

Water Quality Enhancement Activity – WQL07 – Split Nitrogen Applications, 50% After Crop Emergence



Split Nitrogen Applications

Apply no more than 50% of total crop nitrogen needs within 30 days prior to planting and apply the remaining 50% or more of the total nitrogen needs after crop emergence.

Land Use Applicability

This enhancement is applicable on cropland.

Benefits

Timing of nitrogen application can be used to ensure adequate amounts of N are available during critical crop growth stages. Application rates can also be adjusted based on crop conditions to refine yield goals. Split application of 50% or more of the total N needs allows for more efficient plant uptake and increases nutrient utilization, resulting in a reduction in the potential loss of N through leaching and other nitrogen-based compounds like the greenhouse gas nitrous oxide to the environment.

Criteria for Split Nitrogen Applications

Implementation of this enhancement requires:

- 1) Regardless of form or application method (fertilizer, manure or any other organic by-products), apply no more than 50% of crop N needs within 30 days prior to planting and 50% or more of the N needs after crop emergence.
- 2) Post emergence N application rates can be reduced based on crop scouting reports that would suggest lower yield potential. Scouting reports need to be provided.
- 3) Producer must have annual manure analysis (if organic nutrient sources are used)
- 4) Nutrient application rates must be within the “Land Grant University (LGU) recommendations based on soil testing and established yield goals and considering all nutrient sources.
- 5) Soil surface disturbance must be minimized.

Documentation Requirements for Split Nitrogen Applications

- 1) Written documentation for each treatment area (field) and year of this enhancement describing these items:
 - a. Acres
 - b. Planned crop



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- c. Planting date and crop planted
 - d. Dates of crop emergence
 - e. Annual manure analysis results (if organic nutrient sources are used)
 - f. Crop yields (both yield goals and measured yield)
 - g. Nutrient application rates/amounts and application dates for each treatment area
- 2) A map showing where the activities are applied.



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Additional guidance for split applications:

Splitting nitrogen applications and applying more of the nitrogen after crop emergence assures that adequate amounts of nitrogen are available during the critical growth stages, and can reduce loss of nitrogen through leaching or volatilization.

Crop scouting should be used to assess the need for additional nitrogen. Scouting reports should identify crop, yield goals, visual symptoms of nitrogen deficiency/sufficiency, and other factors limiting potential yield (e.g., limitations on irrigation water supply, poor stand development, weed competition, etc.) that can be used to help make the decision to apply, or not to apply, additional nitrogen. Producers are encouraged to use plant tissue testing to help determine the need for additional fertilizer to optimize plant growth.

For additional information on plant tissue testing and nutrient deficiencies, refer to:

Idaho NRCS Agronomy Technical Note 54, *Plant Nutrient Deficiency for Idaho Crops*.
http://efotg.nrcs.usda.gov/references/public/ID/Agronomy_TN54.doc

Montana State University Cooperative Extension, *Nutrient Management Module 9 – Plant Nutrient Functions and Deficiency and Toxicity Symptoms*.
http://msuextension.org/publications/AgandNaturalResources/4449/4449_9.pdf

Montana State University Cooperative Extension, *Photos of Nitrogen Deficiency in Crops*. <http://landresources.montana.edu/soilfertility/ndeficiency.html>