

Midwest Cover Crops Council

February 28-March 1, 2013

State Report for Indiana

Eileen Kladvivko,
Agronomy Dept., Purdue University

Research by Kladviko, grad students, colleagues

- 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).

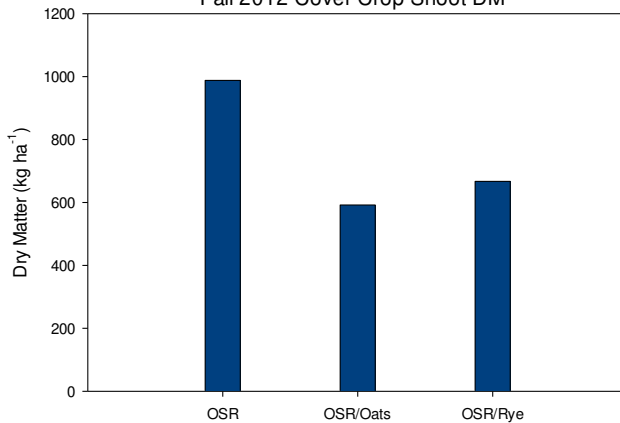
Cover crops following corn – planted 9/17/12



Cover crops following corn – planted 9/17/12

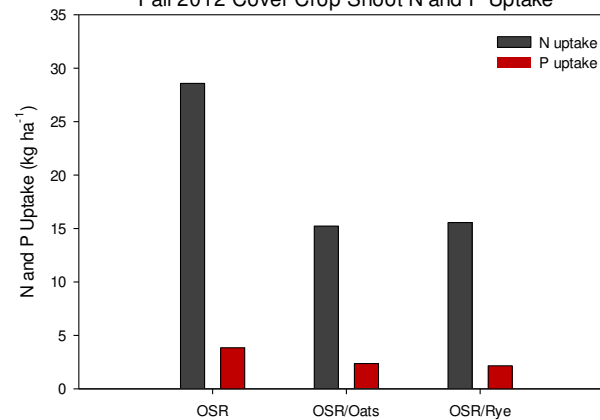


Fall 2012 Cover Crop Shoot DM



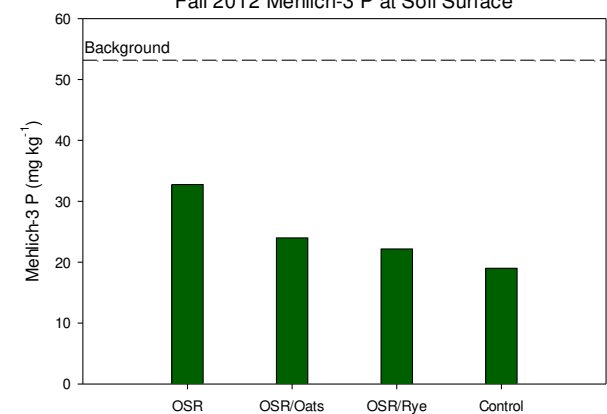
- OSR alone accumulated the most shoot DM
- But there is a large portion of DM in the roots also.

Fall 2012 Cover Crop Shoot N and P Uptake

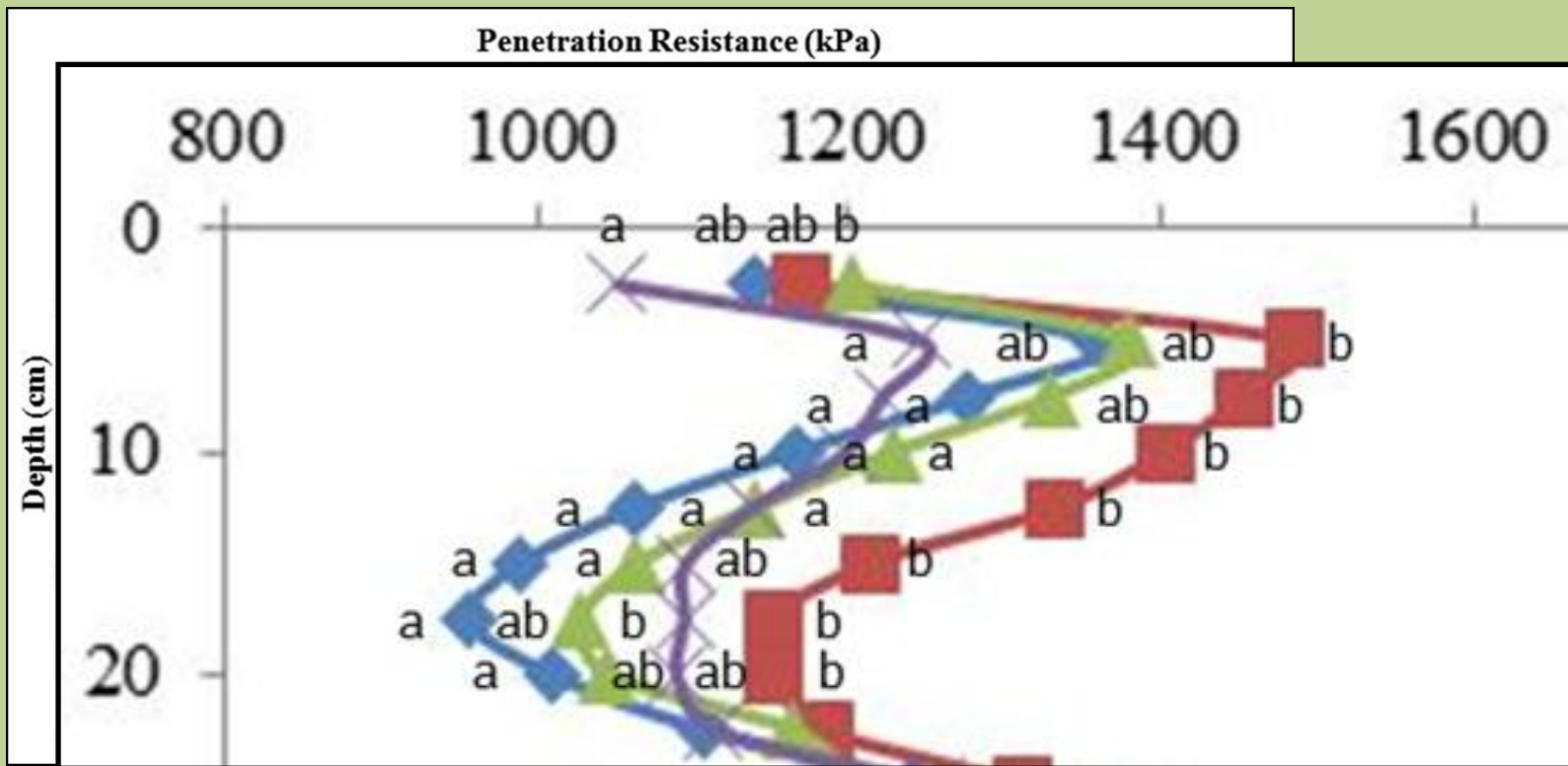


- OSR alone took up the most shoot N & P
- But cereal crops often have more N & P in the roots than in the shoots.

Fall 2012 Mehlich-3 P at Soil Surface



- 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.)

- 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 NO₃ and NH₄ 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

- 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

www.mccc.msu.edu

1/12

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (800) 795-3272 or (202) 720-6382 (TDD).

USDA is an equal opportunity provider and employer.

ID-433

Midwest Cover Crops Field Guide

First Edition

ID-433

**EXPERT
REVIEWED**

MIDWEST *Cover Crops* *Field Guide*



www.mccc.msu.edu



**Purdue Crop
Diagnostic
Training and
Research Center**

www.agry.purdue.edu/dtc