

# What's the Buzz about Radishes and Brassicas?

## Nitrogen Dynamics

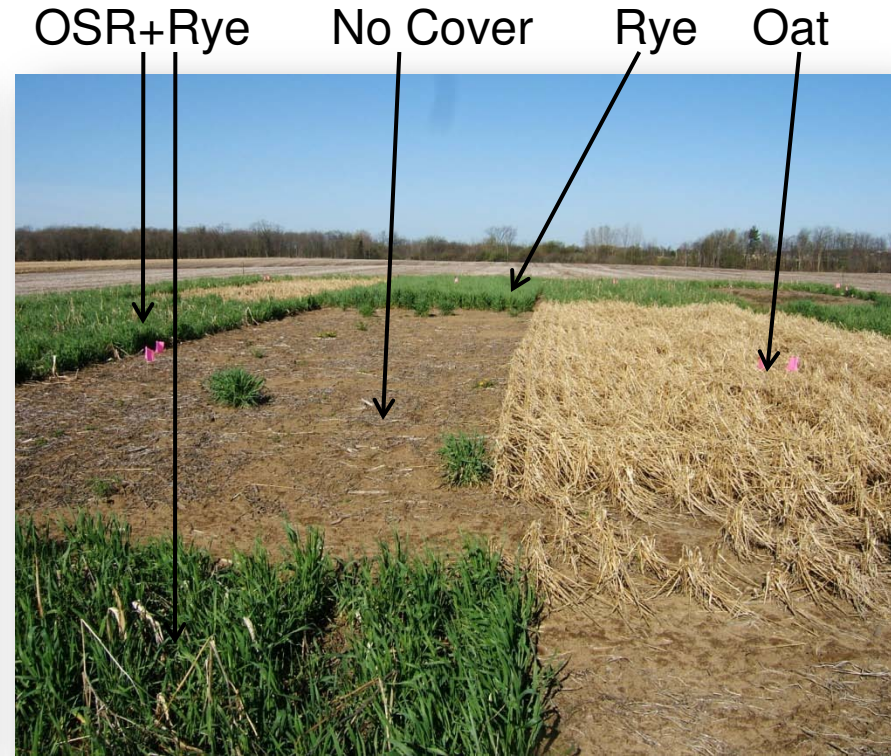
Laura L. Van Eerd  
University of Guelph  
Ridgetown Campus

# Cover Crop Growth

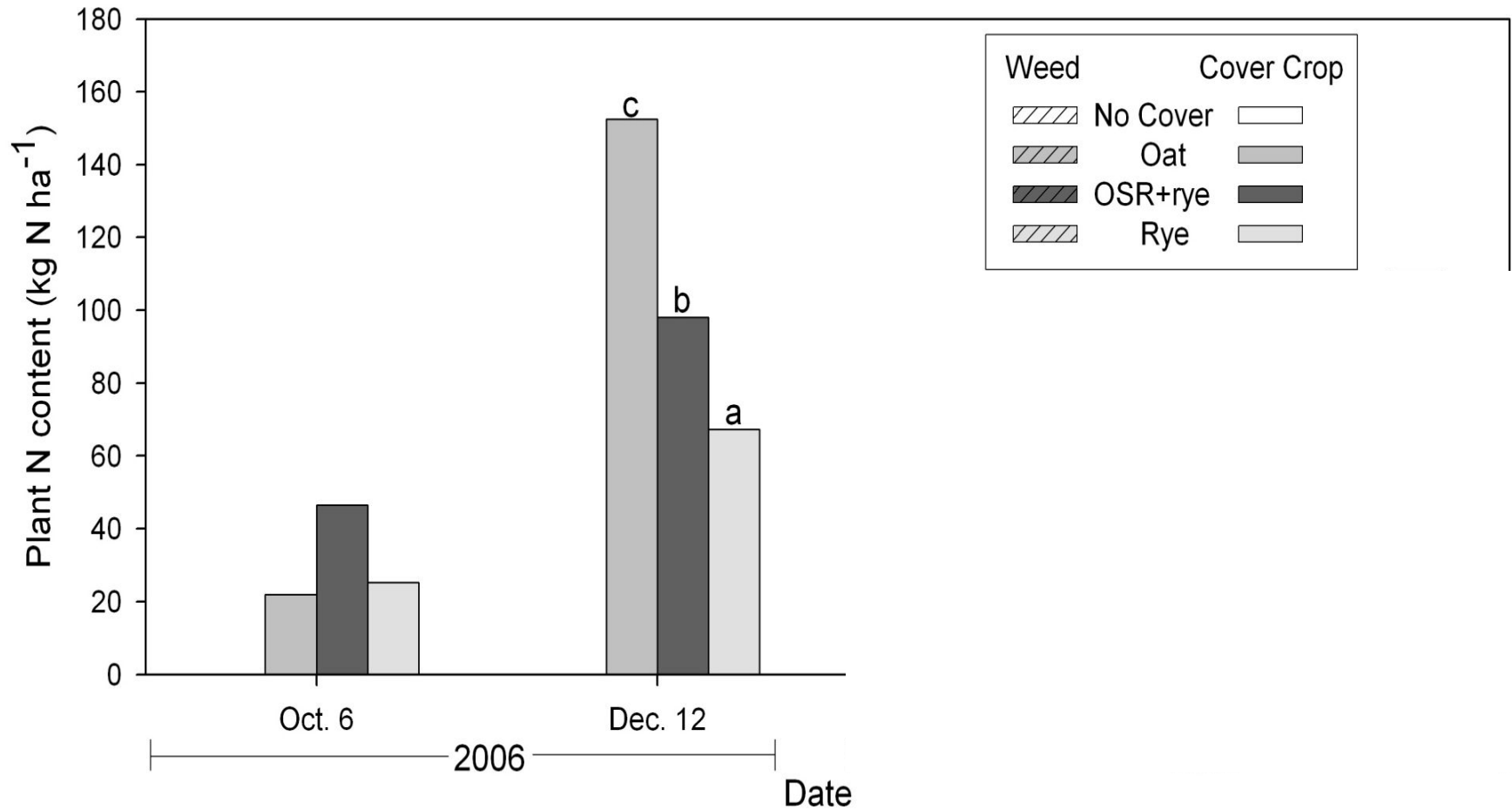
**December 2006**



**May 2007**

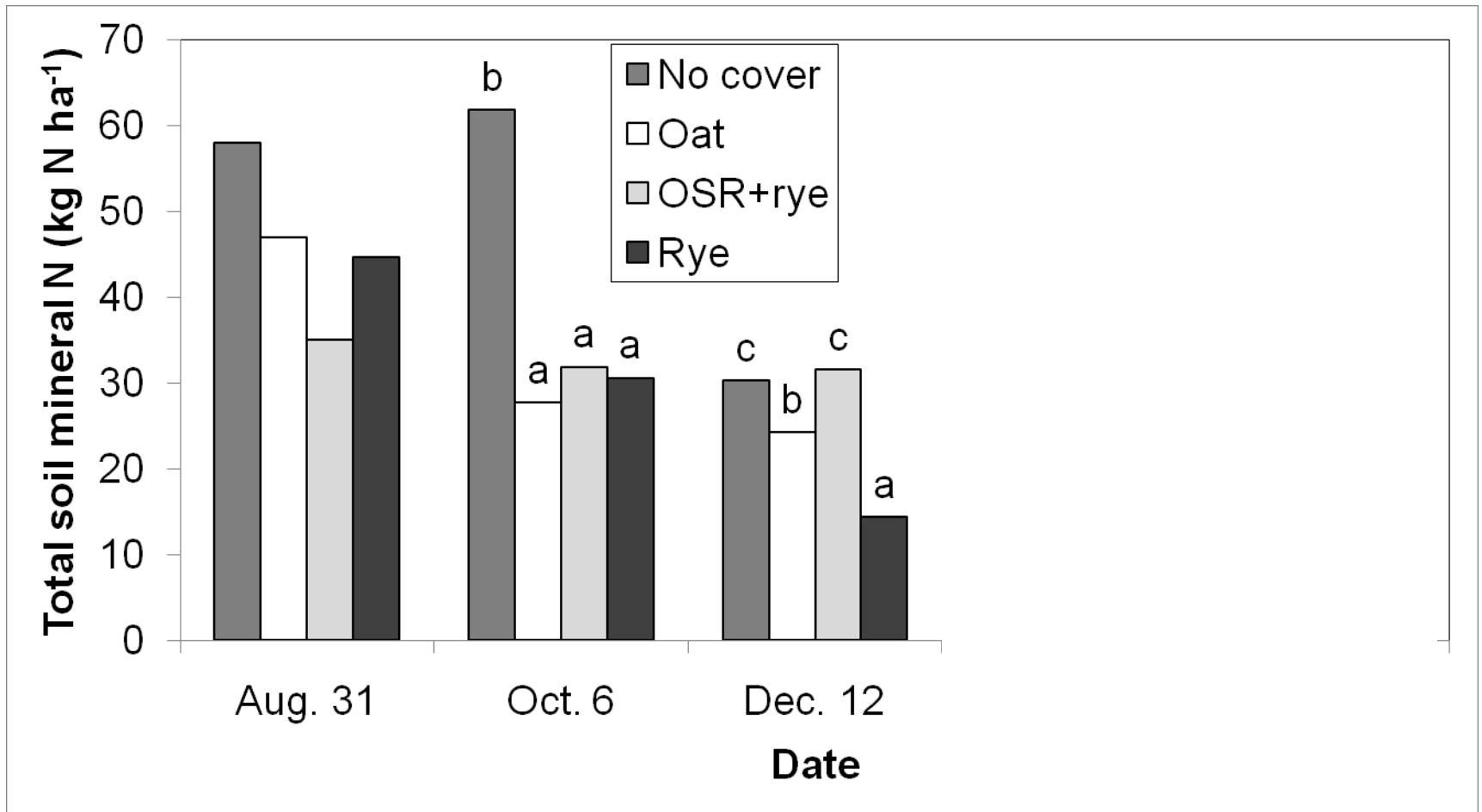


# Bothwell – Cover Crops Plant N



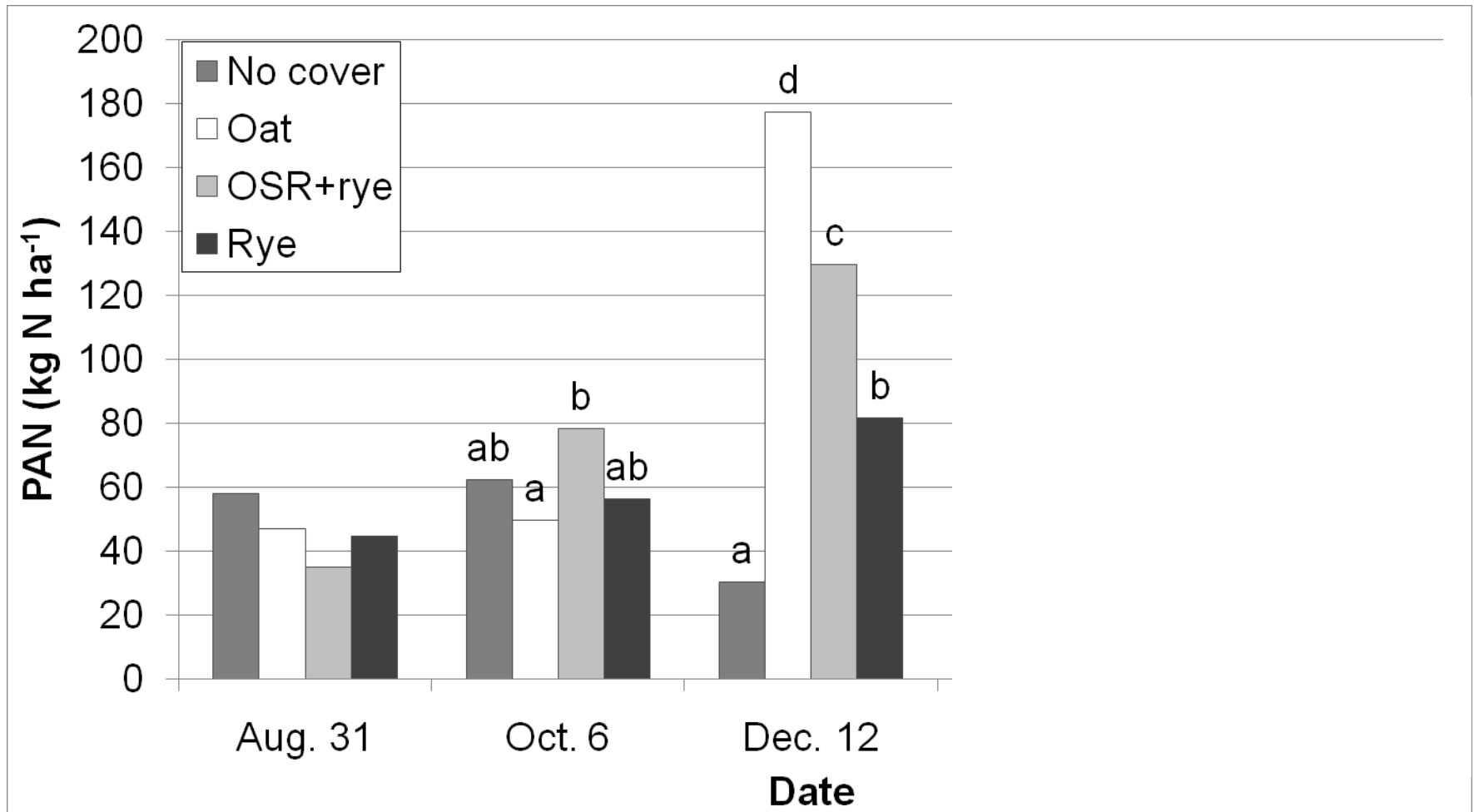
\*For each date, bars labeled with the different letters are significantly different.

# Bothwell – Cover Crop Soil N



\*For each date, bars labeled with the different letters are significantly different.

# Bothwell – Cover Crop PAN



\*For each date, bars labeled with the different letters are significantly different.

# Bothwell – Cover Crop Summary

- Cover crops were effective at conserving plant available N over the fall and into the spring compared to the no cover control
- All covers were equally as effective in the spring

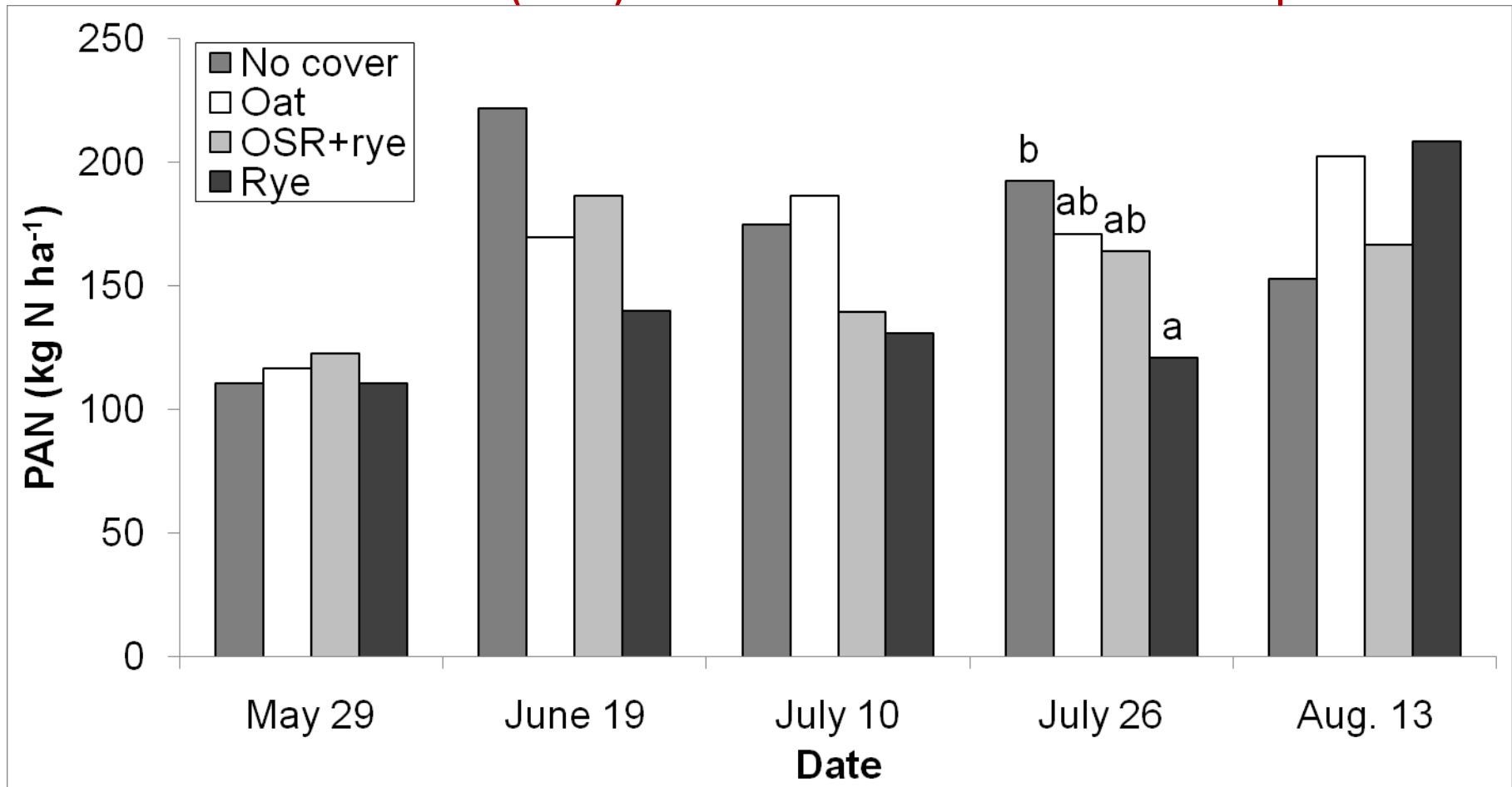


# Is there a N credit?



# Bothwell – Sweet Corn PAN

Plant available N (PAN) = soil mineral N + sweet corn plant N

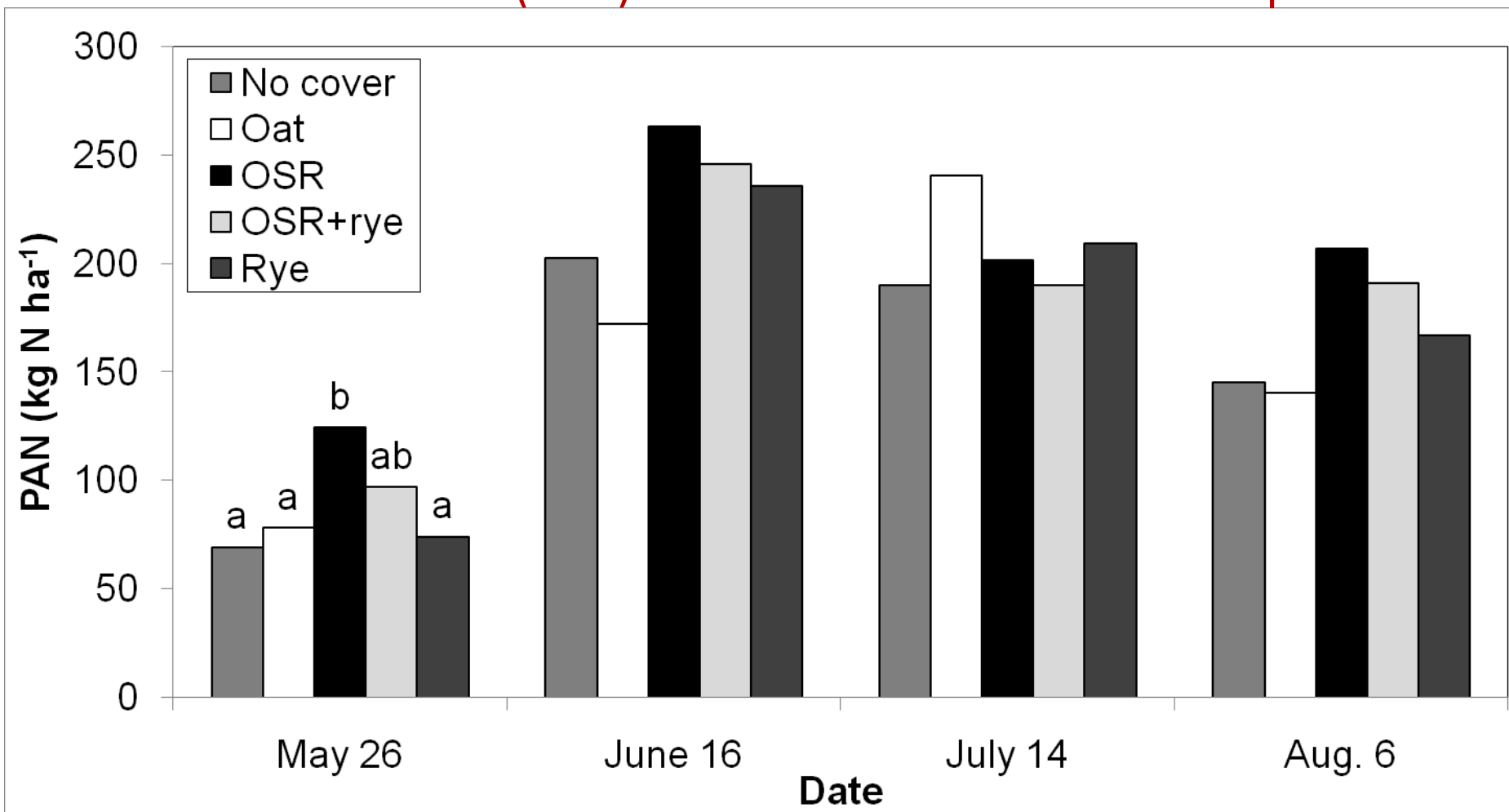


\*For each date, bars labeled with the different letters are significantly different.



# Ridgetown – Sweet Corn PAN

Plant available N (PAN) = soil mineral N + sweet corn plant N

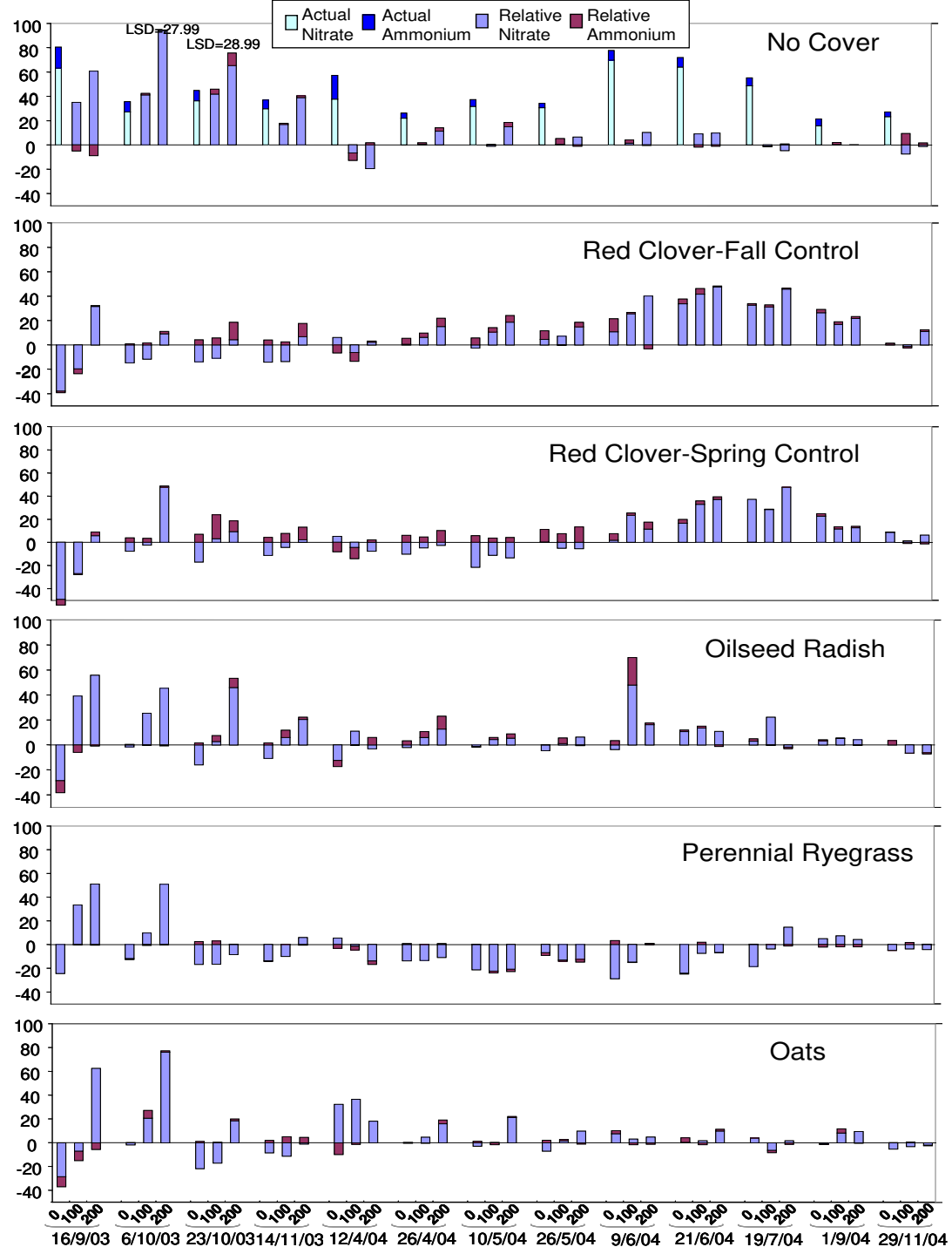


\*For each date, bars labeled with the different letters are significantly different.

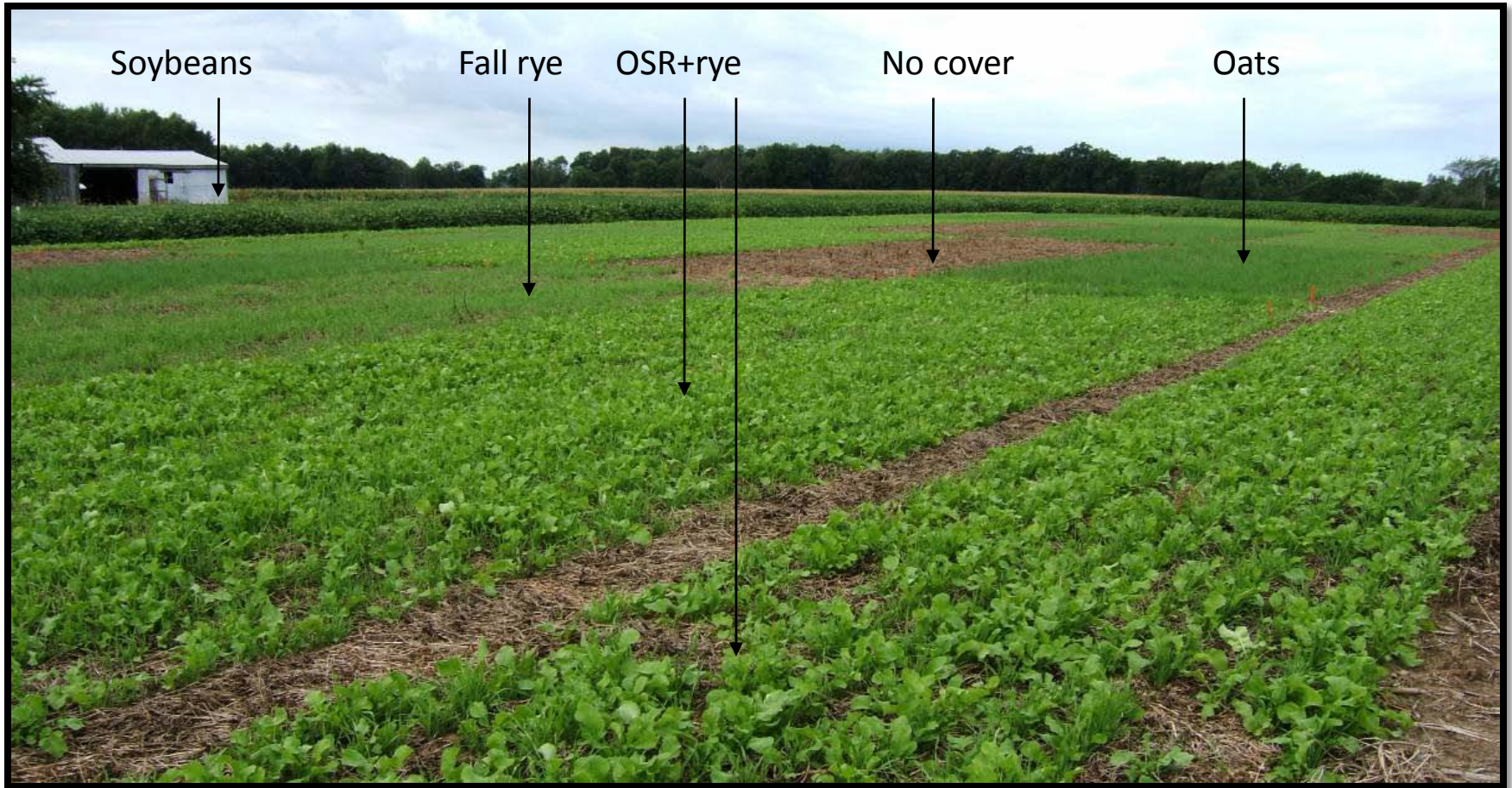
# Discussion

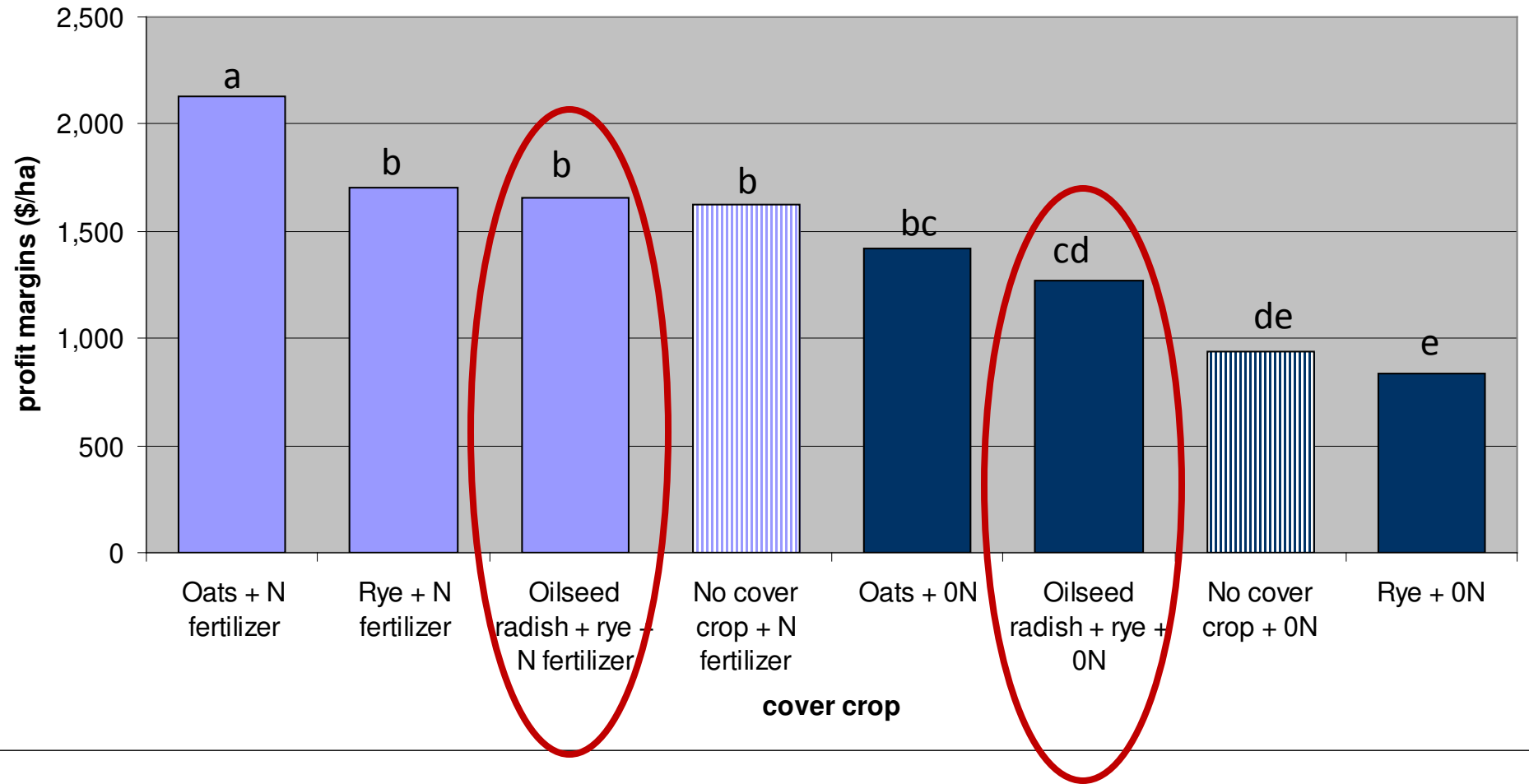
- Cover crops **may** be effective at conserving N over the cover crop growing season
- Little evidence that this translated into increased PAN for the sweet corn crop
- These cover crops do not increase or decrease N fertilizer applications to the sweet corn

# Impact of cover crops on PSNT soil nitrates (data from Dr. Bill Deen U of Guelph)



# If there is no N credit, then why bother?

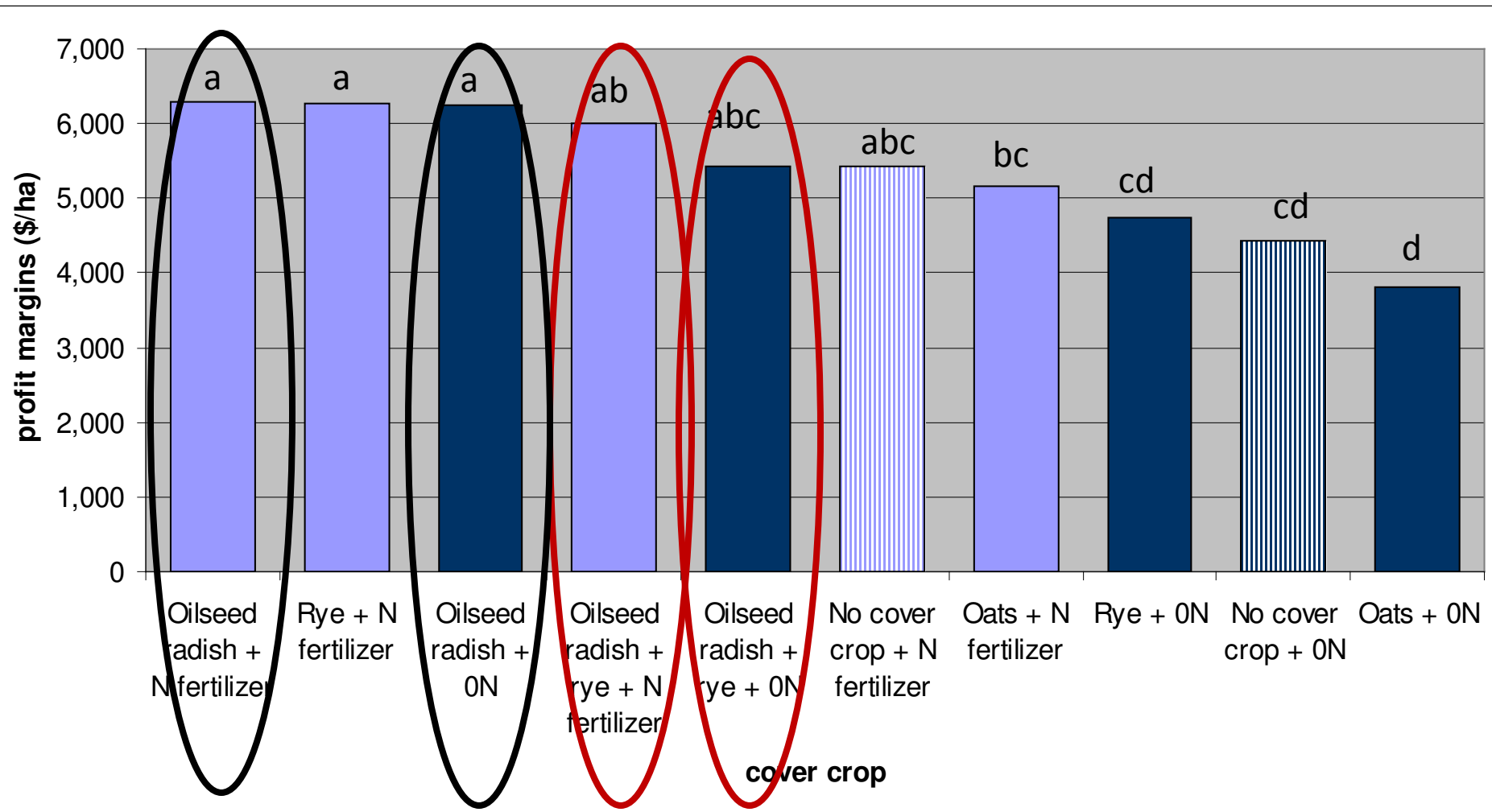






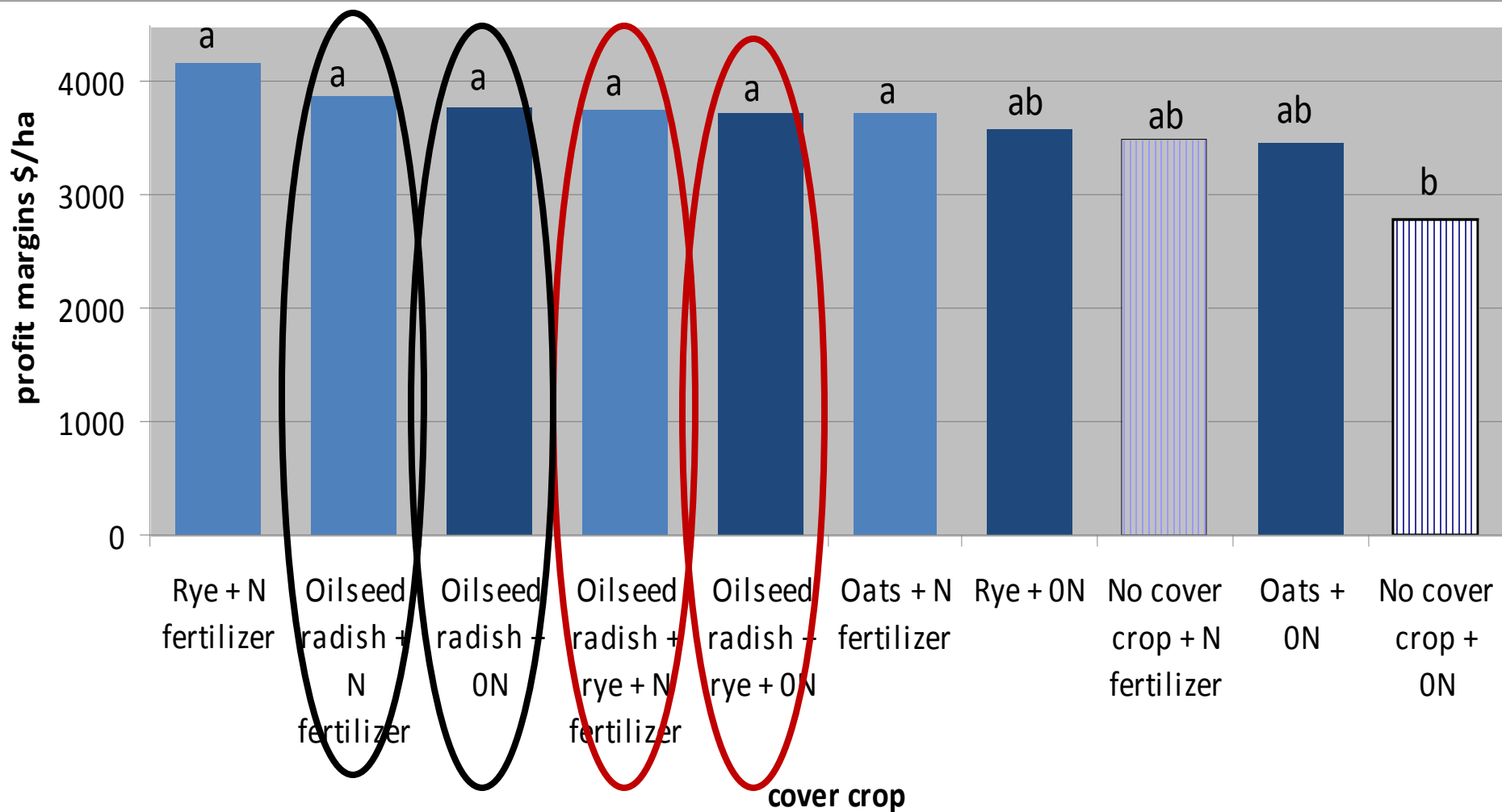
# Economics

# Ridgetown-2008



# Economics

Ridgetown-2009



# Summary on N in Brassicas

- Trap N
- No N credit
- Economics may not be a limiting factor

# QUESTIONS?

**Laura Van Eerd**

**[Ivaneerd@ridgetownc.uogulph.ca](mailto:Ivaneerd@ridgetownc.uogulph.ca)**



# Cover Crops After Cucumbers

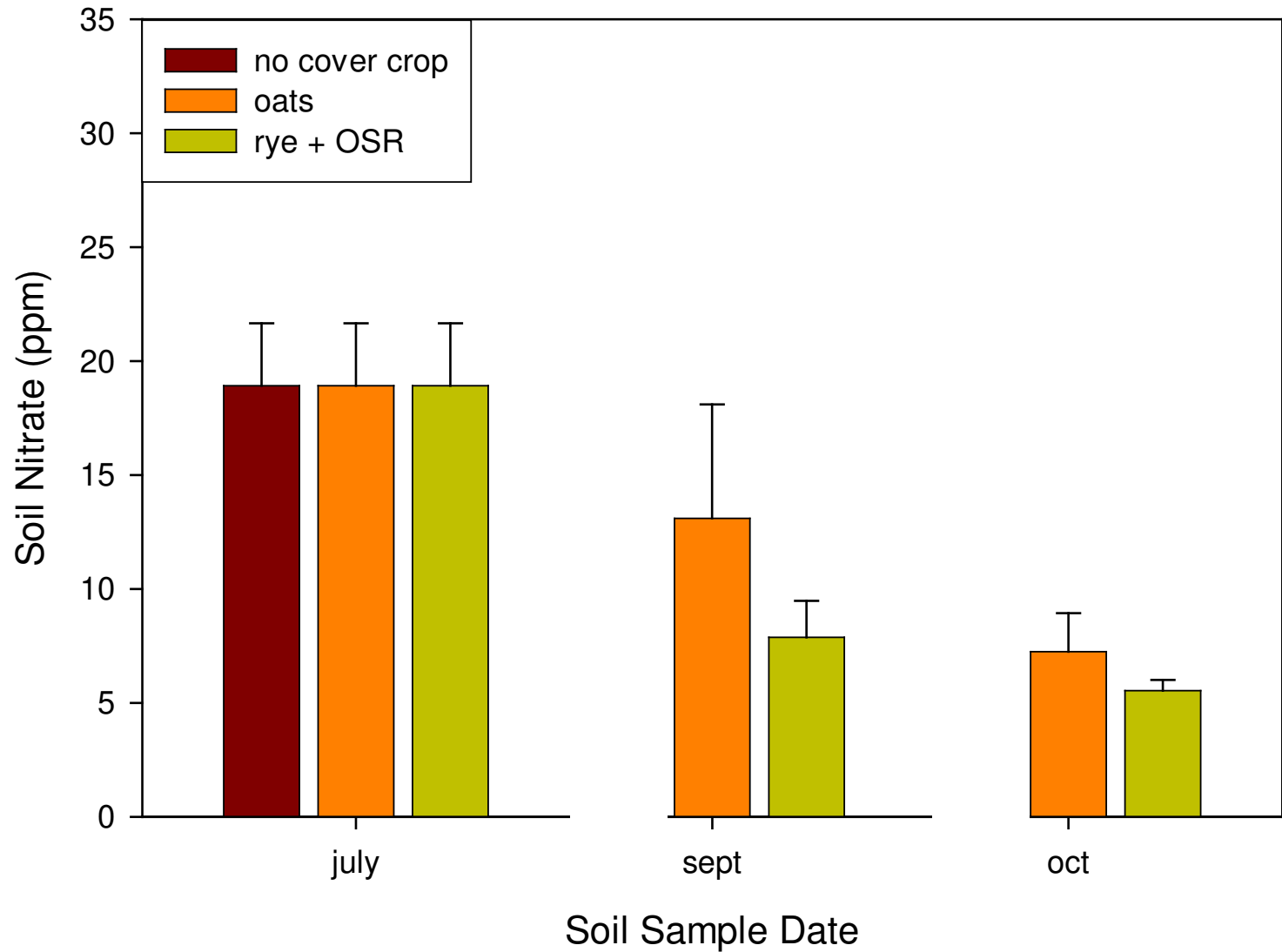


Planting date:  
August 4

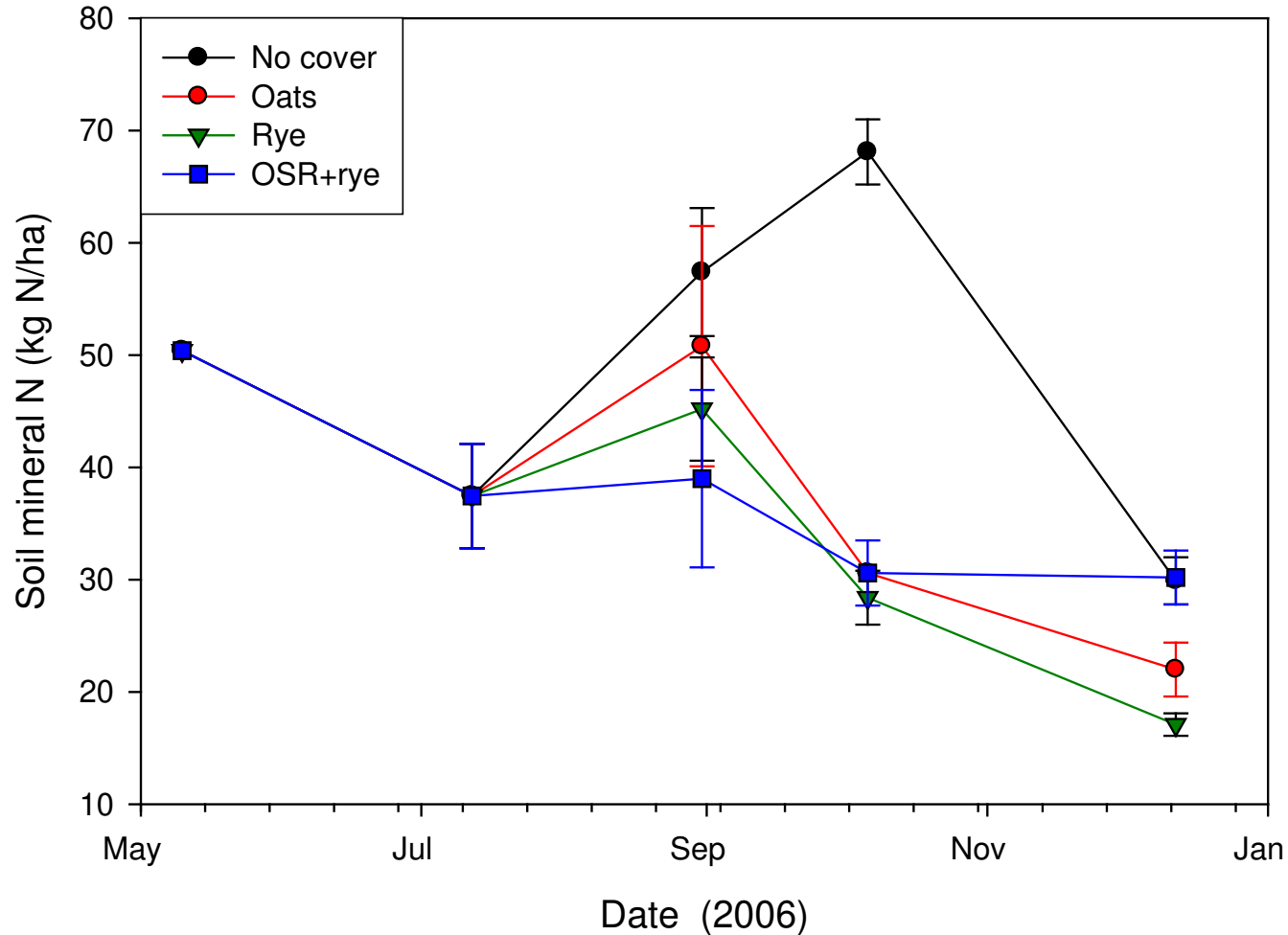
Photo taken:  
October 21



# Cover Crops: Soil N



# Cover crops trap N in the fall





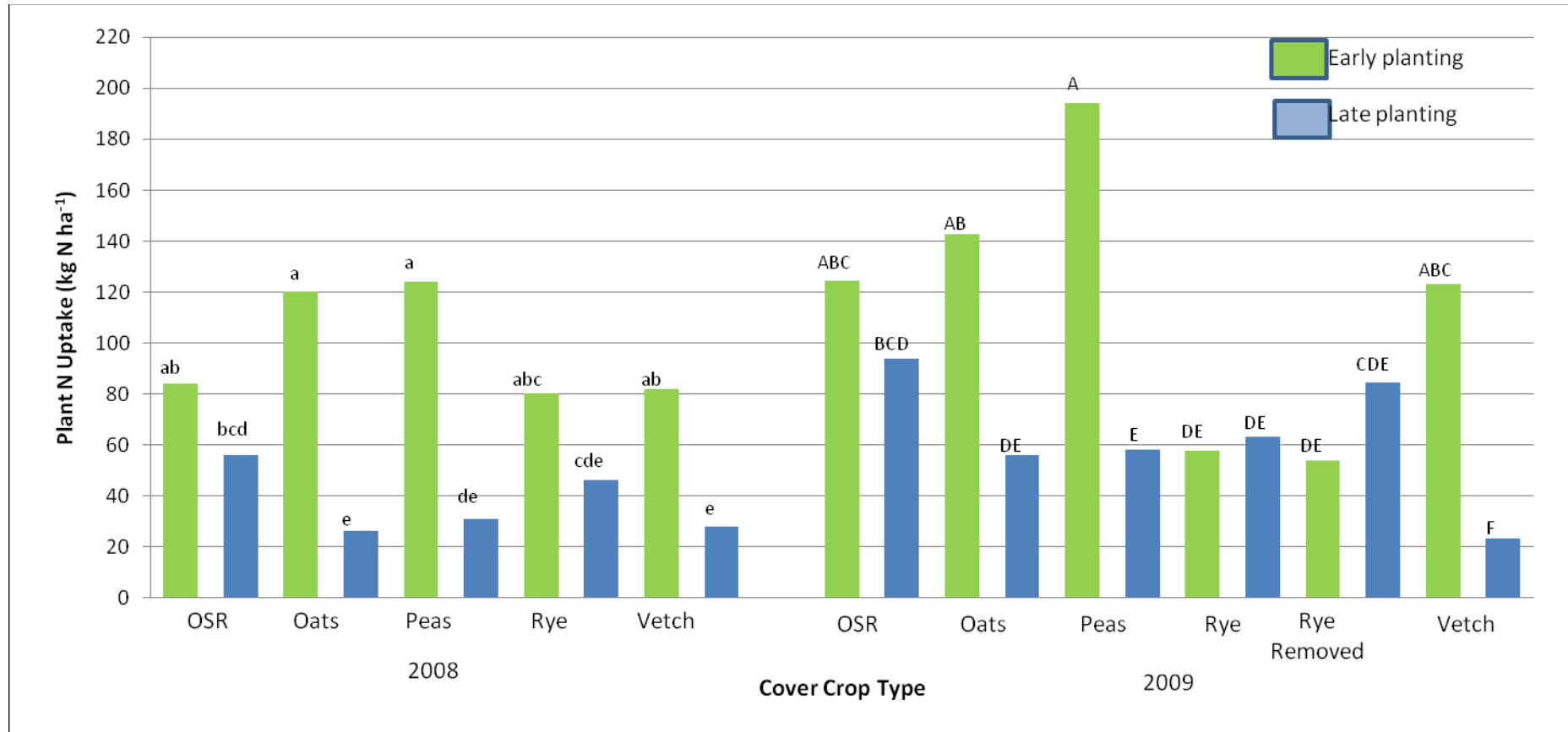
# Cover crops – cucumbers



Early planted - 1<sup>st</sup> week in August  
Late planted - 1<sup>st</sup> week in September

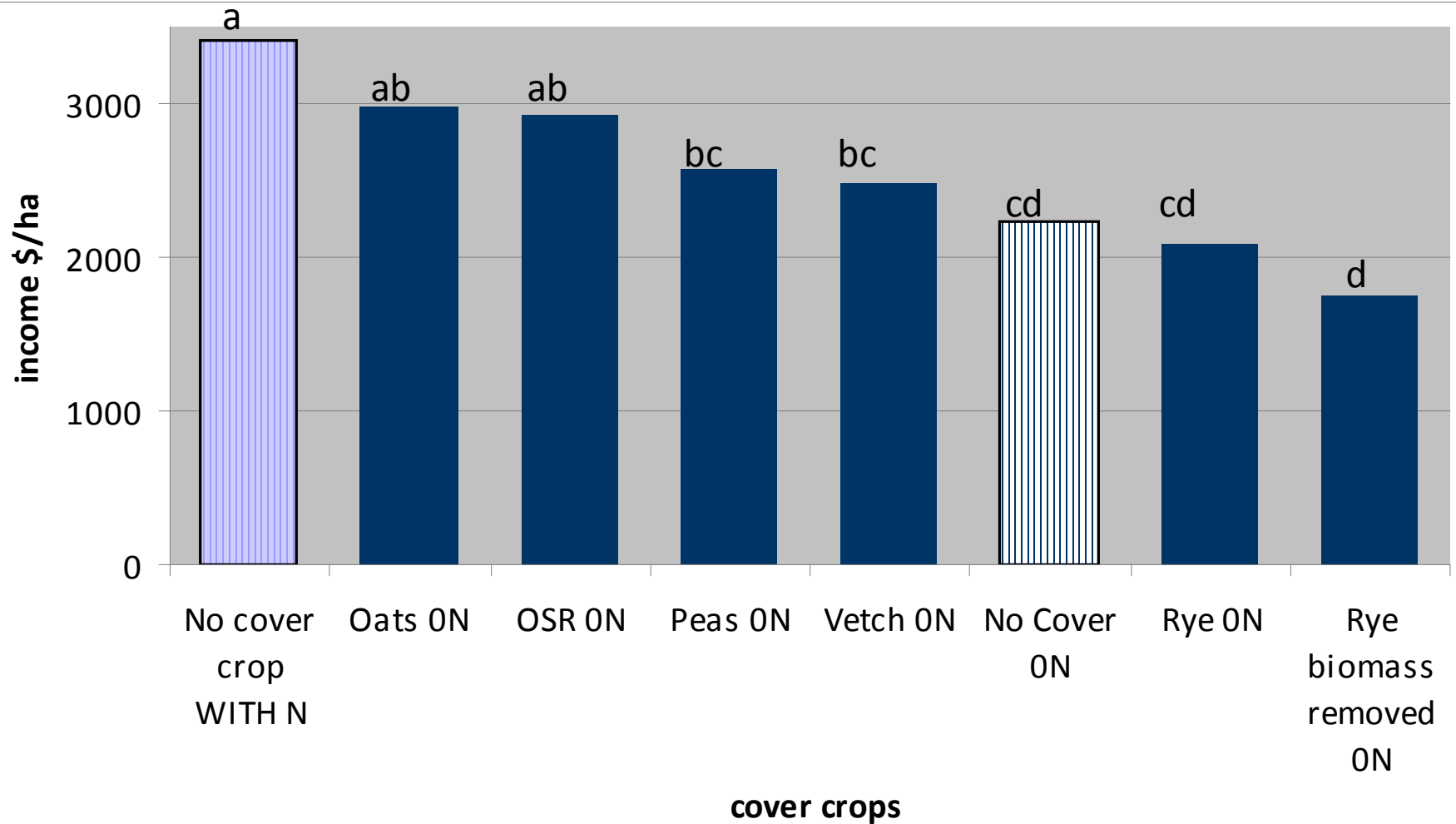


# Early v. Late Planting Dates



**Figure 1.** Quantity of nitrogen in cover crop aboveground tissues and recoverable residue collected in the fall 2008 and 2009. Different letters indicate a statistically significant difference.

# Cover crops – cucumbers



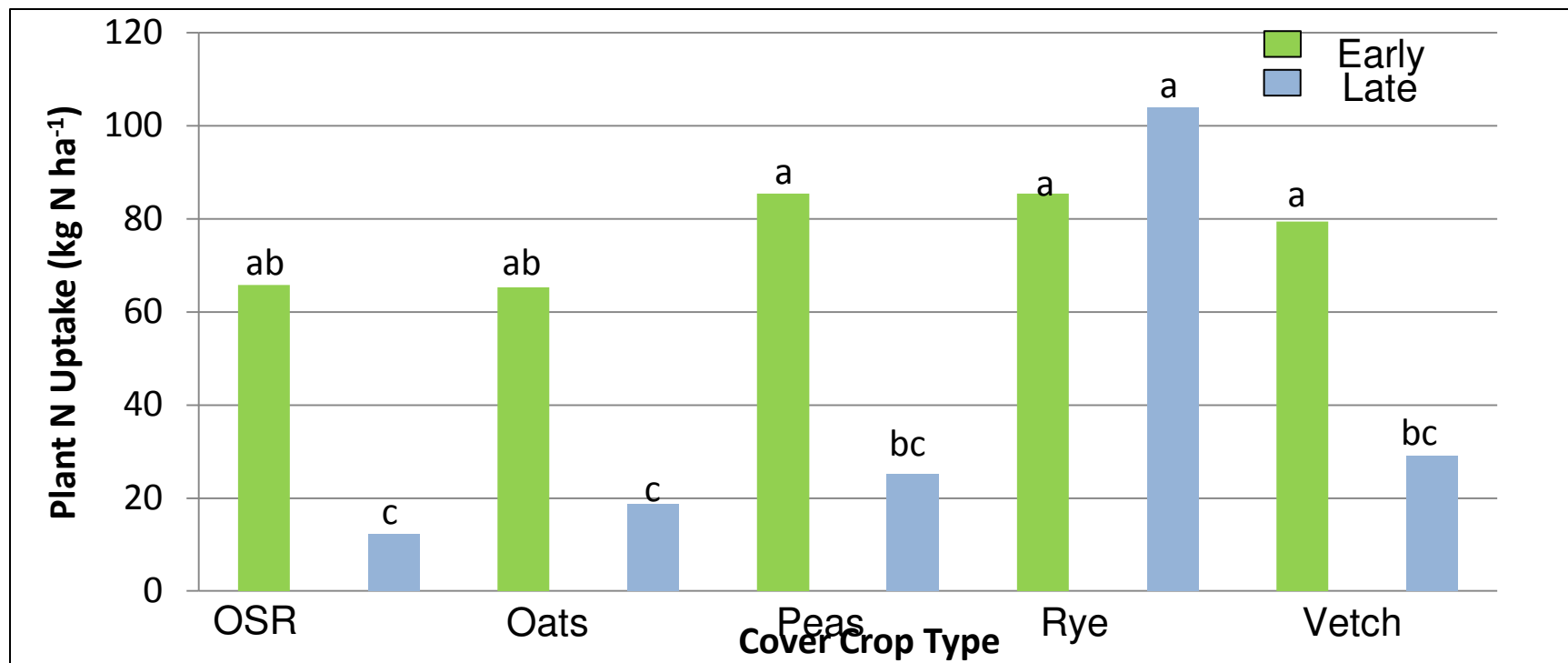


# Cucumber Yield

Cover Crop	Cucumber Harvest 2009	
	Marketable yield (Mg ha <sup>-1</sup> )	Marketable yield income (\$ ha <sup>-1</sup> )
No Cover	7.17 cd	2235 cde
No Cover + N	12.25 a	3405 a
OSR	10.10 ab	2933 ab
Oats	9.19 bc	2988 ab
Peas	9.89 abc	2569 bc
Rye	6.13 d	1871 e
Rye Removed	7.35 bcd	1975 de
Vetch	9.32 bc	2474 bcd

**Table 2.2** Cucumber yield (Mg ha<sup>-1</sup>) and yield income (\$ ha<sup>-1</sup>)\* in 2009. Cover crop treatments with different letters indicate a statistically significant difference.

# Early v. Late Planting Dates



**Figure 2.** Quantity of nitrogen in cover crop aboveground tissues and recoverable residue collected in April, 251 and 291 DAP.

Different letters indicate a statistically significant difference.

# Yields

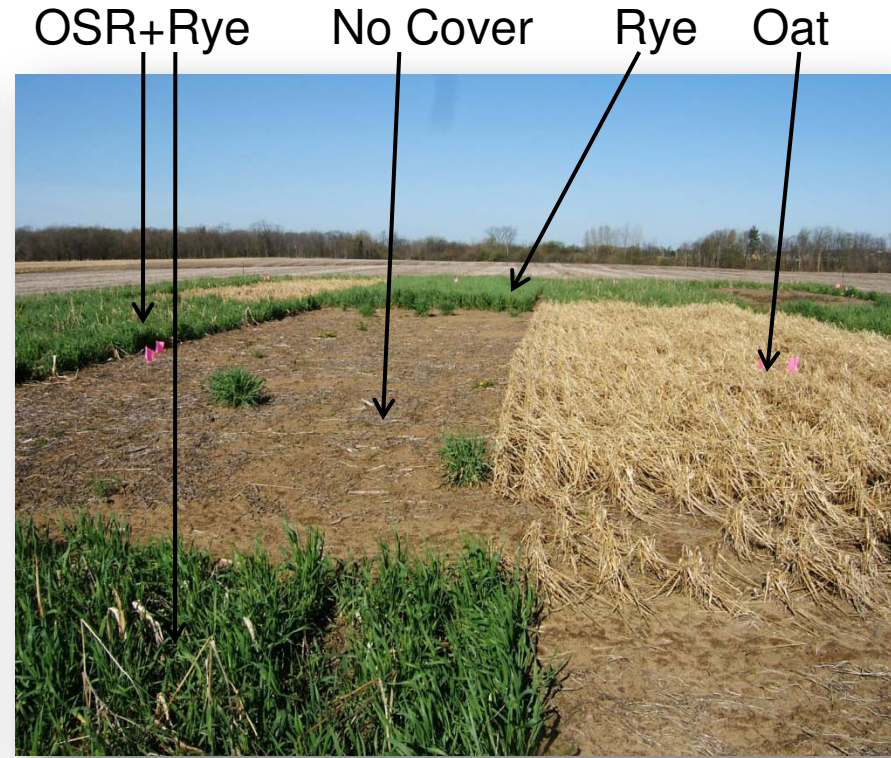
	Bothwell				Ridgetown	
	Total yield				Marketable yield	
N treatment	No cover	Oat	OSR+rye	Rye		
	-----t ha <sup>-1</sup> -----				t ha <sup>-1</sup>	t ha <sup>-1</sup>
0N	6.5 a	11.4 bc	11.4 bcd	6.7 ab	5.4 a	40.0 a
140N	12.2 cd	15.2 d	14.0 cd	13.7 cd	9.5 b	45.9 b
P value	0.038				0.001	0.310

# Bothwell – Cover Crop Growth

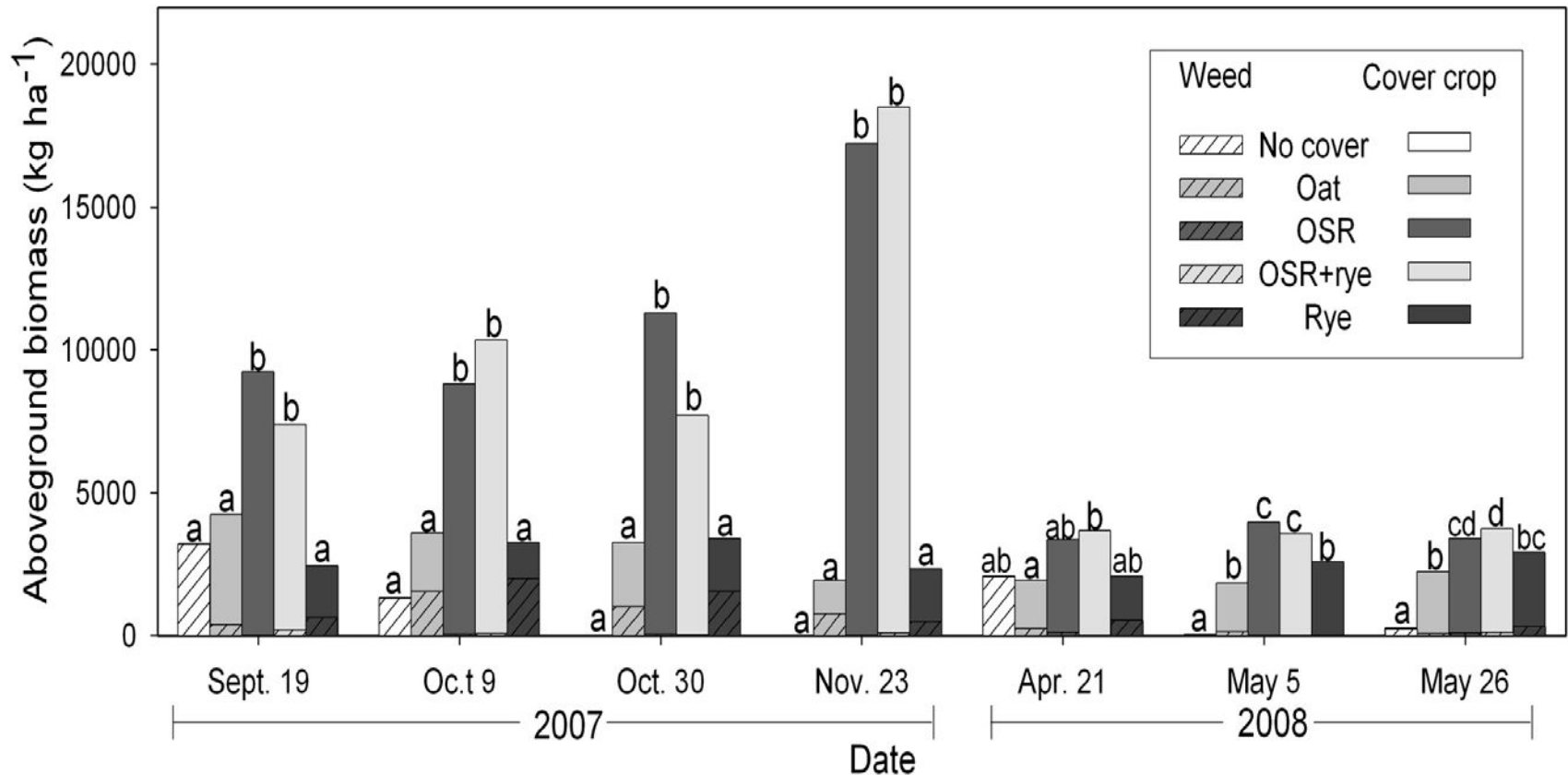
**December 2006**



**May 2007**



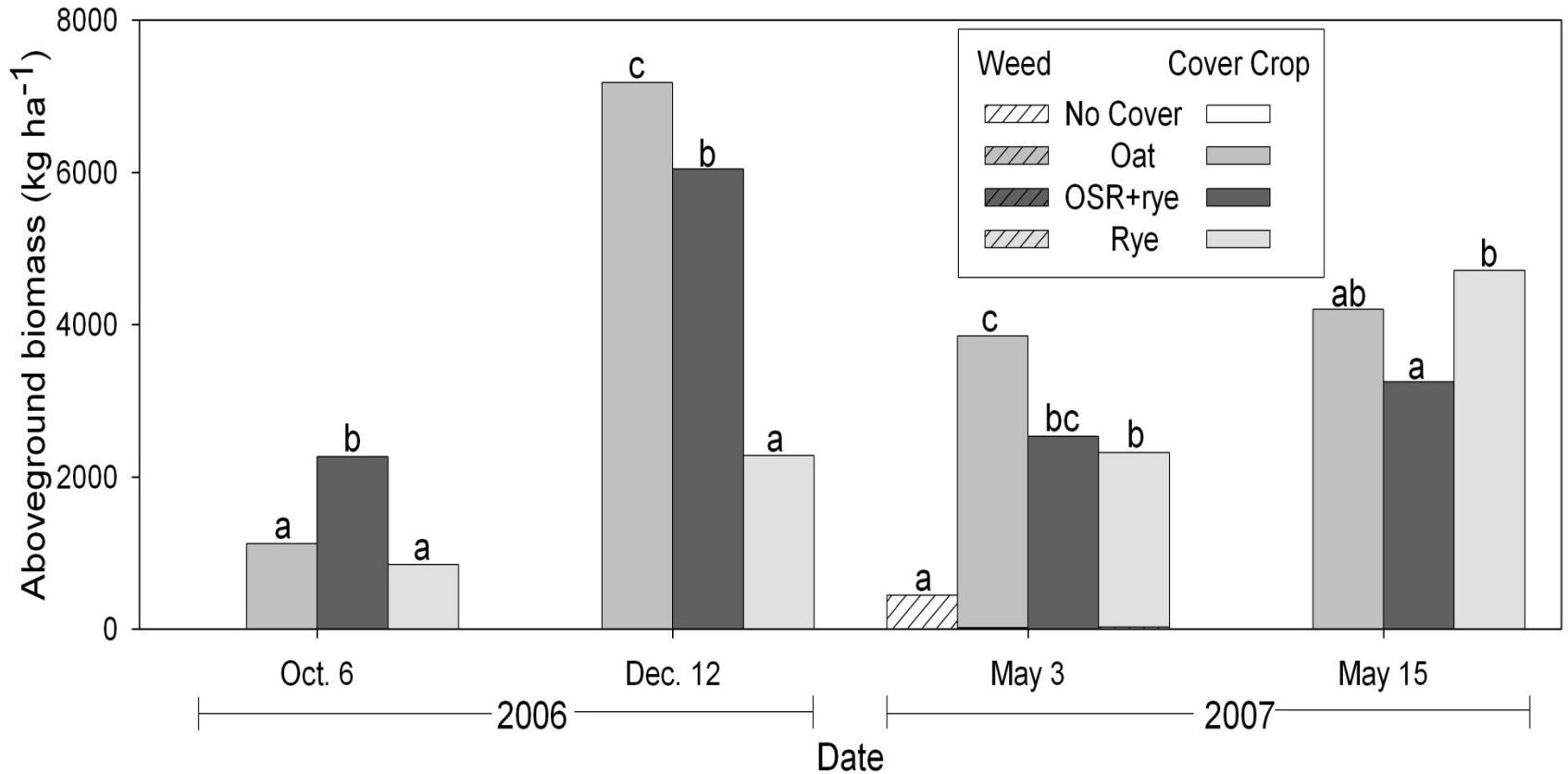
# Ridgetown - Cover Crop Biomass



\*For each date, bars labeled with the different letters are significantly different.



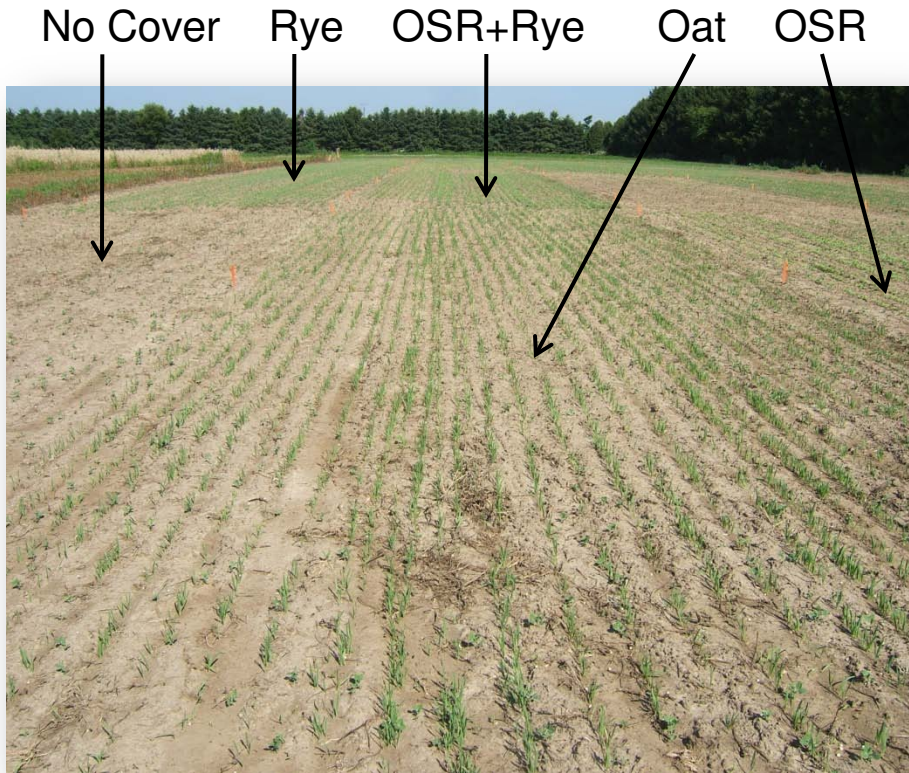
# Bothwell - Cover Crop Biomass



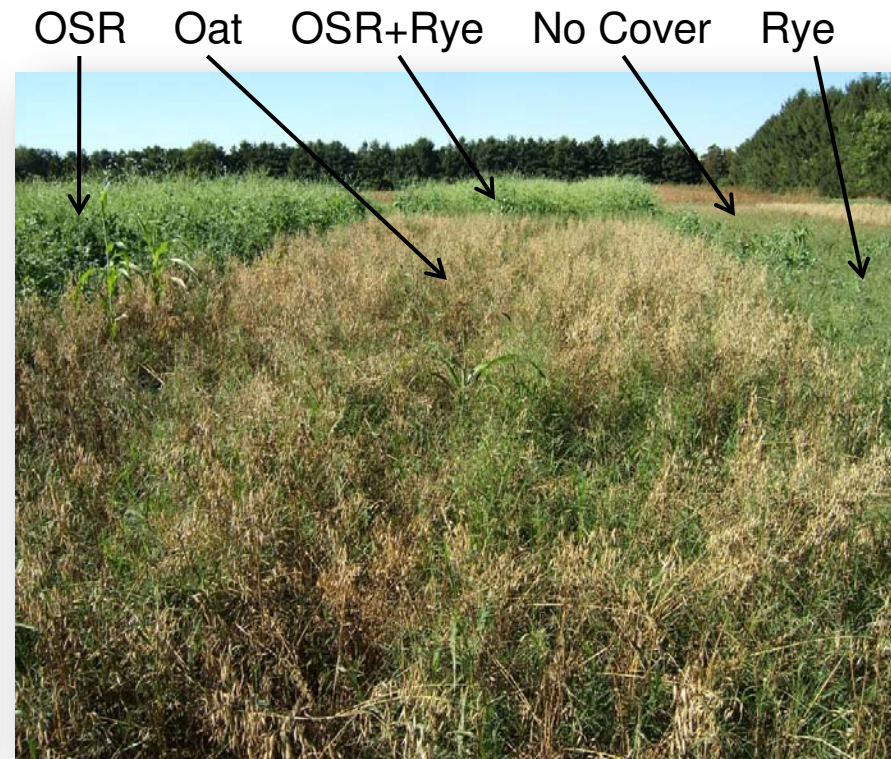
\*For each date, bars labeled with the different letters are significantly different.

# Cover Crop Growth

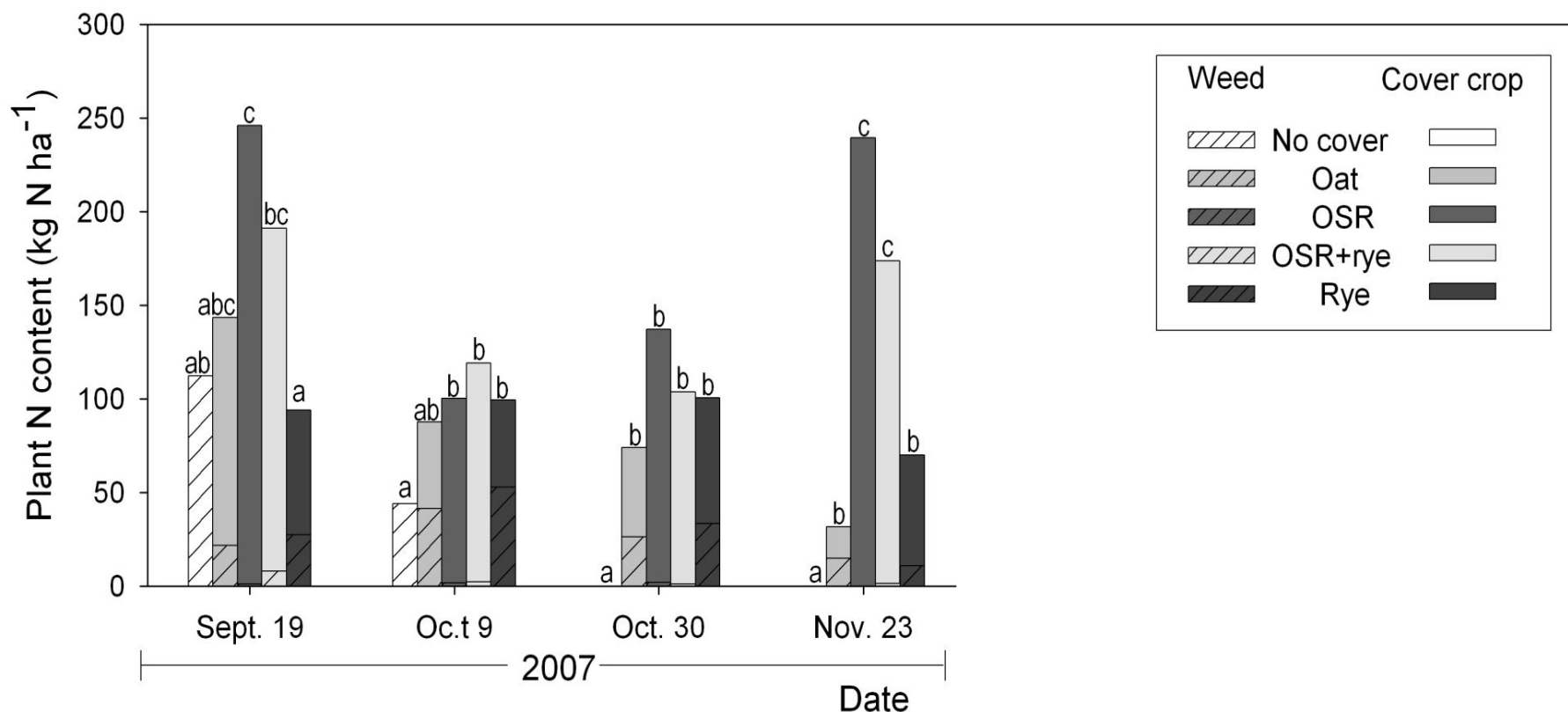
## August 2007



## October 2007

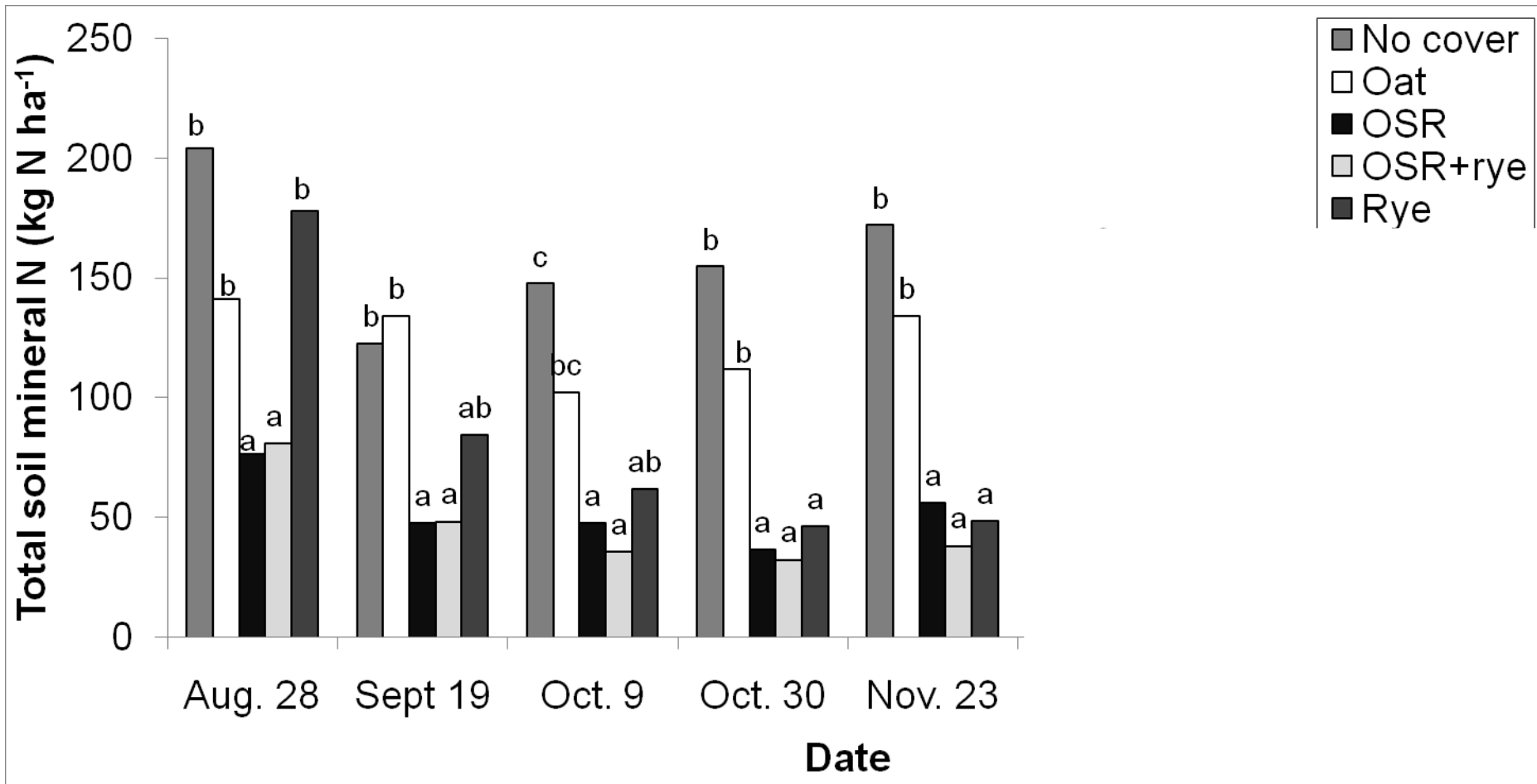


# Ridgetown – Cover Crop Plant N



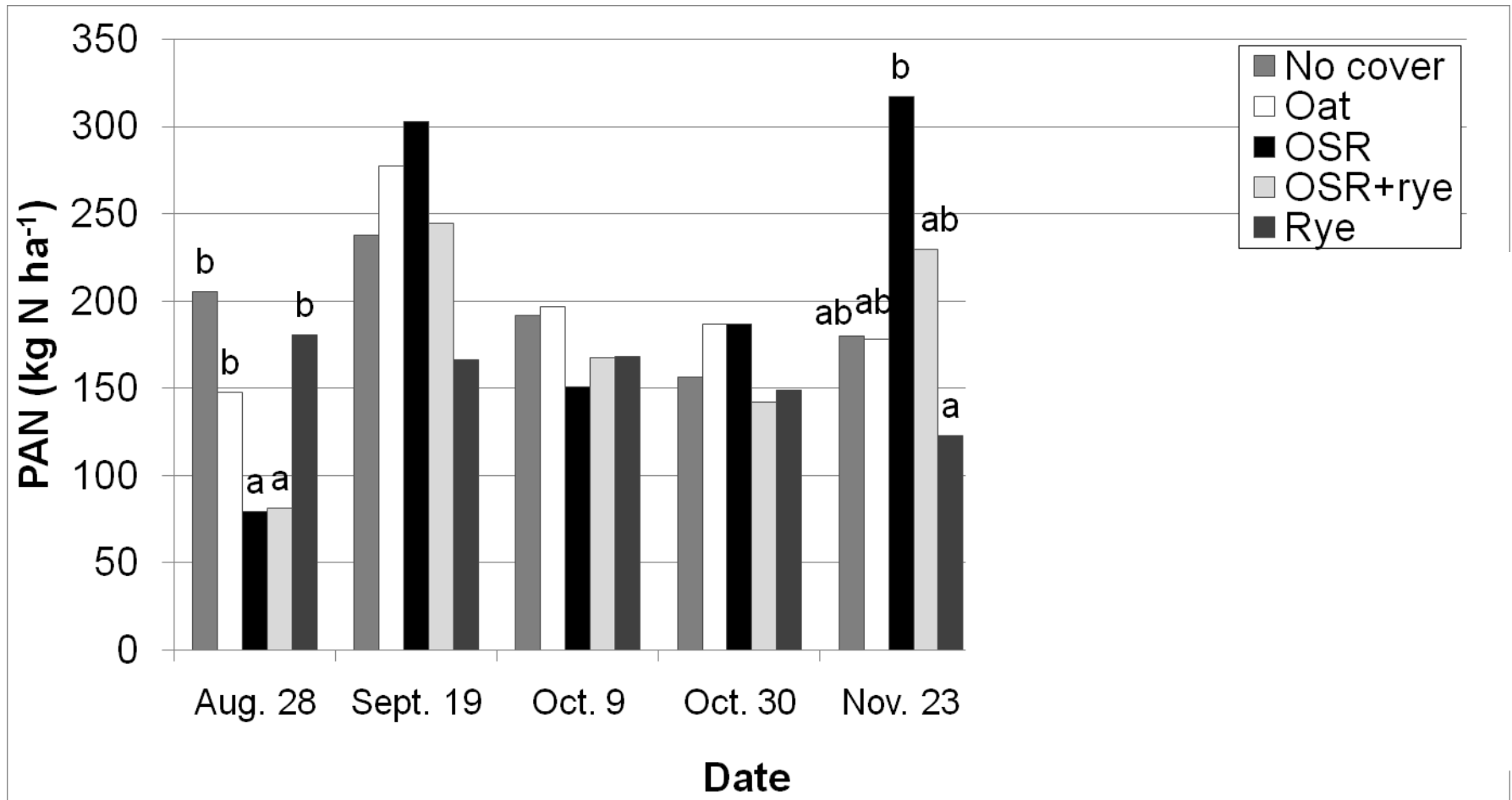
\*For each date, bars labeled with the different letters are significantly different.

# Ridgetown – Cover Crop Soil N



\*For each date, bars labeled with the different letters are significantly different.

# Ridgetown – Cover Crop PAN



\*For each date, bars labeled with the different letters are significantly different.

# Ridgetown – Cover Crop Summary

- Cover crops were effective at conserving plant available N over the fall and into the spring compared to the no cover control
- Oat was most effective in the fall due to high plant N content
- All covers were equally as effective in the spring
- Cover crops generally did not affect PAN in the fall or spring compared to the no cover
- Cover crops were less effective at preventing N loss than at Bothwell, possibly due to differences in soil type and precipitation



# N Credit?

- Need to compare to **NO cover crop control**
- Show fall N uptake and lower soil N but does this result in a N credit?

# Cover Crops Plant N

