

Best Management Practices for Wing River Township in Wadena County, Minnesota



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 Wing River 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 Northwestern Minnesota
- Best Management Practices for Nitrogen Use in Southwestern and West-Central Minnesota
- Best Management Practices for Nitrogen Use: Irrigated Potatoes
- Fertilizing Corn in Minnesota
- University of Minnesota Extension webpage [Crop-Specific Nutrient Needs](https://extension.umn.edu/nutrient-management/crop-specific-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 Wing River Township. [An interactive map](#) showing where the soils are classified as coarse is available online (mda.state.mn.us/wingriver-twp-soil) and on the last page of this document.
- In situations where a field is operated with the same crop management and has areas of 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 the 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 Wing River Township webpage (mda.state.mn.us/wingriver-twp-soil).

A strategy for protecting groundwater within townships

- The local advisory team (LAT) will meet as needed to review practice adoption, 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 within 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?

Ryan Perish | MDA Local Project Lead | Ryan.Perish@state.mn.us | 218-898-0002

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 0.15 Maximum Return to Nitrogen (MRTN) Currently up to 165 lb N/ac for corn following corn Currently up to 135 lb N/ac for corn following soybeans Irrigated corn: at or below the high end of the 0.10 nitrogen rate range Currently up to 225 lb N/ac for corn following corn Currently up to 205 lb N/ac for corn following edible beans Currently up to 195 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: Implementation of on-farm nitrogen rate trial or precision agriculture AMTs may allow a higher nitrogen rate provided that the field specific data indicates this is appropriate. Edible Beans: follow the University of Minnesota guidance based on yield goal, previous crop, and soil organic matter (currently up to 120 lbs. N/ac)
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 also should include 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 also should 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)
4	Use split applications of N fertilizer. Notes: This split application BMP applies only 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.

The BMPs for **Irrigated Potatoes** are listed in the tables below.

BMP	Nitrogen Rate BMPs for Irrigated Potatoes
5	Base N rate on variety, harvest date, and realistic yield goals Note: Yield refers to total yield, not harvestable yield.
6	Account for nitrogen from previous crop (take N credits from legumes)
7	Test irrigation water for N content and adjust fertilizer accordingly

BMP	Nitrogen Timing BMPs for Irrigated Potatoes
8	Do not use more than 40 lbs. N/ac in the starter for mid/late season varieties Note: Mid = vines killed or green dug Aug. 1-Aug. 31; Late = vines killed or green dug after Sept. 1.
9	Do not use more than 60 lbs. N/ac in the starter for early harvested varieties Note: Early = vines killed or green dug before Aug. 1
10	Nitrogen applied through the hilling stage should be cultivated/incorporated into the hill
11	Plan the majority of soluble N inputs from 10 to 50 days after emergence
12	Use a petiole analysis to aid in making post-hilling nitrogen applications

BMP	Nitrogen Source BMPs for Irrigated Potatoes
13	Do not use fertilizers containing nitrate (e.g., UAN) in the starter
14	For mid- to late-season varieties, apply ESN no later than emergence Note: Mid = vines killed or green dug Aug. 1-Aug. 31; Late = vines killed or green dug after Sept. 1.
15	ESN for early harvested potatoes is not recommended due to slow release of N Note: Early = vines killed or green dug before Aug. 1

BMP	Other BMPs for Irrigated Potatoes
16	Follow proven water-management strategies (irrigation scheduling) to provide effective irrigation and minimize leaching
17	Establish a cover crop following potatoes whenever possible Note: Establish a cover crop following potatoes harvested before Sept. 1. Potatoes harvested on or after this date need a cover crop established unless the soil is too wet for seeding, weather is too cold, or it is too late in the growing season for cover crop growth. These and other reasons for not planting cover crops will be considered on a case-by-case basis.

Maintaining records of nitrogen fertilizer use is especially important and enables the MDA to review the BMP adoption rate during its evaluation. An example recordkeeping form is available on the [Wing River Township](http://mda.state.mn.us/wingriver-twp) webpage (mda.state.mn.us/wingriver-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 recordkeeping 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 educational activities that highlight products or practices intended to reduce nitrogen loss.
- Conduct field testing to determine nitrogen requirements for specific crops.
- Test manure using a lab certified or approved by the MDA.
- Use products delaying nitrification approved by the MDA.
- Establish demonstration sites for nitrogen use practices.
- Schedule irrigation according to crop need and soil water-holding capacity in the root zone to avoid leaching.
- Manage irrigation water to leave space in the root zone for possible precipitation.

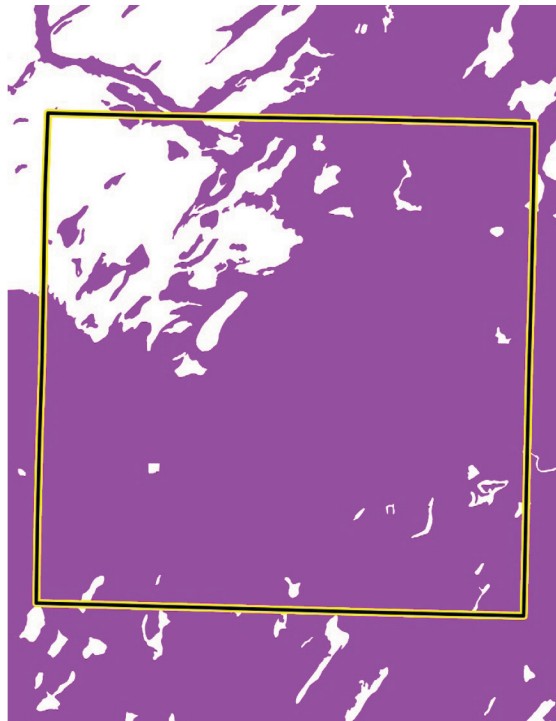
In addition to the items listed above, LAT members emphasized the importance of education, encouraging farmers and

ag professionals to learn from field days, university outreach, industry events, research studies, field trials, online workshops and training, and other resources. The team also highlighted the value of precision agricultural practices and acknowledged that without a well-calibrated yield monitor, it is difficult to truly know the effectiveness of management practices being used.

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 Conservation 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](https://mda.state.mn.us/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.

Wing River Township in Wadena County



Wing River 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.