

**Practice: 346 - Residue and Tillage Management - Ridge Till**

**Scenario: #1 - Ridge Till**

**Scenario Description:**

This practice typically involves conversion from a conventional tillage system to a ridge tillage (conservation tillage) system on 160 acres of cropland. This involves managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting soil-disturbing activities used to grow and harvest crops in systems. The practice is used to reduce wind erosion, reduce sheet and rill erosion, improve soil quality, reduce energy use, increase plant available moisture. The ridge till system includes using a ridge till planter and chemical weed control, and may also include a period of chemical fallow. This residue management system is applicable to both irrigated and non-irrigated fields. This system will manage soil erosion to T and maintain a positive SCI.

**Before Situation:**

Row crops such as corn, cotton, peanuts, soybeans or grain sorghum are grown and harvested in mid-late fall. Full width tillage is performed prior to planting and weed control during crop production is typically cultivation and chemical application. Fields are plowed immediately following harvest, with several additional tillage operations applied to field prior to planting for land preparation and weed control. Residue amounts after tillage operations average less than 10%, resulting in bare soil being exposed to wind erosion and intense rainfall during the fall, winter, and early spring. Any crop residue that is present degrades and sediment/nutrient runoff from fields increases during rainfall events. Sheet and rill erosion and wind occurs with visible signs of soil erosion by spring. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. This system will typically have a negative Soil Conditioning Index (SCI) and a high Soil Tillage Intensity Rating (STIR).

**After Situation:**

Practice applied per the conservation practice standard 346 to meet the planned purposes. Managing crop residue on the surface year around while limiting soil disturbing activities to those which reshape ridges, place nutrients, and plant crops. All crops are seeded/planted with a ridge till planter, which minimizes soil disturbance while establishing good seed-soil contact. All residues are to be maintained on the soil surface in a uniform distribution over the entire field and not burned or removed. Crop residues provide soil surface cover throughout the year. Runoff and erosion are reduced and no rills are visible on the soil surface. Wind erosion is reduced by standing residues and surface cover. Over time, soil health is improved due to the additional crop residues, ground cover, and soil infiltration. This practice will require reducing soil erosion to T and maintain a positive SCI.

**Scenario Feature Measure:** Area planted

**Scenario Unit:** Acre

**Scenario Typical Size:** 160

**Scenario Cost:** \$5,198.40

**Scenario Cost/Unit:** \$32.49

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Seeding Operation, Ridge Till Planter	1232	Mechanical seeding using ridge-till equipment. Includes equipment, power unit and labor costs.	Acre	\$18.85	160	\$3,016.00
Ridge Till Row Cultivator	1231	Includes equipment, power unit and labor costs.	Acre	\$13.64	160	\$2,182.40

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**Scenario: #2 - Ridge Till - Sugarcane No Burn**

**Scenario Description:**

In this scenario, sugarcane producers will be migrating from a system of burning residue immediately after harvest in the fall and winter to a system that allows residue to remain on the soil surface until early spring. Residue must be left in the field, and on the tops of ridges, throughout the winter. Keeping the rows covered during the winter months will significantly improve soil quality and reduce erosion. Some loss of yield is expected, however, due to the cooling effects of the residue cover in the spring.

**Before Situation:**

Sugarcane residue is typically burned immediately after harvest in the fall and early winter. Residue amounts after burning operations average less than 30%, resulting in bare soil being exposed to intense rainfall during the fall, winter, and early spring. Any crop residue that is present degrades and sediment/nutrient runoff from fields increases during rainfall events. Sheet and rill erosion occurs with visible signs of soil erosion by spring. Soil health (soil organic matter) declines over time as a result of burning. This system will typically have a negative or low Soil Conditioning Index (SCI).

**After Situation:**

All residues are to be maintained on the soil surface in a uniform distribution over the entire field and not burned or removed until after February 15 of each spring. Crop residues provide soil surface cover throughout the winter. Runoff and erosion are reduced and no rills are visible on the soil surface. Over time, soil health is improved due to the additional crop residues, ground cover, and soil infiltration. This practice will require reducing soil erosion below T and maintain a positive SCI for the entire rotation.

**Scenario Feature Measure:**

**Scenario Unit:** Acre

**Scenario Typical Size:** 60

**Scenario Cost:** \$2,986.62

**Scenario Cost/Unit:** \$49.78

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Foregone Income</i>						
FI, Sugarcane 5 year rotation	2078	Sugarcane is Primary Crop	Acre	\$497.77	6	\$2,986.62

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**Scenario: #3 - Ridge Till - Sugarcane Sweep or Disk Beds**

**Scenario Description:**

In this scenario, sugarcane producers will be migrating from a system of burning residue immediately after harvest in the fall and winter to a system that allows residue to remain on the soil surface until early spring. Residue must be left in the field, and on the tops of ridges, throughout the winter. In the spring, usually sometime in March, residue from the ridge tops will be swept into the furrows. No burning will take place. Keeping the rows covered during the winter months will significantly improve soil quality and reduce erosion. Some loss of yield is expected, however, due to the cooling effects of the residue cover in the spring.

**Before Situation:**

Sugarcane residue is typically burned immediately after harvest in the fall and early winter. Residue amounts after burning operations average less than 30%, resulting in bare soil being exposed to intense rainfall during the fall, winter, and early spring. Any crop residue that is present degrades and sediment/nutrient runoff from fields increases during rainfall events. Sheet and rill erosion occurs with visible signs of soil erosion by spring. Soil health (soil organic matter) declines over time as a result of burning. This system will typically have a negative or low Soil Conditioning Index (SCI).

**After Situation:**

All residues are to be maintained on the soil surface in a uniform distribution over the entire field and not burned or removed until after February 15 of each spring. Sometime in March, after off-bar disking, ridge tops will be swept, placing residue in the row furrows. Crop residues provide soil surface cover throughout the winter. Runoff and erosion are reduced and no rills are visible on the soil surface. Over time, soil health is improved due to the additional crop residues, ground cover, and soil infiltration. This practice will require reducing soil erosion below T and maintain a positive SCI for the entire rotation.

**Scenario Feature Measure:**

**Scenario Unit:** Acre

**Scenario Typical Size:** 60

**Scenario Cost:** \$2,311.71

**Scenario Cost/Unit:** \$38.53

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Ridge Till Row Cultivator	1231	Includes equipment, power unit and labor costs.	Acre	\$13.64	60	\$818.40
<i>Foregone Income</i>						
FI, Sugarcane 5 year rotation	2078	Sugarcane is Primary Crop	Acre	\$497.77	3	\$1,493.31