

**Practice: 324 - Deep Tillage**

**Scenario: #1 - Deep Tillage < 36 inches**

**Scenario Description:**

Deep tillage of <36 inches in depth is required to correct adverse conditions from soil compaction which results in slow water infiltration rates, limited root growth, and reduced crop production. Compaction is typically caused by tillage or harvest operations, or by heavy equipment traffic. This practice does not apply to normal tillage practices to prepare a seedbed, but is meant to fracture compacted soil zones.

Resource Concern: Soil Condition - Compaction

**Before Situation:**

Soil structure has been damaged through compaction caused by tillage equipment, harvest traffic, or construction equipment. Hardpan layers in the soil are restricting water infiltration, plant root growth, proper soil biological function, and overall crop production. Soil structure has been reduced, aggregate strength is weak and soil biological activity is low. Soil organic matter is not adequate and the water holding capacity of the soil is limited for the desired root zone.

**After Situation:**

Deep tillage operations such as subsoiling, paratilling or ripping are performed not as a part of the normal tillage operation for seedbed preparation, but used to relieve compaction at depths less than 36 inches. Soil compaction is measured with a penetrometer and/or visual observations. Soil moisture is less than 30 percent when deep tillage is used. Deep tillage is generally performed in the fall after crop harvest when soil conditions are dry, or soon after construction of conservation practices such as terraces, diversions, etc. Reduce tillage operations, avoid tillage or harvest operations when soil moisture levels are high, and limit harvest traffic to end rows or haul roads when possible

**Scenario Feature Measure:**

**Scenario Unit:** Acre

**Scenario Typical Size:** 80

**Scenario Cost:** \$1,660.71

**Scenario Cost/Unit:** \$20.76

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$39.91	1	\$39.91
Ripper or subsoiler, 16 to 36 inch depth	1235	Deep ripper or subsoiler, (16-36 inches depth) includes tillage implement, power unit and labor.	Acre	\$20.26	80	\$1,620.80

**Practice: 324 - Deep Tillage**

**Scenario: #2 - Deep Tillage >= 36 inches**

**Scenario Description:**

Deep tillage of >=36 inches in depth is required to correct adverse conditions from soil compaction which results in slow water infiltration rates, limited root growth, and reduced crop production. Compaction is typically caused by tillage or harvest operations, or by heavy equipment traffic. This practice does not apply to normal tillage practices to prepare a seedbed, but is meant to fracture compacted soil zones.

Resource Concern: Soil Condition - Compaction

**Before Situation:**

Soil structure has been damaged through compaction caused by tillage equipment, harvest traffic, or construction equipment. Hardpan layers in the soil are restricting water infiltration, plant root growth, proper soil biological function, and overall crop production. Soil structure has been reduced, aggregate strength is weak and soil biological activity is low. Soil organic matter is not adequate and the water holding capacity of the soil is limited for the desired root zone.

**After Situation:**

Deep tillage operations such as subsoiling, paratilling or ripping are performed not as a part of the normal tillage operation for seedbed preparation, but used to relieve compaction at depths of >=36 inches. Soil compaction is measured with a penetrometer and/or visual observations. Soil moisture is less than 30 percent when deep tillage is used. Deep tillage is generally performed in the fall after crop harvest when soil conditions are dry, or soon after construction of conservation practices such as terraces, diversions, etc. When possible, reduce tillage operations, and avoid tillage or harvest operations when soil moisture levels are high. Limit harvest traffic to end rows or haul roads when possible

**Scenario Feature Measure:**

**Scenario Unit:** Acre

**Scenario Typical Size:** 40

**Scenario Cost:** \$2,481.91

**Scenario Cost/Unit:** \$62.05

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$39.91	1	\$39.91
Ripper or subsoiler, > 36 inch depth	1236	Deep ripper or subsoiler, (>36 inches depth) includes tillage implement, power unit and labor.	Acre	\$61.05	40	\$2,442.00