

Soil Quality Enhancement Activity – SQL03 – Drainage water management for nutrient, pathogen, or pesticide reduction



Enhancement Description

This enhancement consists of managing soil and/or surface water levels during the non-cropping season in order to reduce the loss of nutrients, pathogens, or/and pesticides from a crop field through drainage systems and into downstream receiving waters. This enhancement may also be utilized to reduce the oxidation of organic matter in the soil and/or reduce wind erosion or particulate matter (dust) emissions.

Land Use Applicability

Cropland

Benefits

This enhancement holds nutrients in the soil, reduces pathogens leaving the field, and/or reduces pesticides leaving the field when crops are not actively growing. Additional benefits may include reduction of the oxidation of organic matter and/or reduced wind erosion or particulate matter (dust) emissions.

Conditions Where Enhancement Applies

This enhancement applies to cropland that has been artificially drained (surface or subsurface) and which is flat enough that significant portions can be flooded or saturated by controlling outflow from the drainage system.

Criteria

1. Implementation of this enhancement requires compliance with the requirements of the Conservation Practice Standard, Drainage Water Management (554) and the associated plan;
2. Operate water control structures/devices to hold water surface elevations no more than 6 inches **below** the ground surface on the affected area for a minimum of 90 days per year;
3. This enhancement only applies to the areas of cropland where water levels can be effectively maintained at the desired elevations.

Adoption Requirements

This enhancement is considered adopted when a drainage water management plan that meets NRCS practice standard 554 has been implemented and fields are flooded such that ponding or saturated conditions meet the target hydrologic conditions in the above criteria.



United States Department of Agriculture
Natural Resources Conservation Service

2012 Ranking Period 1

Documentation Requirements

1. List of fields where this enhancement was utilized, the field size, and the equipment installed/used,
2. Dates when fields were flooded and water removed from fields, and
3. Photo documentation of saturated soil areas. Photos must be dated and labeled with field number.

Michigan Supplement

SQL03

Cropland where Practice Applies

1. There is an existing patterned/systematic (not random) drainage system with laterals (< 60-foot spacing) placed along the natural contours of the land and connected to submains or mains
2. There is a drainage system map that includes the materials, diameters or dimensions, and locations of the laterals and mains
3. Existing drainage system provides drainage for at least 75 percent of the cropped area of the field
4. Existing mains or outlets to be controlled are at least 6-inch diameter and not shared by other landowners
5. Average field slope is 0.5 percent or less
6. A water table may be maintained without having an adverse impact on adjoining properties

Michigan Criteria

1. NRCS eFOTG Drainage Water Management (554) standard will be followed.
2. Drainage water will be controlled by the use of water control structures or pumps.
3. Water velocity in the soil near the drain shall be kept slow enough to prevent soil particles from entering the drainage system.
4. Drainage water will be managed annually for a minimum of 90 days between September 1 and April 1.
5. Operate water control structures/devices to hold water surface elevations no more than 6 inches below the ground surface.

Additional Criteria to Improve Water Quality

1. The system will prevent automatic discharge of storm water during minor rainfall events.
2. The controlled discharge of excess water shall account for water not otherwise removed by evapotranspiration and seepage.
3. The uniformity of storm water draw down shall be improved throughout the areas influenced by the designed system.
4. The distance the water must travel in surface ditches before it reaches the main discharge point shall be maximized when practical.

Additional Criteria to Reduce the Rate of Oxidation of Organic Soils

1. Drainage beyond that necessary to provide an adequate root zone for a crop shall be kept to a minimum.
2. When practical, the water table shall be raised to the surface, or to a designated maximum elevation, for a sufficient time to return the saturated zone to anaerobic conditions.

Additional Criteria to Reduce Wind Erosion

1. The system shall provide sufficient moisture to the soil surface, either by ponding or capillary action, to reduce and/or prevent wind erosion when there is insufficient organic residue or plant material on the surface.