



Minnesota
Pollution
Control
Agency

Evaluation of Maximum Nitrogen Rates for Manure

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Minn. R. ch. 7020.2225 limits rates of manure application to crop nitrogen needs as recommended in the most recent University of Minnesota Extension Service publication (with some exceptions). Extension Service recommendations on nitrogen (N) rates were recently revised. Recommended N rates when manure is the nutrient source are found in the 2007 publication, “Manure Management in Minnesota” found at www.extension.umn.edu/distribution/cropsystems/DC3553.html.

Because this publication provides a range of recommended N rates rather than specific numbers, a commonly asked question is, “What are the maximum rates that the Minnesota Pollution Control Agency (MPCA) allows when reviewing manure management plans and records?” The following guidelines clarify the MPCA’s position on maximum allowable N rates, as based on Minn. R. ch. 7020.2225 and University of Minnesota Extension Service guidelines, when manure is all or part of the crop’s nitrogen source.

MPCA Offices:

Rochester:

507/285-7343

Mankato:

507/389-5977

Marshall:

507/537-7146

Willmar:

320/214-3786

Detroit Lakes:

218/847-1519

Brainerd:

218/828-2492

Duluth:

218/723-4660

Metro:

651/296-6300

Toll-Free:

800/657-3864

Corn: maximum crop- available N rates

Maximum available N rate for corn lbs/acre	Previous crop
180 <u>Subtractions</u> 180-75=105 180-50=130 180-35=145	corn, barley, buckwheat, canola, grass hay, grass pasture, oats, potatoes, rye, sugarbeets, sunflowers, sweet corn, vegetables, wheat above crops grown previous year; two years ago alfalfa 4 or more plants/ft.² above crops grown previous year; two years ago alfalfa 2-3 plants/ft.² above crops grown previous year; two years ago red clover
160	edible beans, field peas
140	soybeans, small grains with stubble tilled after harvest in Southeast Minnesota, alfalfa with 1 or less plants/ft. ²
105	alsike clover, birdsfoot trefoil, grass/legume hay, grass/legume pasture, fallow, red clover
80	alfalfa 2-3 plants/ft. ²
30	alfalfa 4 or more plants/ft. ²

Exceptions to the above maximum rates

1. University recommendations from a land grant college in a contiguous state can be used, where the neighboring state has similar soils and climatic conditions (see major land resource areas) map to see which neighboring states have similar conditions as found in your county at www.mo10.nrcs.usda.gov/mlras/.
2. Rates up to 20 percent higher are allowed where such rates can be justified by the producer based on site nutrient management history, soil conditions, or cool weather.

3. Rates exceeding those in the table on first page are approved where measurements and/or observations show nitrogen deficiencies during the growing season and sidedress nitrogen can still be added. Guidelines for when to apply supplemental N are found at www.joe.org/joe/2005june/tt4.html.

Note: If N deficiencies seem to occur repeatedly, or when producers are concerned about ongoing yield losses as a result of applying N at University recommended rates, producers are encouraged to take the Best Management Practices (BMP) challenge, which guarantees the same net profit when following the required/recommended practices. For more information on the BMP challenge, go to www.bmpchallenge.org/.

4. Other exceptions are allowed if in accordance Extension Service's publication, "Fertilizing Corn in Minnesota". For example, sometimes the use of a soil nitrate test will suggest a slightly higher N need than otherwise recommended.

Non-legumes other than corn: maximum available N rates

Follow recommendations in "Fertilizer Recommendation for Agronomic Crops in Minnesota" by the University of Minnesota Extension Service, 2001, BU-06240.

Legumes: maximum available N rate

The maximum rate can not exceed the nitrogen removed in the harvested vegetation in accordance with the table below. Note that nitrogen applications are generally not required for these crops, and in some cases can be harmful to the crop.

Crop	Yield units	Typical lbs. N removed per unit of yield
alfalfa	tons (air dry)	50.4
alsike clover	tons (air dry)	40.8
grass/legume	tons (air dry)	43.5
red clover	tons (air dry)	45.1
soybeans	bushels	3.5

For more information, please contact the MPCA at 800-657-3864 or 651-296-6300 and request to speak to feedlot program staff.