Incorporating cover crops profitably on highly erodible land in West-Central Indiana

Mike Buis farms 3100 acres of rolling farmland just west of Indianapolis with his brother, Jeff. They own 1400 acres and rent 1700 acres. Most of Mike’s cropland is in a corn-soybean or corn-soybean-wheat rotation. Mike began working with the Soil Health Partnership (SHP) in 2016 to experiment with cover crops. On his SHP research field, he trials a cereal rye cover crop before soybeans, and an oats and radish mix before corn. Experimenting with cover crops on his SHP research field prompted Mike to integrate a wheat cover crop on 300 additional acres. We focus on the economic benefits of his wheat cover crop management practices because he has adopted the wheat cover crop at scale.

Farmer profile:
- Working with SHP since 2016
- Experimenting with cover crops on his SHP research field
- Total farmed area is 3100 acres
- Planting corn-soybean or corn-soybean-wheat rotation

Mike Buis and his brother Jeff Buis on their West-Central Indiana farm
The Soil Health Partnership: Benefits of Cover Crops

Wheat Cover Crop Management
- Mike plants a wheat cover crop each year on approximately 300 acres of highly erodible land (HEL) because he likes the flexibility of a large planting window and ease of termination.
- Seeds bin-run wheat cover crop* at approximately 60 lbs/acre for a total seed cost of $5-$6/acre.
- Broadcasts cover crop seed with fall fertilizer application immediately after harvest and incorporates both with Salford tillage tool (turbo till/vertical tillage).
- Terminates wheat cover crop in the spring before it heads out, or when it’s approximately 12-14" tall, by burning down with an herbicide application (wheat is not harvested).
- Plants directly into the cover crop residue with a no-till planter (no spring tillage).

*Growers should check with genetic source for plant back restrictions before planting bin-run wheat as a cover crop.

Measuring the impact of Cover Crops on Soil Health on the SHP Research Field

On his SHP research field, Mike is trialing a cereal rye cover crop before soybeans, and an oats and radish mix before corn (four strips with cover crops and four without any cover crop). This has given him the opportunity to experiment with cover crops in addition to wheat.

SHP sampled soils on Mike’s research field in 2016 and 2018 (before and after implementing a cover crop). Based on these results, average soil organic matter for the cover cropped strips (but not the control strips) increased significantly between 2016 and 2018 (at 99% confidence level; see graph). Increases in organic matter often result in improved soil structure and function. This means Mike might see long-term benefits in soil water holding capacity and nutrient cycling and availability as a result of using cover crops.

Mike plants a wheat cover crop each year on approximately 300 acres of highly erodible land (HEL). Although he is not required to do so, adding cover crops to his HEL ensures he is going above and beyond to minimize soil erosion.
The Soil Health Partnership: Benefits of Cover Crops

Without the cover crop, Mike estimates that he would need to apply a higher rate of herbicide—or a more costly mix—that would cost him at least an additional $10 per acre in weed control.

Estimating the weed control benefit of the wheat cover crop

- After termination, the residue from the wheat cover forms a thick mat on the surface of the soil.
- The cover crop residue effectively acts as a mulch that can suppress weeds and disrupt conditions for the germination of weed seeds.
- How much is this reduced weed pressure worth? With a cover crop, Mike’s herbicide costs run approximately $8-$10/acre for a glyphosate and 2,4-D mix. Without the cover crop, Mike estimates that he would need to apply a higher rate of herbicide—or a more costly mix—that would cost him at least an additional $10 per acre in weed control.

Highly Erodible Land (HEL) and Soil Health Practices

Conservation Compliance provisions were originally enacted as part of the 1985 Farm Bill. They require that farmers like Mike who grow crops on HEL use conservation practices (such as reduced tillage) to be eligible for federal programs such as disaster assistance, conservation programs, or crop insurance premium subsidies. Although he is not required to do so, adding cover crops to his HEL ensures he is going above and beyond to minimize soil erosion.

Economic Takeaways

- Implementing cover crops on his HEL was a natural fit for Mike after he started experimenting with cover crops on his SHP research field. Because he had already adopted minimum-till on his HEL to meet conservation compliance requirements, there was no additional cost for seeding or terminating the cover crop except for the seed cost.
- Mike found that he needed to use fewer herbicides during the growing season due to his wheat cover crop. Being able to put a dollar value on weed control has encouraged Mike to increase his use of cover crops.

Has adding cover crops impacted Mike’s bottom line?

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<thead>
<tr>
<th></th>
<th>Costs</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Cover Crop Seed</td>
<td>$6/acre</td>
<td></td>
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<tr>
<td>Seeding the cover crop</td>
<td>$0/acre*</td>
<td>Weed control provided by cover crop</td>
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<tr>
<td>Terminating the cover crop</td>
<td>$0/acre*</td>
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Net Benefit: $4/acre

*Why is there no additional cost for seeding the cover crop, or burning it down in the Spring? Because Mike spreads fall fertilizer and incorporates it, there is no additional cost to seed and incorporate the cover crop. There is no additional cost to terminate the cover crop because he uses a similar herbicide program to control weeds (in a minimum tillage system without cover crops) and terminate the wheat cover crop (in a minimum tillage system with the wheat cover crop).
The Soil Health Partnership: Benefits of Cover Crops

Learn more about the Soil Health Partnership by visiting soilhealthpartnership.org or contacting soilhealth@ncga.com

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