NUTRIENT MANAGEMENT
(Acre)
Code 590

Natural Resources Conservation Service
Conservation Practice Standard

Definition

Managing the amount, form, placement, and timing of applications of plant nutrients.

Scope

This standard establishes the minimum acceptable requirements for ***a plan that addresses*** the application of plant nutrients associated with organic wastes (manure and organic byproducts), commercial fertilizer, legume crops, and crop residues.

Purposes

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Supply plant nutrients for crop production.
- Minimize entry of nutrients to surface water.
- Minimize entry of nutrients to groundwater.

Conditions Where Practice Applies

On lands where plant nutrients are applied.

Criteria

Because this is the first conservation practice standard designed to use the new NRCS planning procedure, a short explanation of the application of criteria based on identified purpose is provided.

In order to address the purpose of supplying nutrients for crop production, Criteria I must be applied.

It would be extremely rare in Wisconsin to find a field with an identified concern of nutrients applied for production where there would not also be a concern for the entry of nutrients to either surface or groundwater. Criteria I would only be used alone where Total Resource Planning did not identify a surface or groundwater concern. Food Security Act and Farmland Preservation Plans are not Total Resource Plans.

In order to address the purpose of minimizing the entry of nutrients to surface water, Criteria I and III must be applied.

The criteria for minimizing the entry of nutrients to surface water will be applied to the majority of the fields in Wisconsin.

In order to address the purpose of minimizing entry of nutrients into groundwater, Criteria I and II must be applied.

The criteria for minimizing the entry of nutrients to groundwater will be applied in areas with groundwater concerns, ie, Lower Wisconsin River Valley, Central Sands, Atrazine Prohibition Areas, etc.

This practice would be used to treat these identified resource concerns:

Soil Resource

Soil Contaminants:

Excess Animal Wastes and Other Organics

Excess Fertilizer

Water Resource

Quality:

Nutrients and Organics in Groundwater

Nutrients and Organics in Surface Water

Plant Resource

Management:

Nutrient Management

I. Minimum Criteria to Provide Nutrients for Crop Production and to Minimize Entry of Nutrients to Surface Water and Groundwater

A. General Cases:

1. Soils shall be tested a minimum of once every four years.

2. Develop field by field nutrient budget for all major nutrients consistent with UWEX Publication "A-2809". Conservation Planning Tech Note WI-1 spells out the minimum requirements for a Nutrient Management Plan.

3. Available nitrogen, including nitrogen from legumes, manure, sludge, organic byproducts, and commercial sources, shall not exceed nonlegume crop needs, except that, available nitrogen may exceed crop needs by up to 20% if legumes, manures and organic byproducts are the only sources of nitrogen.

4. Commercial fertilizer shall not be applied to frozen or snow covered ground except for grass pastures on slopes of six percent or less north of Wisconsin Highway 29 and on winter grains throughout the state.

B. Manure and organic byproducts applied to crops for harvest.

1. Organic byproducts other than manure or septage shall be analyzed for nutrients. Other analyses may be required as prescribed by state, federal, or local regulations. These materials shall be spread as prescribed by federal, state, or local regulations (see Wis. Department of Natural Resources Code, NR214 (industrial wastes), NR204 (municipal sludges), NR113 (septage)). Required documentation shall be maintained by the applicator. These materials may require injection or incorporation within specified time periods.

2. Surface spread liquid manures and organic byproducts shall not run off the intended site during application. Application must be stopped if ponding or runoff begins.

C. Manure and organic byproducts applied on land where vegetation is not harvested. This does not include non-farmed wetlands.

1. Liquid materials shall be injected across slopes that are 3% or greater or be surface spread.

2. Application rates shall not exceed 75 lb available P2O5/acre (32.8 lb P/acre) total for a 5-year period unless incorporated.

3. Application of manure shall occur between July 15 and freeze-up to minimize damage to wildlife habitat.

II. Additional Criteria to Minimize Entry of Nutrients to Groundwater

A. Manure shall contain a nitrification inhibitor if it is injected in the fall on sands, and loamy sands when the soil temperature is above 50 degrees F.

B. Commercial nitrogen fertilizer for spring seeded crops shall not be fall applied on sands and loamy sands.

C. Manure and organic byproducts shall not be applied to the following areas unless injected or incorporated within 72 hours:

1. within 200 feet upgradient of sinkholes, creviced bedrock at the surface, or other direct conduits to the groundwater, such as gravel pits and wells.

2. In other locally identified areas documented as having a high potential to pollute groundwater resources.

D. Commercial Nitrogen application rates shall not exceed recommendations based on crop need.

III. Additional Criteria to Minimize Entry of Nutrients to Surface Water

A. Manure shall not be applied at rates exceeding 75 lb available P2O5/acre/ year (32 lb P/acre) unless these materials are incorporated within 72 hours after application, in which case, the nitrogen content of the manure becomes the restricting nutrient. Applications of manure cannot be at a level which delivers more nitrogen than the crop needs. The nutrient content of manure shall be determined through a laboratory analysis or from SCS Conservation Planning Technical Note 1.

B. The soil loss tolerance will not be exceeded on soils receiving manure and organic byproducts.

C. Manure and organic byproducts shall not be spread in established waterways, non-farmed wetlands, terrace channels or other areas where runoff concentration occurs.

D. Manure and organic byproducts shall not be applied to the following areas unless injected or incorporated within 72 hours:

   1. within the 10-year floodplain or within 200 feet of streams, rivers, or lakes, whichever is greater,

   2. within 200 feet upgradient of sinkholes, creviced bedrock at the surface, or other direct conduits to the groundwater, such as gravel pits and wells.

E. Manure and organic byproducts shall not be applied on frozen or snow covered ground in the following areas:

   1. areas identified in III(D) (above),

   2. slopes of greater than 9%, except for manure on slopes up to 12% with well grassed waterways, that are either contour stripcropped with alternate strips in sod, or contour farmed with all the residue from a corn crop taken for grain remaining on the surface.

   3. other locally identified areas documented as having a high potential to pollute surface water resources.

F. Manure and organic byproducts may be applied on frozen or snow covered ground on locally identified areas documented as having a low potential to pollute surface water.

G. Commercial phosphorus application rates shall not exceed recommendations based on crop need.

H. Additional guidance for reducing entry of nutrients into surface water may be found in Conservation Planning Technical Note 1.

PLANNING CONSIDERATIONS

1. Manure should not be winter spread on sites that are likely to deliver nutrient runoff to surface waters and/or groundwater. See Conservation Planning Technical Note 1 for guidelines concerning areas with high pollution hazard for surface runoff.

2. Manure should be stored in properly located and constructed facilities during periods when land application is not suitable. (See UWEX Publication A-3466 for more information.)

3. Manure applications to no-till cropping systems should be injected to avoid nutrient runoff and maximize nutrient availability. Surface applications should be avoided.

4. Vegetative filter strips, along with other erosion control practices, should be maintained adjacent to surface water, wetlands, sinkholes, and rock outcrops in order to reduce the amount of sediment and nutrients which actually reach surface water and/or groundwater.

5. Evaluate federal, state, and local water quality standards and designated use limitations, such as city, county, and township zoning ordinances.

PLANS AND SPECIFICATIONS

Plans and specifications will be prepared for a specific site based on this standard, and planning instructions provided in Conservation Planning Technical Note 1.

1. Nutrients shall be applied consistent with federal, state, and local regulations.

2. Industrial wastes and byproducts are regulated under NR214, Wisconsin Administrative Code. They must be spread in accordance with a Wisconsin Pollution Discharge Elimination System (WPDES) Permit as obtained from the Wisconsin Department of Natural Resources (WDNR).

OPERATION, SAFETY AND MAINTENANCE

1. Minimize operator exposure to potentially toxic gases associated with manure, organic wastes and chemical fertilizers, particularly in enclosed areas. Wear protective clothing appropriate to the material being handled.

2. Protect commercial fertilizer from the weather, and agricultural waste storage facilities from accidental leakage or spillage. See Chapter Ag 162 of Wisconsin Administrative rules and County Waste Storage Facilities Ordinances concerning regulations on siting, design, operation and maintenance of these facilities.

3. When cleaning equipment after nutrient application, remove and save fertilizers or wastes in an appropriate manner. If system is flushed, use rinse water in the following batch of nutrient mixture, where possible, or dispose of according to state and local regulations. Always avoid cleaning equipment near high runoff areas, ponds, lakes, streams, and other water bodies. Extreme care must be exercised to avoid contaminating wells.

4. Application equipment must be calibrated to achieve the desired application rate.

Working Tools -

1. SCS Conservation Planning Technical Note 1

2. University of Wisconsin-Extension (UWEX) Publication "A-2809, Soil Test Recommendations for Field, Vegetable, and Fruit Crops", Rev. 1991.

3. University of Wisconsin-Extension (UWEX) Publication "A-3512, Wisconsin's Preplant Soil Profile Nitrate Test".

4. University of Wisconsin-Extension (UWEX) - Wisconsin Department of Agriculture, Trade, and Consumer Protection (UWEX-DATCP) Publication "A-3466, Nutrient and Pesticide Best Management Practices for Wisconsin Farms", June 1989.

5. University of Wisconsin-Extension (UWEX) Publication "A-2100, Sampling Soils for Testing".

6. University of Wisconsin-Extension (UWEX) Publication "A-3517, Using Legumes as a Nitrogen Source", May 1991, with revised 1992 Forage Legume Nitrogen Credit Table.

7. University of Wisconsin-Extension (UWEX) Publication "A-3537, Nitrogen Credits for Manure Applications", May 1991.

8. University of Wisconsin-Extension (UWEX) Publication "A-3557, Nutrient Management: Practices for Wisconsin Corn Production", May 1992.

9. University of Wisconsin-Extension (UWEX) Publication "A-3568, A Step-by-Step Guide to Nutrient Management", May 1992.

10. University of Wisconsin-Extension (UWEX) Publication "Wisconsin Irrigation Scheduling Program".

11. University of Wisconsin-Extension (UWEX) Publication "WISP: Managing Irrigation for Corn Production", March 1991.

12. Wisconsin Department of Natural Resources Codes NR214, (Land Treatment of Industrial Liquid Wastes, By-product Solids and Sludges); NR204 (Municipal Sludge Management) and NR113 (Septage).

13. WISPer Model, The Wisconsin Integrative Soil Program Ver. 2.0 for Economic Recommendations, University of Wisconsin-Extension.