Best Management Practices for Grove Township in Stearns County, Minnesota

DEPARTMENT OF AGRICULTURE

Township

September 2026

This document is a list of the University of Minnesota nitrogen (N) fertilizer best management practices (BMPs), alternative management tools (AMTs) and additional practices for the Grove Township. The BMPs are from the following University of Minnesota resources:

- Best Management Practices for Nitrogen on Coarse Textured Soils,
- Best Management Practices for Nitrogen use in South-Central Minnesota,
- Fertilizing Corn in Minnesota, and
- University of Minnesota Extension webpage **Crop-Specific Nutrient Needs** (extension.umn.edu/nutrient-management/crop-specific-needs)

Considerations when reading the BMP tables

- The BMPs listed below are applicable to all soils or specific to coarse or fine textured soils found within Grove Township. **An interactive map** showing where the soils are classified as coarse is available online (mda.state.mn.us/grove-twp-soil) and on page 4.
- In situations where a field is operated with the same crop management and has areas with both coarse- and fine-textured soils, the operator can manage these areas of the field separately or follow the BMPs for the majority soil texture within the field.
- Some BMPs may not apply to all cropping systems, such as incorporation of urea with tillage in no-till systems. If a BMP is agronomically or technically unsuitable for a specific field based on soil type, topography, crop or management system, a suitable BMP or AMT may be used instead.
- See the document "Definition of Terms in the University of Minnesota Nitrogen Fertilizer BMPs" for definitions of terms related to the BMPs. This document is available on the **Grove Township** web page (mda.state.mn.us/grove-twp).

A strategy for protecting groundwater within townships

- The local advisory team will meet as needed to review practice adoption, related monitoring data, and to consider establishment of additional or innovative practices as these opportunities become available.
- The primary goal of the Nitrogen Fertilizer Management Plan is to involve the agricultural community in problem solving at the local level to address concerns about elevated levels of nitrate in groundwater. Active participation and demonstrated outcomes are critical to supporting this voluntary approach. At a township scale, an increase in the adoption of the listed BMPs and AMTs will protect groundwater. Even small improvements in nitrogen management across a large area can reduce nitrogen loss below cropland and over time reduce nitrate levels in groundwater.
- The nitrogen fertilizer BMPs and AMTs listed below are appropriate for cropland with the township. In areas with vulnerable groundwater, AMTs tend to provide the highest level of protection. The MDA is publishing this list of practices after gathering input from local agriculture stakeholders who make fertilizer-use decisions within the area. The MDA will seek opportunities to expand outreach and increase adoption of agricultural practices that protect groundwater in the area.

Questions or Comments?

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Best Management Practices (BMPs)

The BMPs numbered 1 – 3 apply to all soil types and are the most important BMPs to reduce nitrate losses.

BMP	Nitrogen Rate BMPs for All Agronomic Crops (all soil types)
1	**Dryland corn: at or below the 0.125 Maximum Return to Nitrogen (MRTN)** Currently up to 175 lb N/ac for corn following corn Currently up to 140 lb N/ac for corn following soybeans **Irrigated corn: at or below the 0.10 Maximum Return to Nitrogen (MRTN)** Currently up to 210 lb N/ac for corn following corn Currently up to 180 lb N/ac for corn following soybeans References: • Corn nitrogen rates are based on the current **nitrogen fertilizer application guidelines for corn from the University of Minnesota** (extension.umn.edu/crop-specific-needs/fertilizing-corn-minnesota) or its successor. • For other crops grown in the area, follow the current **University of Minnesota nitrogen rate guidance applicable to that crop** (extension.umn.edu/nutrient-management/crop-specific-needs). Note: The implementation of approved alternative management tools may allow a higher nitrogen rate provided that the field specific data indicates this is appropriate.
2	Include N supplied in a starter, weed and feed program, and contributions from phosphorus fertilizers such as MAP and DAP when calculating total N rate. Note: The total N rate should also include any AMS or other inorganic fertilizers containing nitrogen.
3	Take appropriate N credit for previous legume crops and manure used in the crop rotation. Note: In addition to legumes and manure total N rate should also include nitrogen from organic sources with a known nitrogen availability factor (i.e. research-based nitrogen availability tables, laboratory analysis, including first and second year credits) such as biosolids and industrial by-products.

BMP	Nitrogen Placement, Timing and Source BMPs for Corn and Edible Beans (coarse textured soil)
4A	**Use split applications of N fertilizer.** Notes: This split application BMP only applies to corn and edible bean acres that receive commercial nitrogen fertilizer. If manure is the only source of nitrogen, this BMP does not apply. Refer to the definition of split application in the "Definition of Terms in the University of Minnesota Nitrogen Fertilizer BMPs". Practices that meet this definition will be considered meeting this BMP. Nitrogen loss modeling indicates that the application timing practices listed in BMP 4A or 4B for coarse textured soils provide a similar groundwater protection benefit. The adoption of at least one of the practices listed in 4A or 4B is needed to count as having adopted BMP 4.
4B	**Spring preplant application of ESN (polymer coated urea)** Notes: The MDA will refer to definition of ESN in the companion document "Definition of Terms in the University of Minnesota Nitrogen Fertilizer BMPs". This definition includes the allowable urea/ESN ratio. Nitrogen loss modeling indicates that the application timing practices listed in BMP 4A or 4B for coarse textured soils provide a similar groundwater protection benefit. The adoption of at least one of the practices listed in 4A or 4B is needed to count as having adopted BMP 4.
5	**Use N stabilizer (N-Serve) on labeled crops when early sidedress is used.** Note: For corn, this BMP applies to situations when a portion of the total nitrogen fertilizer is applied preplant and the remainder is applied as a single sidedress application early in the growing season. Early in the growing season is defined as the period from the crop emergence through V4 growth state. This BMP does not apply to situations when there is more than one sidedress application within the growing season. For edible beans, early sidedress is defined as within 17 days after planting.

BMP	Nitrogen Placement, Timing and Source BMPs for Corn (fine textured soil)
6	Spring preplant applications of ammonia and urea or split applications of ammonia, urea, and UAN.

Maintaining records of nitrogen fertilizer use is especially important and enables the MDA to review the BMP adoption rate during its evaluation. An example record keeping form is available on the **Grove Township** webpage (mda.state.mn.us/grove-twp).

Record Keeping for All Agronomic Crops (all soil types)
Keep records of nitrogen use, including rates, crediting of nitrogen sources, timing, placement and source. The MDA will provide guidance on record keeping requirements.

Alternative Management Tools (AMTs) and Additional Practices

In areas where groundwater is vulnerable to nitrate contamination, following BMPs alone may not be enough to reduce the amount of nitrate leaching into the groundwater to meet water-quality goals. The MDA encourages farmers to adopt AMTs that go beyond traditional nitrogen fertilizer BMPs by providing additional protection from the loss of nitrogen below cropland.

The following is a list of AMTs currently approved by the MDA and reviewed with the LAT, which acknowledged the protective potential of these practices. While BMPs are widely applicable, AMTs can be appropriate when it is practicable for an individual producer or specific field.

- Minnesota Ag Water Quality Certification Program
- Cover Crops
- Perennial Vegetation
- Land Conservation Programs
- Intermediate Wheatgrass (Kernza)
- On Farm Nitrogen Rate Trials (this AMT can provide in-field data to optimize nitrogen rate)
- Precision Nitrogen Management (this AMT can provide in-field data to optimize nitrogen rate)

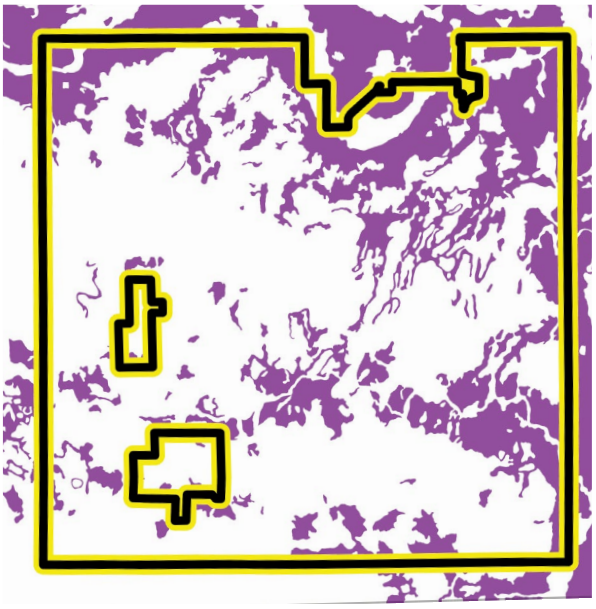
Below is a list of additional practices that could be protective of groundwater or provide information to guide nitrogen fertilizer use. Some may not be appropriate or applicable to every farm.

- Attend University of Minnesota manure management educational events offered online or within the county.
- Calibrate manure spreading equipment to verify application rate.
- Test manure using a lab certified or approved by the MDA.

On irrigated acres within the township, promoting and supporting tools and information to make irrigation water scheduling and system upgrades to improve water use efficiency could further reduce the risk of saturated soil conditions that can lead to leaching. The irrigation technology Regional Conservations Partnership Program (RCPP) grant sponsored by the MDA is an example of the type of promotion and support to expand adoption of these tools. More information is available at the **Precision Irrigation Cost-Share** website (mda.state.mn.us/precision-irrigation-cost-share).

Additional opportunities to partner with the ag industry, University of Minnesota, Forever Green Initiative, Minnesota Department of Health, the Board of Soil and Water Resources, and local resource conservation professionals should be explored to promote and expand the support for adopting BMPs and AMTs in this area to further protect groundwater.

Grove Township in Stearns County



Grove Township is outlined in yellow and black. Coarse-textured soils are shaded in purple.

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.