

Using Cover Crops to Facilitate the Transition to Continuous No-Till

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Rationale:

- No-till systems provide many benefits, including soil quality, erosion control, and profitability
- However, many farmers still hesitate to use continuous no-till; they instead use no-till for soybeans but some tillage (often chisel) for corn
- Reasons often include potential crop yield declines during the transition years, since improved biological and physical properties take time to develop
- Methods are needed to “jump-start” the system, to more quickly transition to the improved soil quality of mature no-till systems
- Cover crops may help speed the transition in soil properties when converting from conventional tillage to no-till

Project Goals:

- Demonstrate the potential for using appropriate cover crops to speed up the transition into a productive continuous no-till system, for corn-soybean rotations in Indiana and Ohio
- Develop a cover crop selector tool for use in Midwest cash grain cropping systems
- Hold training workshops and field days, to educate producers about cover crops and their role in soil quality improvement, especially in conjunction with continuous no-till

Approach:

- Work directly with 4 producers in Indiana and 4 producers in Ohio
- Producers were experienced with no-till soybeans but had used tillage before corn
- The test field was divided into 3 treatments:
 - 1) control (NT soybeans, tilled corn)
 - 2) no-till for both corn and soybeans
 - 3) no-till for both corn and soybeans, with use of winter cover crop (1, 2, or 3 covers)
- Cover crop was aerially seeded into standing crop in September 2009
- Background soil samples were collected for soil quality measurements and fertility status
- Soil samples will be collected after two years, to monitor potential improvements in soil properties.
- Crop yields will be measured with yield monitors on combine
- Crop consultants working directly with each producer, will assist with decisions regarding management and selection of subsequent cover crops, management of the no-till transition, etc.

Demonstration sites hosted by local SWCDs, NRCS, and Extension, in conjunction with local producers, are also used for field days and workshops.



Putnam Co. plots drilled 14 July after wheat; photos taken 18 Aug.

annual ryegrass / crimson clover

groundhog radish / forage oats



Digging for roots is always educational!

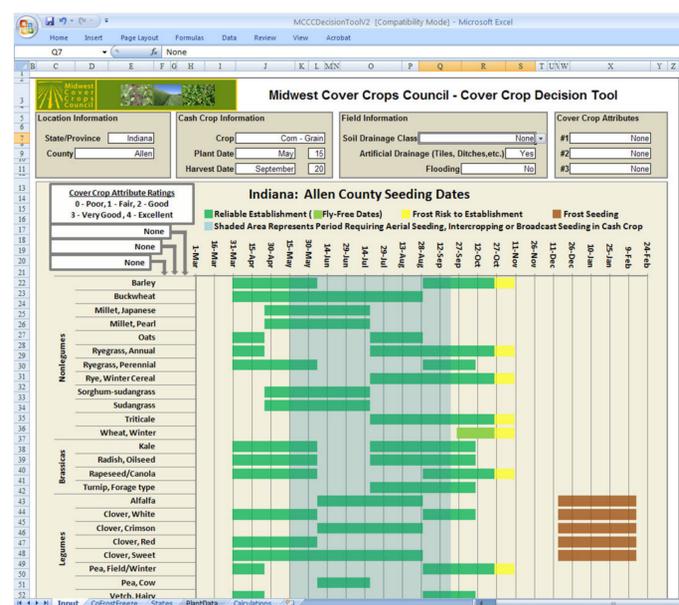


Cover crop mixes generate excitement, but are a bit costly for cash grain systems.



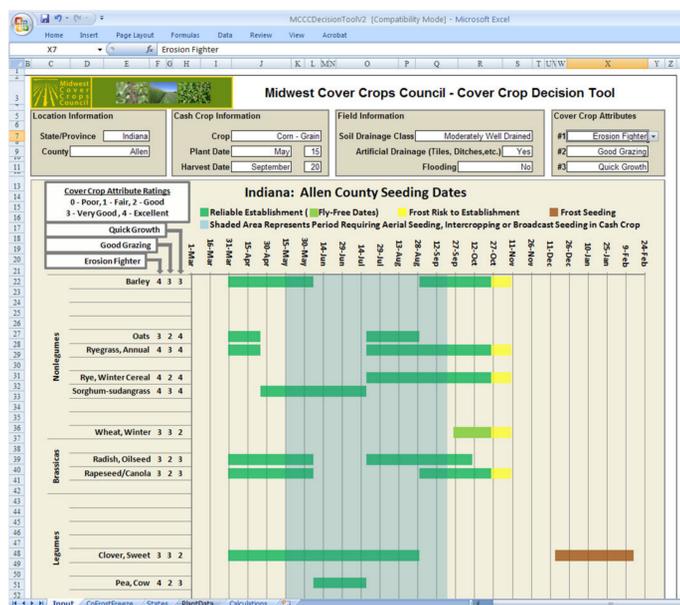
Cover crop selector tool is under development

- Tool combines elements of NRCS practice standards and job sheets on cover crops, NRCS seeding tool from Indiana, and charts from *Managing Cover Crops Profitably*, 3rd ed. (Andy Clark, ed., published by SARE/SAN)
- Tool is Excel-based, and selects potential cover crops that fit the time window (frost dates), soil drainage class, and desired purposes of the cover crop (N scavenger, soil builder, etc.)
- Tool will be tested in Indiana this winter and adapted for use throughout the Midwest, with readily-available data from each state/province in the MCCC
- Watch the MCCC website for updates on availability of the tool!



List of all potential cover crops along with their seeding date windows, for the example of Allen County, IN. The shaded area indicates when the cash crop is growing.

The user then fills in information about the soil drainage class, and the desired purposes of the cover crop (up to three attributes, such as soil builder, erosion fighter, quick growth, etc., as listed in *SARE/SAN* book). As each selection is made, cover crops are rated, and those that are rated fair or poor are eliminated. This has great educational value to users, since they can immediately see the effect their choices make on the cover crops that are possible for their system.



Cover Crops Workshop and Field Day

August 25, 2009, in Elwood, IN

Indoor presentations by producers, crop consultant, university, NRCS, and seed company representatives.

Field site visits to producers with long-term experience with no-till and cover crops.

All attendees received a copy of the SARE/SAN book, *Managing Cover Crops Profitably*, 3rd ed. (Andy Clark, ed.)

Topics included:

Cover crops, no-till, and soil quality; role of cover crops in reducing nitrate losses to tile drains; choosing the right cover crop and fitting them into your system; practical management tips.



Listening to indoor presentations, followed by a hearty lunch!



Soil pit to show rooting patterns, long-term no-till soil structure, and a few earthworm channels too!

Visit the *NEW* Midwest Cover Crops Council Website:

www.mccc.msu.edu



- Join the MCCC e-mail list-serve; see the homepage link
- Save the date! Next annual meeting to be held in Ames, Iowa on March 3-4, 2010– see website for details