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**Midwest Cover Crops Council**  
February 28-March 1, 2013  
State Report for Indiana

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## Research by Kladivko, grad students, colleagues

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- N cycling with oilseed radish cover crop (Kaylissa Horton—see poster). Evaluate radish alone or with oats or rye, for N uptake and subsequent release. Also penetration resistance.
- Using bicultures to reduce loss of sediment and P from oilseed radish cover crops (Jason Cavadini—see poster). Evaluate radish alone or with oats or rye, for P uptake and subsequent release. Also erosion and P loss in runoff and sediment.
- New CIG led by Shaun Casteel— manure after wheat, w/ cover crops, soy “cover”, fallow, for nutrients (Edwin Suarez).

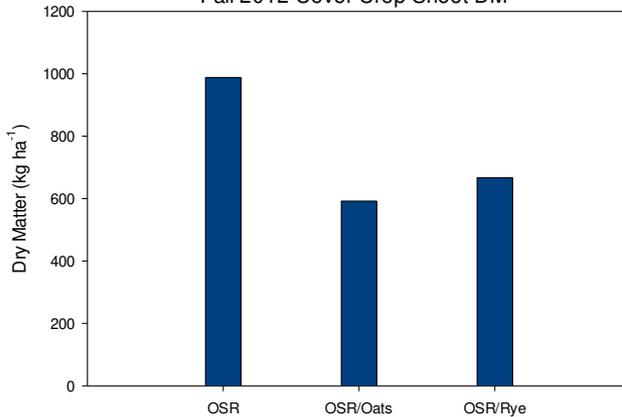
Cover crops following corn – planted 9/17/12



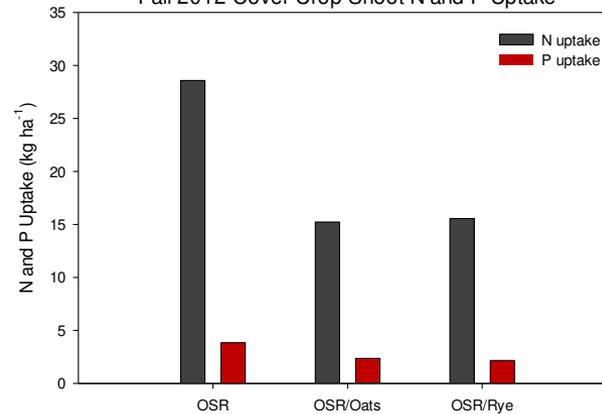
# Cover crops following corn – planted 9/17/12



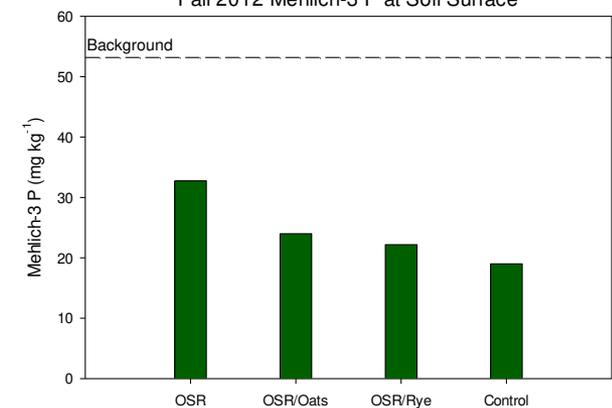
Fall 2012 Cover Crop Shoot DM



Fall 2012 Cover Crop Shoot N and P Uptake



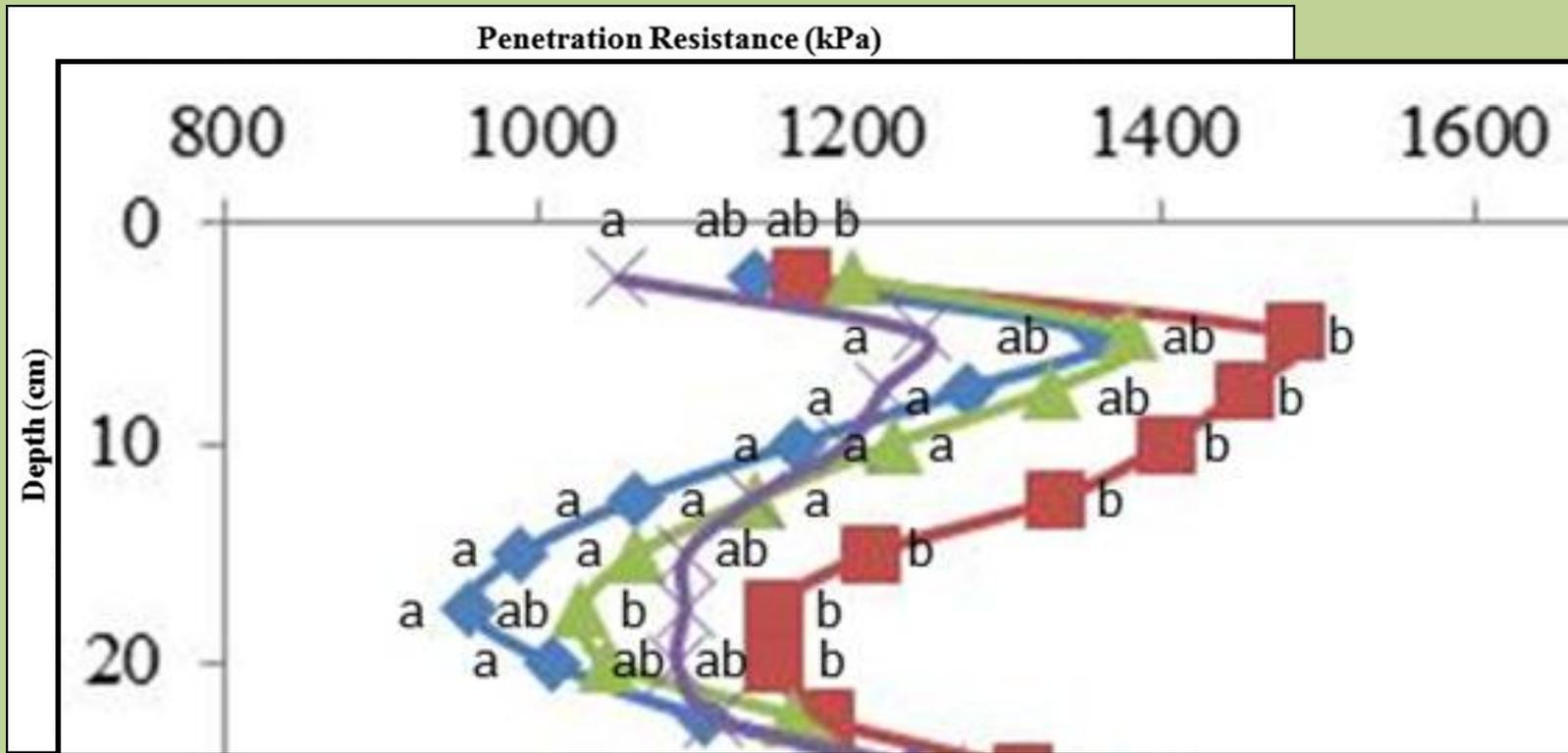
Fall 2012 Mehlich-3 P at Soil Surface



- OSR alone accumulated the most shoot DM
- But there is a large portion of DM in the roots also.

- OSR alone took up the most shoot N & P
- But cereal crops often have more N & P in the roots than in the shoots.

- OSR alone had highest soil P
- Mixed roots of bicultures may have taken up more P than tubers in OSR alone



Treatment significance is presented by depth. Treatment was not significant at depths without letters of significance.

- Mass water content-uniform across treatments & depths
- In general OSR had higher penetration resistance, while all other treatments were NS different from each other



## Kladvko group (cont.)

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- Cover crops for organic vegetable production (Jessica Garvert—see poster). Evaluate cover crops for improving soil quality and providing N to crop.
- CSCAP— large regional project on corn systems and climate (led by Iowa State). Includes rye vs. no rye, C and B. Evaluate resilience to climate stresses. Soil moisture, quality, soil nitrate, crop growth and yield.
- CIG—new project on soil health improvement using cover crops and no-till. Includes Purdue farms and farmer cooperators, in four regional hubs in Indiana. Joint w/ SWCD, NRCS, ISDA. Using oats/radish; rye; oats/radish/rye/crimson clover. (Sara Alford)

# Experiment setup:

- Cover crops in organic vegetable production
- Sweet corn grown as nitrogen uptake crop
- Soil data showed greater soil NO<sub>3</sub> and NH<sub>4</sub> concentration following residue incorporation

## Sweet corn harvest results:

Significant treatment differences: the plants recognize and utilize the increased available soil nitrogen.

	Dry wt grain (g/4plants)	% N grain	Dry wt stover (g/4plants)	% N stover	Total plant N (g N/plant)
Clover	274.08 a	2.02 a	319.66 a	1.68 a	2.74 a
Bare	161.18 b	1.81 a	201.84 b	1.48 b	1.49 b

No significant treatment difference in grain %N

# Extension/Outreach/On-farm trials

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- Pocket guide and selector tool— time to start revisions!
- New CIG project, partners w/ SWCD, NRCS, ISDA. Four regional hubs for trainings and workshops on soil health. Has included Advanced Cover Crops, and Advanced Conservation Cropping Systems. Also includes mentor farmers.
- Intro to Soil Health workshops (SARE state funds), incl. basic soils, cover crops, no-till. Four in Feb 2013.
- Conservation Cropping Systems Initiative (CCSI)
- New NRCS Soil Health Initiative— going strong!
- 1 new Extension factsheet (more planned!)
- Field days, winter meetings



- Purdue University (Indiana)
- Michigan State University
- USDA-Agricultural Research Service
- Iowa State University
- Ohio State University
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
- University of Guelph-Ridgetown Campus
- University of Minnesota
- University of Wisconsin
- North Dakota State University
- University of Illinois
- Other governmental and private organizations

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Midwest Cover Crops Field Guide

First Edition

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EXPERT  
REVIEWED

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