

**Soil Quality Enhancement Activity – SQL05 – Use of deep rooted crops to break up soil compaction**



**Enhancement Description**

This enhancement is for the use of deep rooted crops to break up compacted soils and improve soil quality. Deep rooted crops can be perennial plants like alfalfa or annual plants like forage radish.

**Land Use Applicability**

Cropland

**Benefits**

Soils can have naturally occurring compacted layers (hard pans) or those that have been created through tillage or other farming activities. Deep rooted crops with large taproots can alleviate the effects of soil compaction by penetrating the compacted layer, creating pore space that allows air, water and crop roots to penetrate deeper in the soil profile. Eliminating soil compaction through the use of deep rooted crops increases infiltration, reduces surface runoff, improves soil tilth and overall soil quality. It also eliminates the need for sub-soiling with a plow, thus saving fuel, reducing erosion and enhancing water quality.

**Criteria**

1. The selected crop must be one that has been identified as having the capability of alleviating soil compaction (state specific lists are available in NRCS Field Office Technical Guide).
2. If perennial plants are used, once established, they must be maintained annually by proper fertilization and mowing/harvesting.
3. Annual crops should be seeded early enough in the fall to allow for adequate growth to occur prior to winter (Follow NRCS 340 standard).
4. No deep tillage is allowed to remove compacted layer.

**Documentation Requirements**

1. Written documentation for each year of this enhancement describing the following items:
  - a. Deep rooted crops used and dated planted.
  - b. Cash crop planted and method used.
1. A map showing fields where the enhancement is applied.
2. Photographs of a representative number of fields showing deep rooted crops.

## Michigan Supplement

### Soil Quality Enhancement Activity – SQL05 – Use of Deep Rooted Crops to Break Up Soil Compaction

#### **Deep Rooted Grasses**

Big bluestem  
Indian grass  
Switch grass  
Smooth Bromegrass

#### **Deep Rooted Legumes**

Alfalfa  
Birdsfoot Trefoil  
Sweet Clover

#### **Deep Rooted Forbs**

Canola  
Chickory  
Kale  
Oil Seed Radish

Use the Natural Resources Conservation Service (NRCS) Michigan (MI) conservation practice standard Cover Crop (340) job sheet to document the following:

1. Deep rooted crops used and the date planted;
2. Cash crops planted and methods used;
3. Map showing where enhancement was applied;
4. Photographs of a representative number of fields showing one of the above deep rooted grasses, legumes, or forbs, and soil compaction symptoms.

#### **REFERENCE**

See the NRCS MI Conservation Sheet 324.1 Soil Compaction Symptoms, Causes, Correction, and Prevention.