

Best Management Practices for the Hastings Drinking Water Supply Management Area (DWSMA)

July 2023



This document is a list of the University of Minnesota nitrogen (N) fertilizer best management practices (BMPs) that apply within the Hastings Drinking Water Supply Management Area (DWSMA). The BMPs are from the following University of Minnesota resources:

- Best Management Practices for Nitrogen Use in Southeastern Minnesota,
- Best Management Practices for Nitrogen on Coarse Textured Soils,
- Best Management Practices for Nitrogen Use: Irrigated Potatoes,
- Fertilizing Corn in Minnesota, and
- University of Minnesota Extension webpage Crop-Specific Nutrient Needs at <https://extension.umn.edu/nutrient-management/crop-specific-needs>.

Considerations when reading the tables

- The BMPs are broken out by soil type, with coarse textured (sandy) soils in some cases having different BMPs than finer textured soils. A Hastings DWSMA Interactive Map at www.mda.state.mn.us/hastings-dwsma shows where the soils are classified as coarse textured. The map is also shown on page 5. In situations where a field is operated with the same crop and management and has areas with both coarse and fine textured soils, the operator can either manage these areas of the field separately or follow the BMPs for the majority soil texture within the field.
- The BMPs on the final list must be followed on 80% of the cropland (excluding soybean acres) in the DWSMA.
- Information (records/documentation) needs to be provided to show that a BMP was followed. If a responsible party does not provide information or provides insufficient information showing a practice has been followed, it counts as non-implemented during MDA's evaluation/survey of nitrogen fertilizer BMP implementation.
- 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 Alternative Management Tool (AMT) can be selected in its place.
- See the companion document "Definition of Terms in the University of Minnesota Nitrogen Fertilizer BMPs" for definitions of terms related to the BMPs. This document is available at www.mda.state.mn.us/hastings-dwsma.
- Nitrogen rate BMPs may change when University of Minnesota guidelines are updated.

Questions or Comments?

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1. Best Management Practices (BMPs)

BMP Number	Rate BMPs (All Soil Types)	Applies to
1	<p>Nitrogen rates are based on nitrogen fertilizer application guidelines from the University of Minnesota. Rates were last updated July 2022.</p> <p>Irrigated corn following corn: up to the 0.1 MRTN (currently at 210 lbs N/ac)¹</p> <p>Irrigated corn following soybean: up to the 0.1 MRTN (currently at 180 lbs N/ac, which includes a 30 lb N/ac credit for soybean)¹</p> <p>Dryland corn following corn: up to the 0.1 MRTN (currently at 175 lbs N/ac)¹</p> <p>Dryland corn following soybean: up to the 0.1 MRTN (currently at 140 lbs N/ac)¹</p> <p>Other crops: Crop-Specific Nutrient Needs²</p>	All agronomic crops ² on all soils
2	Include N supplied in a starter, weed and feed program, and contributions from phosphorus fertilizers such as MAP and DAP, or other commercial fertilizers which contain N when calculating total N rate	All agronomic crops ² on all soils
3	Take appropriate N credit for all sources, including legumes, N in irrigation water, green and livestock manure, compost, biosolids, food waste, or other organic materials used in the crop rotation	All agronomic crops ² on all soils
4	Keep records of nitrogen use, including rates, crediting of nitrogen sources, timing, placement and source. MDA will provide guidance on record keeping requirements.	All agronomic crops ² on all soils

¹ Higher nitrogen rates may be allowed if using Alternative Management Tools that allows for higher nitrogen rates

² All crops listed at the University of Minnesota Extension webpage Crop-Specific Nutrient Needs at <https://extension.umn.edu/nutrient-management/crop-specific-needs> or its successor

BMP Number	Placement, Timing and Source BMPs (Coarse Textured Soils)	Applies to
5A	Use split applications of N fertilizer	Corn and edible beans on coarse textured soils
5B	Acceptable, but less effective: Spring preplant application of ESN (polymer coated urea) ³	Corn and edible beans on coarse textured soils
6	Use an N stabilizer (N-Serve) on labeled crops when early sidedress is used ⁴	Corn and edible beans on coarse textured soils

BMP Number	Placement, Timing and Source BMPs (Fine Textured Soils)	Applies to
7	Apply ammonia or urea as spring preplant applications, or split-apply ammonia, urea or UAN	Corn on fine textured soils
8	Minimize direct movement of surface water to sinkholes	Corn on fine textured soils

³ This BMP applies in situations where all N fertilizer is applied pre-plant, in which case ESN should be used to keep nitrogen in the root zone longer. If BMP 5B is used, BMP 5A is not required. If BMP 5A is used, BMP 5B is not required.

⁴ 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 growing season is defined as the period from crop emergence through the V4 growth stage. This BMP does not apply to situations when there is more than one sidedress application within the growing season.

2. BMPs for Irrigated Potatoes only

BMP Number	Rate BMPs for irrigated potatoes only ²	Applies to
9	Base N rate on variety, harvest date, and realistic yield goals ^{5, 6}	Irrigated Potatoes
10	Account for nitrogen from previous crop (take N credits from legumes)	Irrigated Potatoes
11	Test irrigation water for N content and adjust N fertilizer accordingly	Irrigated Potatoes

BMP Number	Timing BMPs for irrigated potatoes only	Applies to
12	Do not use more than 40 lbs N/A in the starter for mid/late season varieties ⁷	Irrigated Potatoes
13	Do not use more than 60 lbs N/A in the starter for early harvested varieties ⁷	Irrigated Potatoes
14	Nitrogen applied through the hilling stage should be cultivated/incorporated into the hill	Irrigated Potatoes
15	Plan the majority of soluble N inputs from 10 to 50 days after emergence	Irrigated Potatoes
16	Use a petiole analysis to aid in making post-hilling nitrogen applications	Irrigated Potatoes

BMP Number	Source BMPs for irrigated potatoes only	Applies to
17	Do not use fertilizers containing nitrate (e.g., UAN) in the starter	Irrigated Potatoes
18	For mid to late season varieties ¹⁰ , apply ESN no later than emergence	Irrigated Potatoes
19	ESN for early harvested potatoes is not recommended due to slow release of N	Irrigated Potatoes

BMP Number	Other BMPs for irrigated potatoes only	Applies to
20	Follow proven water management strategies (irrigation scheduling) to provide effective irrigation and minimize leaching	Irrigated Potatoes
21	Establish a cover crop following potatoes whenever possible	Irrigated Potatoes

⁵ At the time this list was published, the highest University of Minnesota nitrogen rate guidelines were 250 lbs. N/acre. Higher nitrogen rates may be used if using a petiole test or Alternative Management Tool that allows for higher N rates.

⁶ Yield refers to total yield, not harvestable yield.

⁷ Early = vines killed or green dug before August 1; Mid = vines killed or green dug August 1 – August 31; late = vines killed or green dug after September 1.

Hastings Drinking Water Supply Management Area (DWSMA) (green outline). Areas with coarse-textured soils are indicated with purple shading. The map is also available at <https://tinyurl.com/DWSMAHastings>

