The Shun Binford farm in the Coxey Creek-Tennessee River Watershed of Alabama increased profitability for cotton, soybean, and wheat by decreasing production costs with a soil health management system (SHMS) of minimum tillage production and cover crops. The farm began using minimum tillage practices on the heavier clay soils and no-till on the lighter soils in 1997. Cover crops have been planted for four years.

**Benefits of the SHMS reported by the farmer:**

- **IMPROVED WATER INFILTRATION**
- **REDUCED EROSION**
- **ENHANCED RESILIENCE TO EXTREME WEATHER**

**CROPS GROWN**
- 50% Cotton
- 50% Double-cropped Soybean and Wheat

**SOIL TEXTURE**
- Ranged from Sandy loam to Clay

**SOIL HEALTH MANAGEMENT SYSTEM**
- Minimum tillage
- Cover crops
- Monitoring of soil nutrient levels

**NET INCOME INCREASE**
- Cotton: $7.96/acre
- Soybean: $11.80/acre
- Wheat: $29.33/acre

The initial management system was conventional tillage production. Post-plant weed management was exclusively with herbicide in conventional tillage. Three tillage operations were eliminated for cotton and soybean, and two were eliminated for wheat. Total reduced expenses were $53.14/acre for cotton, $31.90/acre for soybean, and $53.49/acre for wheat.
The soil health management system adopted was no-till production for soybean and wheat along with minimum tillage production and cover crops before cotton.

Wheat as a cover crop before cotton was broadcast by custom application for $8.00/acre in the fall at a seed rate of one bu./acre.

The cover crop was terminated with herbicide and incorporated into the soil with a vertical tillage implement.

Total additional expenses were $45.18/acre for cotton, $20.10/acre for soybean, and $24.16/acre for wheat.

Reduced expenses were $7.96/acre greater than additional expenses for cotton.

Reduced expenses were $11.80/acre greater than additional expenses for soybean.

Reduced expenses were $29.33/acre greater than additional expenses for wheat.

Net farm income increased $7.96/acre for cotton, $11.80/acre for soybean, and $29.33 for wheat.

### ECONOMICS of Soil Health Systems: Coxy Creek-Tennessee River Watershed of Alabama

#### Soil Health Management System and Additional Expenses
- The soil health management system adopted was no-till production for soybean and wheat along with minimum tillage production and cover crops before cotton.
- Wheat as a cover crop before cotton was broadcast by custom application for $8.00/acre in the fall at a seed rate of one bu./acre.
- The cover crop was terminated with herbicide and incorporated into the soil with a vertical tillage implement.
- Total additional expenses were $45.18/acre for cotton, $20.10/acre for soybean, and $24.16/acre for wheat.

#### Soil Health Management System Impact on Farm Income
- Reduced expenses were $7.96/acre greater than additional expenses for cotton.
- Reduced expenses were $11.80/acre greater than additional expenses for soybean.
- Reduced expenses were $29.33/acre greater than additional expenses for wheat.
- Reduced expenses were realized for all crops without yield reductions.
- Net farm income increased $7.96/acre for cotton, $11.80/acre for soybean, and $29.33 for wheat.

### Table 1. Partial Budget Analysis, 24 Years with a Soil Health Management System, $ per Acre per Year (2019 Dollars)

<table>
<thead>
<tr>
<th>Expense Category</th>
<th>Cotton</th>
<th>Soybean</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BENEFITS</td>
<td>COSTS</td>
<td>BENEFITS</td>
</tr>
<tr>
<td>Seed</td>
<td>0.00</td>
<td>5.50</td>
<td>0.00</td>
</tr>
<tr>
<td>Fertilizer &amp; Amendments</td>
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<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Pesticides</td>
<td>0.00</td>
<td>3.84</td>
<td>0.00</td>
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<tr>
<td>Fuel &amp; Electricity</td>
<td>7.63</td>
<td>2.77</td>
<td>4.19</td>
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<tr>
<td>Labor &amp; Services</td>
<td>14.42</td>
<td>15.84</td>
<td>8.78</td>
</tr>
<tr>
<td>Post-harvest Expenses</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Equipment Ownership</td>
<td>31.09</td>
<td>17.23</td>
<td>18.93</td>
</tr>
<tr>
<td><strong>Total Expense Change</strong></td>
<td><strong>53.14</strong></td>
<td><strong>45.18</strong></td>
<td><strong>31.90</strong></td>
</tr>
<tr>
<td>Yield, bu./acre; Cotton, lb./acre</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Price Received,2 $/unit</td>
<td>0.67</td>
<td>0.67</td>
<td>10.00</td>
</tr>
<tr>
<td><strong>Revenue Change</strong></td>
<td><strong>0.00</strong></td>
<td><strong>0.00</strong></td>
<td><strong>0.00</strong></td>
</tr>
<tr>
<td><strong>Total Change</strong></td>
<td><strong>53.14</strong></td>
<td><strong>45.18</strong></td>
<td><strong>31.90</strong></td>
</tr>
<tr>
<td><strong>Change in Net Farm Income</strong></td>
<td><strong>7.96</strong></td>
<td><strong>11.80</strong></td>
<td><strong>29.33</strong></td>
</tr>
</tbody>
</table>

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