Portage River Watershed of Ohio

FARM SIZE
200 crop acres

CROPS GROWN
- Corn: 50 acres
- Soybean: 100 acres
- Winter Wheat: 50 acres

SOIL TEXTURE
Clay

SOIL HEALTH MANAGEMENT SYSTEM
- No-till production
- Cover crops
- Tests for selected measures of soil health

NET INCOME INCREASE
- Corn: $19.72/acre
- Soybean: $28.62/acre

INTRODUCTION
The Ron Snyder farm in the Portage River Watershed of Ohio increased profitability by decreasing costs of production for corn and soybean with a soil health management system (SHMS) of no-till production with cover crops. The farm has followed no-till practices for 20 years and has planted cover crops for 10 years.

ADDITIONAL INFORMATION ON THE FARM IS AVAILABLE IN A REPORT AND VIDEO PRESENTATION AT WWW.NACDNET.ORG/SOIL-HEALTH-ECONOMICS.

METHODS
The Soil Health Institute conducted an interview to obtain production information for evaluating economics of the soil health system based on partial budget analysis. In this approach, the benefits and costs of a soil health system are assessed by calculating changes in revenue and expenses before and after adoption of that system. The change in net farm income associated with adopting a SHMS is calculated as shown below and presented in Table 1.

Net change in farm income = Benefits - Costs, where:
- Benefits = Reduced Expenses + Additional Revenue
- Costs = Additional Expenses + Reduced Revenue

A DETAILED DESCRIPTION OF THE METHODOLOGY FOR PARTIAL BUDGET ANALYSIS CAN BE FOUND AT HTTPS://SOILHEALTHINSTITUTE.ORG/ECONOMICS.

FINDINGS
Initial Management System and Reduced Expenses
- The initial management system was conventional tillage production.
- Post-plant weed management was exclusively with herbicide in conventional tillage.
- A disk operation and two field cultivator operations were eliminated for each crop.
- Phosphorous and potassium applications were eliminated for corn and soybean.
- Total reduced expenses were $85.42/acre for corn and $78.96/acre for soybean.

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The soil health management system adopted was no-till production with cover crops.

Winter wheat production practices were not changed due to the SHMS.

Cover crops included primarily oats and winter/cereal rye with up to 14 additional species.

Cover crop seed cost was $35.00/acre before corn and $20.00/acre before soybean.

Cover crops were drilled in the fall, after harvest of the preceding crop.

Corn and soybean were planted as cover crops were roller-crimped in a single field trip.

Total additional expenses were $65.70/acre for corn and $50.34/acre for soybean.

Reduced expenses were $19.72/acre greater than additional expenses for corn.

Reduced expenses were $28.62/acre greater than additional expenses for soybean.

The SHMS was implemented without reductions in yield.

Net farm income increased $19.72/acre for corn and $28.62/acre for soybean.

### Table 1. Partial Budget Analysis, 20 Years with a Soil Health Management System on a 200-Acre Farm, $ per Acre per Year (2019 Dollars).

<table>
<thead>
<tr>
<th>Expense Category</th>
<th>REDUCED EXPENSE</th>
<th>ADDITIONAL EXPENSE</th>
<th>REDUCED EXPENSE</th>
<th>ADDITIONAL EXPENSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed</td>
<td>0.00</td>
<td>35.00</td>
<td>0.00</td>
<td>20.00</td>
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<tr>
<td>Fertilizer &amp; Amendments</td>
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<td>0.00</td>
<td>45.28</td>
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<td>Pesticides</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Fuel &amp; Electricity</td>
<td>4.38</td>
<td>2.76</td>
<td>4.38</td>
<td>2.76</td>
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<tr>
<td>Labor &amp; Services</td>
<td>10.47</td>
<td>10.49</td>
<td>10.32</td>
<td>10.13</td>
</tr>
<tr>
<td>Equipment Ownership</td>
<td>18.98</td>
<td>17.45</td>
<td>18.98</td>
<td>17.45</td>
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<tr>
<td><strong>Total Expense Change</strong></td>
<td><strong>85.42</strong></td>
<td><strong>65.70</strong></td>
<td><strong>78.96</strong></td>
<td><strong>50.34</strong></td>
</tr>
</tbody>
</table>

| Yield, bu./acre           | 0.00            | 0.00               | 0.00            | 0.00               |
| Price Received, $/bu.     | 4.20            | 4.20               | 10.00           | 10.00              |
| **Revenue Change**        | **0.00**        | **0.00**           | **0.00**        | **0.00**           |

| **Total Change**          | **85.42**       | **65.70**          | **78.96**       | **50.34**          |

**Change in Net Farm Income**

1 Expenses and expected yields based on farmer reported production practices. (https://soilhealthinstitute.org/economics/)