

Cover Crop Economics – New CIG Being Launched in Indiana

Wallace E. Tyner

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Research Questions

- Under which conditions do cover crops provide the greatest benefits?
 - Crop rotations
 - Soil class
 - Tillage
 - Residue removal
- How much corn residue can be sustainably removed with and without cover crops?

What We Don't Know

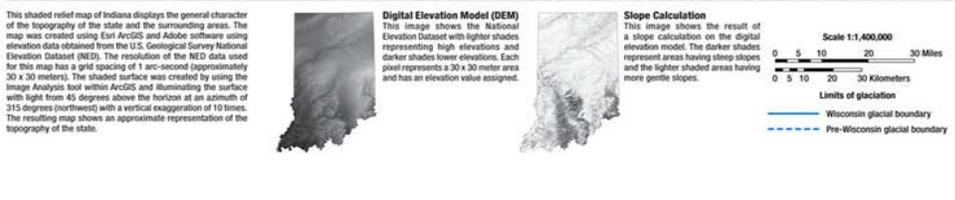
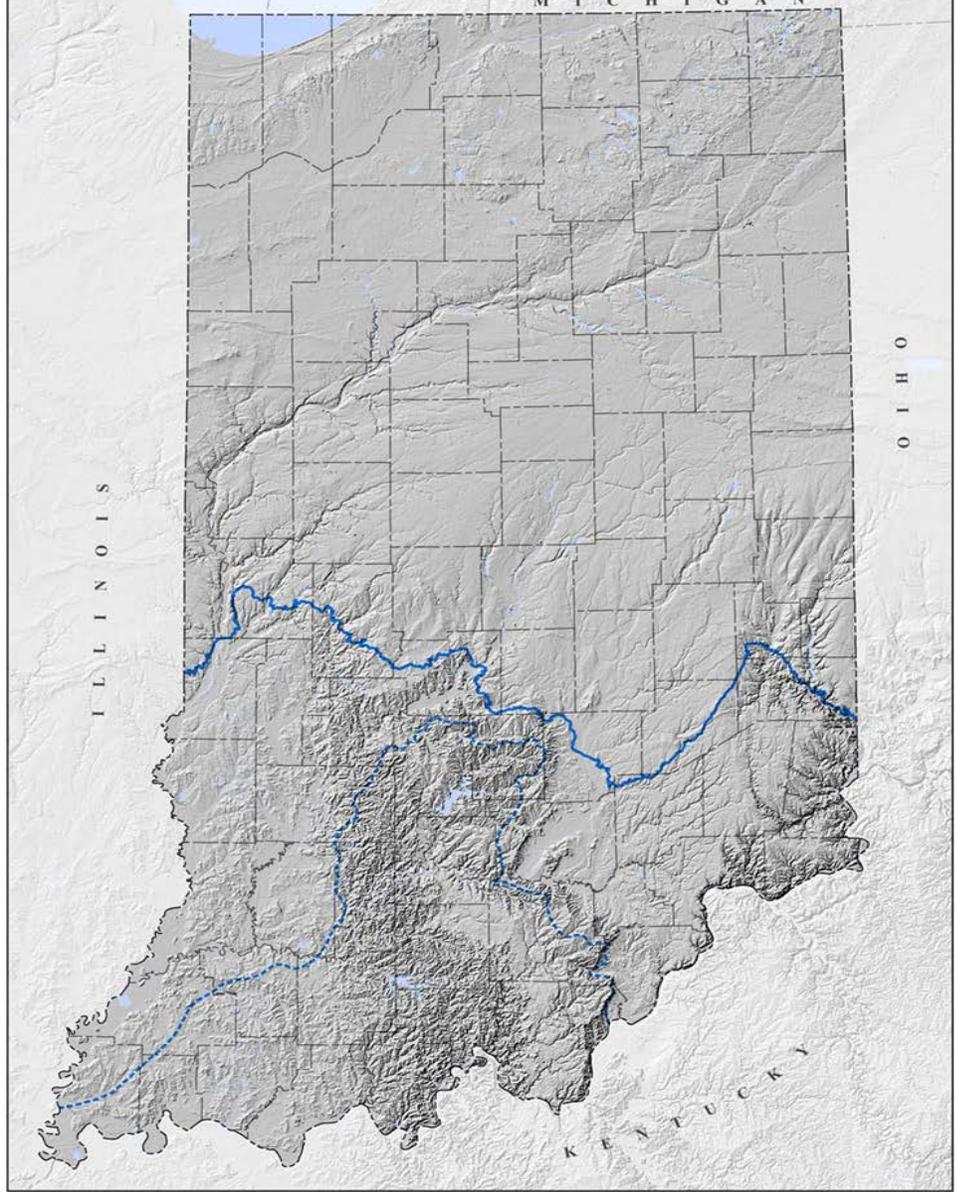
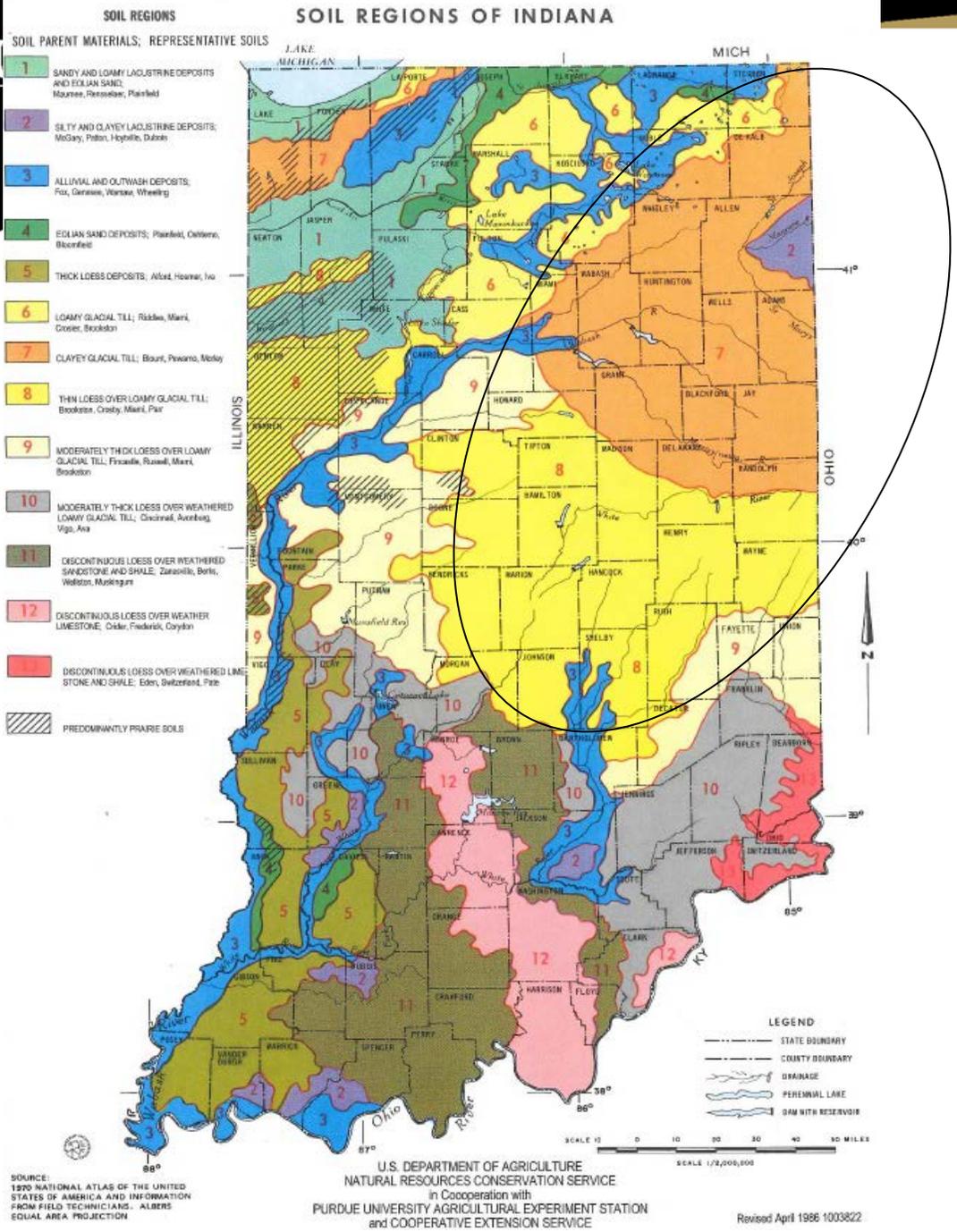
- There are many claimed benefits for improved soil health and cover crops:
 - Reduced soil erosion
 - Increased soil organic carbon
 - Reduced nitrate leaching
 - Increased water retention capacity
 - And many others
- We have a pretty good idea of the technical soil impacts for many of these cases.
- We do not know what they are worth.

How Do We Get to Economic Values?

- There are projects in place that are using strip trials to try to estimate physical and economic impacts of different cultivation practices and cover crops.
- We need to continue these and move them closer to estimating economic impacts (e.g., SHP).
- However, we also need to get better economic estimates of the different categories of benefits such as soil erosion.
- We have a new CIG to get and use data on farmer fields to estimate measures of economic impacts (e.g., yields and costs) that matter to farmers.
- We can also use models to help estimate economic values.

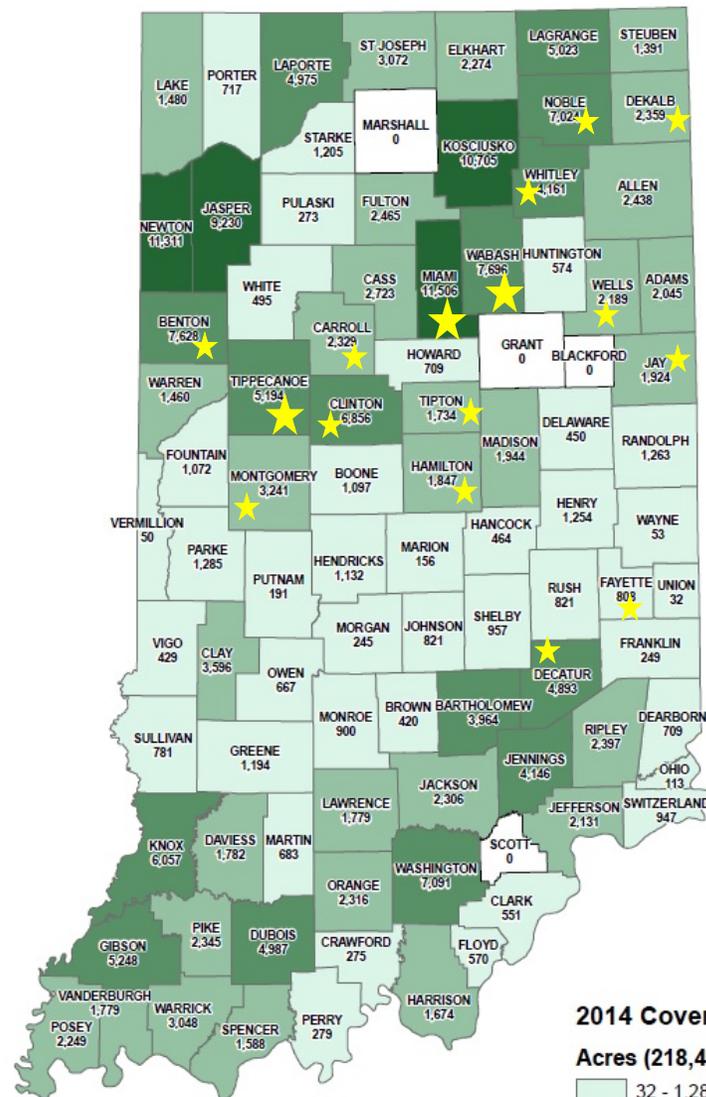
New CIG to Use Farm Field Data

- Need much larger number of participating farmers to get reliable data sets.
- Need to limit crop rotations to the main rotations used in an area (e.g., C-C or C-S in Indiana).
- Need to focus initially in an area with relatively homogenous soil classes and slopes.
- Need to have enough farmers doing cover crops so we can make statistically valid comparisons with non-cover crop fields.



SOURCE: 1970 NATIONAL ATLAS OF THE UNITED STATES OF AMERICA AND INFORMATION FROM FIELD TECHNICIANS - ALBERS EQUAL AREA PROJECTION

PURDUE AGRICULTURE



A total of 218,490 acres of cover crops were funded by Farm Bill, Clean Water Indiana, EPA Section 319, and Soil and Water Conservation District programs.

March 19, 2015
Deb Fairhurst, ISDA Program Manager

County	Share of cover crops land in the total farm land (%)	Dominant soil region (number)
MIAMI	6.56%	7
WABASH	3.89%	7
NOBLE	3.87%	7
CLINTON	3.07%	8
BENTON	3.00%	8
WHITLEY	2.97%	7
DECATUR	2.62%	9
TIPPECANOE	2.36%	9
DEKALB	1.47%	7
HAMILTON	1.41%	8
TIPTON	1.19%	8
CARROLL	1.14%	9
MONTGOMERY	1.13%	9
JAY	1.09%	7
WELLS	1.09%	7
FAYETTE	1.03%	9

Selection of Participants

1. Is your farm in one of the following 37 counties?

Adams	Delaware	Jay	Randolph
Allen (western)	Fayette	Johnson	Rush
Benton	Grant	Madison	Shelby
Blackford	Hamilton	Marion	Tippecanoe
Boone	Hancock	Miami	Tipton
Carroll	Hendricks	Montgomery	Union
Clinton	Henry	Morgan	Wabash
Decatur	Howard	Noble	Wayne
DeKalb	Huntington	Putnam	Wells
			Whitley

Selection of Participants

2. In all or some of your fields, do you have a rotation only consisting of corn and/or soybeans?
3. Do you plant genetically modified corn and/or soybeans?
4. Do you have at least 5 years of historical data at the field level?

If the answer to all these questions is YES, you could qualify.

Selection of Participants

- We need to get 35 farms enrolled this year and 35 more next year.
- We will need five fields enrolled for each farm with five years of historic data (350 total fields).
- Farmers will receive a payment of \$1000/year for each of three years in the program, plus at least one soil test.

Data collection from Farmers

Data collection for CC and NCC fields

Data	Motivation
Number of acres for the field	Description purposes
Slope class of the field	Variable in the regression model
Corn or soybeans yield (bu./ac)	Dependent variable in the regression model
Tillage system	Variable in the regression model
Total amount of N (lbs./ac) only for corn years	Variable in the regression model
If field poorly drained : Drainage system of the field	Variable in the regression model

Data collection for CC fields

Data	Motivation
Cover crop and seeding rate (in lbs./ac)	Quantify the establishment cost
Seeding method	Quantify the establishment cost
Herbicide product used to terminate the cover crop and application rate	Quantify the termination cost
If participant received cost share assistance : name of the program	Quantify private benefits of cover crops or social costs of cover crops

Data collection from the Literature

Data	Motivation
Average growing season temperature (May-Sept)	Variable for the regression model
Average growing season precipitation (May-Sept)	Variable for the regression model
Corn and soybean prices	Quantify private benefits
Cash crop production costs (seed, fertilizers, herbicides, machinery repairs and others)	Quantify private costs
Cover crop seed cost	Quantify the establishment cost for cover crops
Cover crop seeding method cost	Quantify the establishment cost for cover crops
Herbicide cost for herbicides used in terminating the cover crops and cost of spraying	Quantify the termination cost for cover crops

Summary

- The farmer's selection process will enable the researchers to have less heterogeneity in soil type, soil slope, and crop rotation.
- The data required by farmers is not complicated and represents the minimum needed to get reliable results.
- Limitation: results will only be valid for the particular area where this research is implemented, but it can be replicated elsewhere.
- The process can be repeated by selecting other areas with different soil types, soil slopes, and crop rotations.

Frequently Asked Questions

- **Q: Can my fields be irrigated?**
- A: The fields in the study cannot be irrigated because this will cause unneeded variance in the data.

- **Q: Does the type of cover crop used matter?**
- A: No, you are free to use any type of cover crop that you want. All we ask is that you tell us what cover crops you are using each year.

Frequently Asked Questions

- **Q: Do I need to have five years of continuous cover crop use for my cover crop fields?**
- **A:** This would be the ideal scenario. However, if we are unable to find enough fields with five continuous years of data, fields with a shorter period of cover crop use may be possible.
- **Q: The county that I farm in isn't one of the selected counties, but it is adjacent to one and it has similar soils. Am I still eligible?**
- **A:** Yes, you are welcome to participate in our project.

Frequently Asked Questions

- **Q: Does the size of my fields matter?**
A: We have no restrictions on field size

- **Q: How do I need to document the yields for my fields?**
A: We only need to know the information about average yield that you are confident is correct. Since this is not a legal issue, yield data does not need to be presented using yield maps or weigh tickets.

Frequently Asked Questions

Q: Can I still participate if I don't have five fields that are eligible for the study?

A: Yes, you are still welcome to participate. However, you will receive compensation at a rate of \$200 per field.

Q: Can fields with manure applied be used in the study?

Yes. It would need to be documented like chemical fertilizer.

Frequently Asked Questions

Q: If I have a field that I am not currently growing cover crops on, but plan to in the future, can I grow cover crops on them during the study?

A: You can enroll those fields as non-cover crop fields so long as you do not plan on starting cover crops on the field until year 3 of the project.

Thanks!

Contact:

slira@purdue.edu

wtyner@purdue.edu