United States Department of Agriculture
Natural Resources Conservation Service 2012 Ranking Period 1

Water Quality Enhancement Activity – WQL09 – Apply phosphorus fertilizer below the soil surface

Enhancement Description
This enhancement is for the application of all phosphorus fertilizer at least 3 inches deep, including manure, or as a 2X2 row starter. Note: the use of this enhancement may require a revised Highly Erodible Land Conservation (HELC) plan.

Land Use Applicability
Cropland

Benefits
Nutrient management encompasses managing the amount, source, placement, form, and timing of the application of plant nutrients and soil amendments. Nutrient management effectively utilizes available nutrient resources to supply crops with nutrients required to efficiently produce food, forage, fiber, and cover while minimizing environmental degradation. Nutrient management enhancement activities help agricultural production and the environment.

Increased management activities will protect and enhance water quality and the biotic community that depends upon clean lakes and rivers. Nutrient application placement is critical in order for nutrients to be available during critical crop growth stages and to meet crop yield goals. By applying phosphorus either 3 inches deep or as a 2x2 row starter, it is less vulnerable to loss in surface runoff, both in solution and attached to soil particles, therefore reducing the potential loss of nutrients to the environment.

Conditions Where Enhancement Applies
This enhancement applies to all annually planted crop land use acres.

Criteria
Implementation of this enhancement requires:

1. All phosphorus fertilizer, regardless of form, will be injected at least 3 inches deep below the soil surface, and/or phosphorus applied as a starter fertilizer during the planting operation will be placed in a band 2 inches to the side and 2 inches below the crop seed (commonly referred to as"2x2" placement).
2. Producer must have a current soil test (no more than 3 years old)
3. The amount of phosphorus fertilizer applied as a starter in the 2x2 placement shall not exceed the rate recommended by the Land Grant University (LGU).
4. The total amount of phosphorus applied shall not exceed the rate recommended by the "Land Grant University" (LGU) based on soil testing and established yield goals.
5. Soil surface disturbance must be minimized during phosphorus injection.

Adoption Requirements
This enhancement is considered adopted when all phosphorus is subsurface applied as either a 2X2 starter application or ≥ 3 inches below the soil surface.

Documentation Requirements

1. Documentation for each treatment area (field) and year of this enhancement describing the following:
   a. Treatment acres,
   b. Target (planned) crop,
   c. Soil test results,
   d. Crop yields (both yield goals and measured yield),
   e. Phosphorus application rates/amounts and application dates for each treatment area, and
   f. Method used to inject or incorporate phosphorus.
2. A map showing where the activities are applied.

Note: In lieu of documenting each individual item listed in the Documentation Requirements, a Certified Crop Advisor plan that contains each of the items may be substituted.

References
Sims, J.T. (ed.) 2005. Phosphorus: Agriculture and the Environment. Agronomy Monograph 46. ASA, CSSA, and SSSA, Madison, WI.

Michigan Supplement

WQL09

For phosphorus rate recommendations, follow Michigan State University (MSU) Extension publication E2904, Nutrient Recommendations for Field Crops in Michigan, and MSU Extension Publication E2934, Nutrient Recommendations for Vegetable Crops in Michigan.

Follow Michigan conservation practice standard, Nutrient Management (590).

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