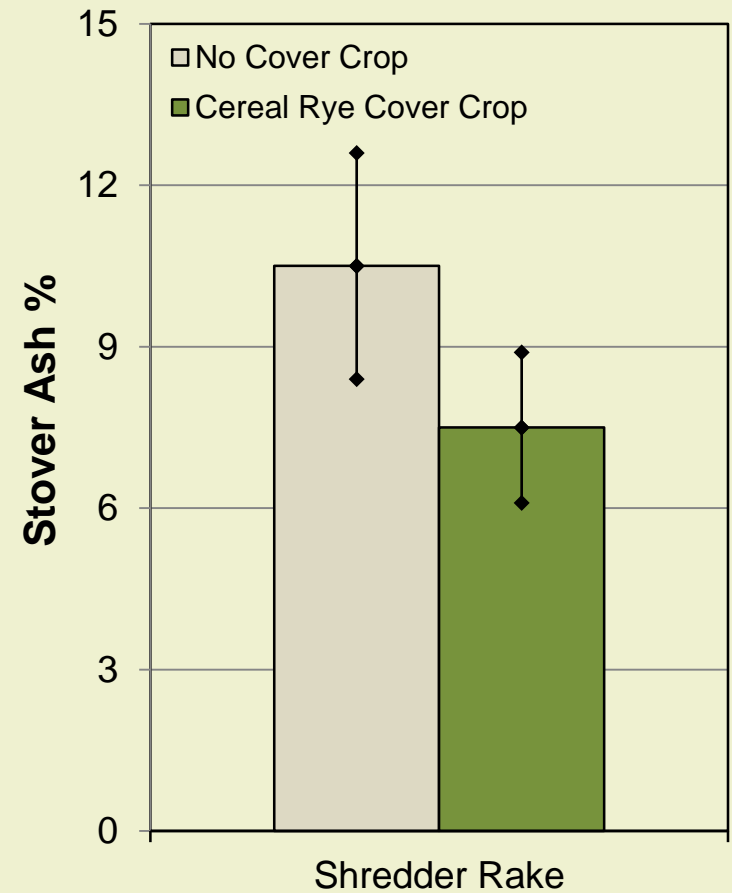


Figure 22. The benefits of cover crops on soybean yields appeared across the Midwest and East.

COVER CROPS FOR
CORN & SOYBEAN
COMPANIES

Cover Crops for Cleaner Stover



Cover Crops for Seed



Production

Aerial seeded cereal

August 19

(male rows removed)

Drilled cereal rye post
seed corn harvest
September 25



Corn and Soybeans Genetics for High Residue



Cover Crop Seed Sales & Agronomy



Cover crop take homes messages...

- Disproportionately high water quality & soil quality benefit from cover crops
- No negative impact on Cornbelt crops
- Several business opportunities

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