

Environmental Quality Incentives Program

2013 EQIP Signup

Minnesota Supplement for:
Practice Standard 590 – Nutrient Management

Supplemental Criteria

1. **Consult General Provision 15 for Ag Waste System payment cap information.**
2. **Eligibility for the 590 incentive practice is contingent upon completion of a CAP 102 Comprehensive Nutrient Management Plan, CAP 104 Nutrient Management Plan, or an equivalent plan meeting CAP 104 criteria.**
3. A payment for Nutrient Management is authorized on **CROPLAND** acres not to exceed 3 payments. Producers can choose either one Basic option or one Enhanced option but cannot choose both a Basic and an Enhanced option. Producers are also eligible for the Adaptive Nutrient Management options and either a basic or enhanced option provided that each option is implemented on different acreage.
4. Use of an advisor certified by NRCS as a nutrient specialist is required (private sector or SWCD/TSA individual). NRCS will act as an advisor only as a last resort. TechReg lists Technical Service Providers (TSP) that are certified in Nutrient Management—Organic and Inorganic.
5. The following core practices are required where Basic or Enhanced 590 is applied:
 - Irrigation Water Management (449) on irrigated land.
 - Drainage Water Management (554) on drained land where feasible. Field slope must be \leq 0.5% and existing subsurface tile lines must be on the approximate contour.
 - If core practices have already been applied, they will be documented in the plan and required to be continued.
6. Sheet, rill, and wind erosion must be controlled always to below 6 tons per acre per year and below T where possible.
7. Erosion due to concentrated flow must be controlled/stabilized.
8. Consult “**Nutrient Management Requirements for EQIP Contracts**” (Attachments A, B and C) for details on Basic, Enhanced, and Adaptive nutrient management requirements. **Review these requirements with participants interested in Nutrient Management (590).**
9. Nutrient Management with Manure (Basic or Enhanced) payments apply to acres that had manure applied to them in the crop year immediately prior to the 1st contract year or which will receive manure at least once during the payment cycle.
 - Payments may be made during the EQIP contract period on acres not receiving manure provided those acres normally receive manure applications but have been scheduled in a long range strategic plan for no manure applications due to environmental concern.
10. Consult General Provision **13** for requirements related to ensuring that adequate acres are available for manure application and/or manure application requirements on land not owned or controlled by the EQIP contract holder.

Scenarios

Basic Nutrient Management (NM) System

This scenario describes the implementation of a **basic** nutrient management system of organic or non-organic cropland or hayland where there is no manure application. The planned NM system will meet the current 590 standard. Implementation will result in the proper rate, source, method of placement, and timing of nutrients. Payment for implementation is to defray the costs of soil testing, analysis, consultant services that provide nutrient recommendations based on LGU recommendations or crop removal rates and an associated nutrient budget, and recordkeeping. Records demonstrating implementation of the 4 R's of the NM criteria will be required.

Basic Nutrient Management (NM) system with manure

This scenario is the same as the preceding Basic Nutrient Management system where there is manure or compost application in addition to commercial fertilizer applications. Risk assessments including phosphorus and nitrogen will be completed with applications of manure. Manure application will be based on risk results.

Small Farm/Diversified

This scenario is the same as the Basic Nutrient Management System but is for smaller production areas. This scenario attempts to capture the higher cost/acre of nutrient management planning and implementation with small farms that have a large number of crops, often times with multiple harvests per year that require intense and diversified nutrient management plans. This includes CSA's (community supported agriculture), truck farms, market gardens, etc...

Enhanced Nutrient Management with manure

An enhanced nutrient management system goes beyond the basic NM system by including split applications and/or multiple nutrient monitoring techniques (examples include pre-season soil nitrate test, nitrogen tissue tests, chlorophyll readers, corn basal stalk analyses) and methods that more concisely enable scheduling of appropriate fertilizer applications.

Enhanced Nutrient Management (NM) Precision (without manure)

This scenario goes beyond the basic NM system by using technologies that improve efficiency and effectiveness of nutrient management by utilizing precision techniques and tools. See Attachment B for precision tools and techniques. Precision nutrient management techniques ensure that the right rate, proper timing, and proper placement of nutrients minimize non-point source pollution and provide proper amounts of nutrients to the crop where it is needed and not applying where it is not needed.

Advanced Nutrient Management (NM) Precision System

This scenario describes the implementation of an advanced precision nutrient management system on cropland. This scenario goes beyond the basic precision system by using technologies that improve efficiency and effectiveness of nutrient management by utilizing specialized precision techniques and tools (variable rate applicators, NDVI, aerial photography, yield monitoring). Payment for implementation is to defray the costs of soil testing, analysis, consultant services, skilled labor and specialized nutrient application that provide nutrient proper recommendations based on LGU recommendations or crop removal rates and an associated nutrient budget, recordkeeping, and monitoring on a precision level that includes split applications, NDVI sensing, and aerial imaging. See Attachment B for precision tools and techniques.

Adaptive NM GLRI

The practice scenario is for the implementation of nutrient management on a small plot. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement various nutrient use efficiency improvement methods for timing, rate, method of application, or source of nutrients. This scenario was developed to work with the Great Lakes Restoration Initiative (GLRI).

Adaptive NM MRBI and other state research projects or initiatives

The practice scenario is for the implementation of nutrient management on a small plot. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement various nutrient use efficiency improvement methods for timing, rate, method of application, or source of nutrients. This scenario was developed to work with the Mississippi River Basin Initiative (MRBI) and other state research projects or initiatives. It has more intensive soil testing than the Adaptive scenario and includes 8 acres of the site that will have addition implementation of nitrogen urease inhibitor, chlorophyll sensors, and precision application in addition to the other adaptive nutrient management activities.

**ATTACHMENT A – Requirements for Basic Nutrient Management (590) and
Small Farm/Diversified Payment Scenarios for FY 2013 EQIP Contracts**

- 1) **Control sheet, rill, ephemeral gully, and wind soil losses** to 6 tons per acre per year or less.
- 2) **Develop annual nutrient management plan prior to implementation for years 1, 2, and 3:**
 - a) **By October 1** if fall or winter applications are planned
 - b) **By April 1** if only spring or summer applications are planned.
- 3) **Determine crop N, P₂O₅, and K₂O nutrient needs. Consult NRCS Conservation Practice Standard Nutrient Management (Code 590) for detail.**
 - a) Collect updated **soil samples** when existing samples become older than 3 to 4 years old. The samples must be analyzed at a [soil testing lab](#) certified by the Minnesota Department of Agriculture (MDA). Samples will be collected and analyzed according to NRCS guidelines (1 composite sample per 5-20 acres in complex terrain and 1 composite sample per 20-40 acres in uniform terrain).
 - b) Collect **manure samples** each time a storage structure is emptied for application. Have analyzed by a [manure testing laboratory](#) certified by the MDA.
 - c) Annually update **realistic yield goals** using the last five years' yields. Drop the lowest yield, and average the four remaining yields.
 - d) Determine **planned fertilizer or manure application rates** after accounting for all nutrients available to crops from soil, previous legumes, and prior manure applications.
 - e) Use **University of Minnesota (UMN) fertilizer recommendations** as found in the most recent version of [Fertilizer Recommendations for Agronomic Crops in Minnesota \(BU-6240-S-1\)](#) (or analogous crop specific bulletins).
 - f) Base manure application rates on:
 - Crop P₂O₅ removal on fields within 300 feet of lakes, streams, protected wetlands and field edge drainage ditches if those fields have soil test phosphorus values greater than 21 ppm BrayP1 (16 ppm Olsen) and lack acceptable width filter strips (NOTE: A single-year manure application rate can be based on crop nitrogen needs provided that subsequent manure applications do not occur until excess P has been removed by succeeding crops).
 - Crop nitrogen nutrient budgeting on most other fields
- 4) **Commercial Fertilizer (non-organic or approved organic) Timing and Form**
 - a) **Fall Nitrogen (N) Applications for Spring Seeded Crops**
 - i) **No fall Nitrogen (N) fertilizer including MAP or DAP in the following areas:**
 - (1) Southeastern Minnesota
 - (2) Coarse Textured Soils**
 - (3) Fields with less than 36 inches of soil over fractured bedrock.
 - ii) **South Central Minnesota—Acceptable forms are:**
 - (1) Anhydrous ammonia (AA) with a nitrification inhibitor recognized by the University of Minnesota
 - (2) Incorporated polymer coated urea recognized by the University of Minnesota.*
 - iii) **Southwestern, West Central, and Northwestern Minnesota: Acceptable Forms are:**
 - (1) Anhydrous ammonia (AA) placed at a depth of at least 4 inches. A nitrification inhibitor is encouraged but not required
 - (2) Incorporated polymer coated urea recognized by the University of Minnesota*
 - (3) Urea incorporated to a depth of at least 3 inches or urea coupled with a urease inhibitor recognized by the University of Minnesota (follow label instructions) if incorporation will not occur within 72 hours. *

- iv) Apply acceptable fall N applications noted above after soil temperatures at a 6 inch depth stabilize below 50°F.
<http://gis.mda.state.mn.us/maps/cssoil.htm>
 - b) **Fall N Applications for Winter Wheat on Coarse textured soils****
 - i) Do not exceed 20 lbs. of Nitrogen
 - c) **Winter and early Spring Applications:** No applications on frozen ground and/or actively thawing ground.
 - d) **Spring Pre-Plant N or Sidedress N Applications**
 - i) **On Coarse-textured soils**
 - (1) Use a nitrogen stabilizer according to label instructions for N applied up to the 4 leaf corn stage when greater than 40 pounds of Nitrogen is applied (excludes polymer coated urea)
 - (2) Organic operations are exempt unless the inhibitor is approved for organic use.
 - ii) **On Irrigated crops**
 - (1) Limit pre-plant applications to 40 pounds of Nitrogen or less.
 - (2) Use sidedress or split applications of commercial N fertilizer (non-organic or approved organic) for the remaining N requirement.
 - (3) Incorporate spring broadcast applications of Urea and UAN solutions. Use a urease inhibitor with the product according to label requirements if incorporation after 3 days is anticipated.*
 - e) **Frequently Flooded Fields**
 - i) During peak flooding periods—do not apply commercial fertilizer
- 5) **Manure application**
- a) Apply manure uniformly and **calibrate manure application equipment** at time of application.
 - b) Fields with soil **sheet, rill, and wind erosion losses greater than 6 tons/acre/year**, do not apply manure.
 - c) Fields with **uncontrolled ephemeral erosion**—do not apply manure.
 - d) Fields in close proximity to surface waters (lakes, perennial and intermittent streams, public water wetlands, and drainage ditches without berms)
 - **Within 25 feet** do not apply manure
 - **Within 300 feet**
 - i. No manure applications when:
 - A. ground is frozen, snow-covered, or actively thawing
 - B. applying with a traveling gun or center pivot
 - ii. Inject or incorporate manure within 24 hours **OR install a grass filter strip**
 - A. 100-foot wide grass filter strip along surface waters
 - B. 50 foot grass filter strip along intermittent streams and drainage ditches.
 - e) Fields in close proximity to water supply wells, mines, quarries, sinkholes receiving surface runoff or other direct conduits to groundwater
 - **Within 50 feet**—do not apply manure
 - **Within 300 feet**
 - i. Inject or incorporate manure within 24 hours on upslope land
 - ii. When ground is frozen, snow covered, or actively thawing—do not apply manure
 - f) Fields within **300 feet of surface tile intakes**
 - Inject or incorporate manure within 24 hours
 - When ground is frozen, snow covered, or actively thawing—do not apply manure
 - g) On soils classified by NRCS as **“frequently” flooded** (floods 50-100 times in 100 years)
 - During usual peak flooding periods—do not apply manure
 - Inject or incorporate manure within 2 days
 - When ground is frozen, snow covered, or actively thawing—do not apply
 - h) On in-field grassed waterways (unless a variance is granted) or in **road ditches**, do not apply manure.

- i) Fields with **shallow bedrock** or **high water tables**, maintain a minimum separation of 15 inches from the bottom of incorporated or injected manure and these features
 - j) On **coarse textured soils****
 - Delay fall manure applications until soil temperatures at a 6- inch depth stabilize below 50°F.
 - Avoid liquid manure applications when possible
 - k) **Spring Applications**
 - Delay until active thawing and runoff events have passed.
 - l) **Winter Applications (Frozen or Snow-Covered Ground)**
 - Check with County Feedlot Officers for wintertime restrictions on CAFOs requiring NPDES permits. It is possible that **no applications may be permitted**.
 - If sheet and rill soil losses are greater than 4 tons/acre/year, **do not apply solid manure**
 - If sheet and rill soil losses are greater than 2 tons/acre/year, **do not apply liquid manure**
 - m) **Summer Applications** (June, July, August) to early harvested crops that would not have active growing crops for the remainder of season
 - Manure applications are permitted when cover crops are seeded and established for erosion control and nitrogen sequestration.
- 7) **Keep annual field specific records** of crops, yields, commercial fertilizer, and manure applications (including application rates, timing, nutrient content, method of application, and incorporation). Include application, incorporation dates, weather, and field conditions at time of application. All records will demonstrate the implementation of the [4 R's of the Nutrient Management criteria](#) (right place, right time, right rate, and right source).
- 8) **Certify completion and submit required documentation by August 31**
- a) **Nutrient management required documentation (minimum):**
 - Signed form MN-CPA-046 containing all required information or signed MN-CPA-046 form attached to other documents that contain the required information.
 - Manure Analyses
 - Updated soil test results if necessary.
 - Manure applicator calibration worksheets if applicable.

***Does not apply to organic operations. Approved Organic N fertilizer sources must not contain N in the nitrate form if fall applied. All approved organic fertilizer N sources must be incorporated within 5 days of application.**

****Coarse Textured Soils. Assessment of this sensitive feature requires a review of soil texture and modifiers not only in the surface horizon but also in surface soil or subsoil anywhere within 36 inches of the surface. Soil texture classification of sand, loamy sand, loamy coarse sand, fine sand, loamy fine sand, loamy very fine sand, coarse sand, very fine sand, and any of the above listed textures with a modifier of “gravelly” or “very gravelly” are coarse textured by definition, for the purposes of EQIP Nutrient or Pest Management requirements.**

For purposes of this fact sheet a crop year begins immediately after harvest of the preceding crop or forage and extends through harvest of the planned crop.

ATTACHMENT B – Requirements for Enhanced and Advanced Nutrient Management (590) Payment Scenarios for FY 2013 EQIP Contracts

1) **Enhanced Nutrient Management with Manure Option**

- Meet ALL “Basic with Manure Requirements”
- Use one or more applicable monitoring techniques to help evaluate results of the nutrient management strategy:
 - [Pre-season soil nitrate test](#) (Follow U of M protocols/decision tree when selecting and using this option.)
 - Nitrogen tissue tests
 - Chlorophyll readers
 - Corn basal stalk analyses
- All manure (including composted and digested manure) and commercial nitrogen and phosphorus fertilizer (inorganic or organic) applications are incorporated within 24 hours or sub-surface applied.
- Do not apply manure (including composted and digested manure) on **fields with STP levels exceeding 50 ppm Bray P1 or 35 ppm Olsen** (used when pH >7.3 or for calcareous soils with > 2% calcium carbonate),
- In the fall do not apply manure (including composted and digested manure) until soil temperatures at a 6-inch depth stabilize under 50°F.

2) **Enhanced Nutrient Management (NM) Precision (without manure)**

- Meet ALL “Basic without Manure Requirements”
- Collect geo-referenced grid soil samples for phosphorus and potassium at a minimum. Each sample should represent no more than 5 acres
- Create management zones using soil sample analyses, geo-referenced digitized yield maps, and digital soil survey information. Zones should be 10 acres or smaller. Larger zones will be considered on a case by case basis.
- Produce geo-referenced yield maps corresponding at a minimum to the management zone sizes
- Variable rate apply all commercial phosphorus and potassium fertilizer (except for starter) using GPS guided application equipment
- Limit total commercial phosphorus (non-organic or approved organic) applications to maximum single year application of 23 lbs. **when Soil Test Phosphorus Levels (STP) exceed 30 ppm Bray P1 or 20 ppm Olsen** (used when pH >7.3 or for calcareous soils with > 2% calcium carbonate).

3) **Advanced Nutrient Management Precision**

- Meet all Basic and Enhanced Nutrient Management Precision requirements
- Use technologies that improve efficiency and effectiveness of nutrient management by utilizing specialized precision techniques and tools.
- Use one or more applicable monitoring techniques to help evaluate results of the nutrient management strategy:
 - [Pre-season soil nitrate test](#) (Follow U of M protocols/decision tree when selecting and using this option.)
 - Nitrogen tissue tests
 - Chlorophyll readers
 - Corn basal stalk analyses
 - Electrical conductivity (EC)
 - Variable Rate Technology (VRT) for all nutrients
 - NDVI (Normalized Difference Vegetation Index)
 - Land-based, aerial or satellite sensing of relative plant health/vigor

4) **Documentation Required**

- **Meet all Basic nutrient management documentation requirements.**
- **Submittal of signed and completed Form MN-CPA-046 Practices Certification/Recordkeeping form Revised 11/10 or submittal of other recordkeeping forms along with signed MN-CPA-046 (complete sections of the 046 not addressed by the alternative recordkeeping form).**
- **Soil test results with map showing location of soil samples for individual fields.**
- **Monitoring results including as applicable data from nitrogen rate test strips, pre-season soil nitrate test, nitrogen tissue tests, chlorophyll readers, corn basal stalk analyses, land-based, aerial or satellite sensing of relative plant health/vigor, and yield monitors.**
- **Management zone and fertilizer application maps**

Attachment C—Requirements for Adaptive Nutrient Management for GLRI, MRBI and other state research projects or initiatives Payment Scenarios for FY 2013 EQIP Contracts

Follow all protocol listed in National Tech Note #6

<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=30618.wba>