



Northwestern Minnesota Management Practice Considerations for Nitrogen and Phosphorus

Nitrogen Management Practices

- Adjust nitrogen rate according to University of Minnesota guidelines and nitrogen supplied by previous crops and manure applications. Total nitrogen rate should include any nitrogen applied in a starter, weed and feed program and contributions from phosphorus fertilizers such as MAP and DAP.
- Use a soil nitrate test when appropriate to adjust nitrogen rates. Soil samples should be taken in early spring or in the fall after the soil temperature has stabilized below 50° F at the 6-inch depth.
- Plan nitrogen application timing to achieve high efficiency of nitrogen use.
 1. Do not fall apply liquid nitrogen (28-0-0) or any fertilizer containing nitrate nitrogen.
 2. Do not fall apply N to coarse textured soils. Use nitrification inhibitors on coarse-textured soils.
 3. Use anhydrous ammonia or urea nitrogen sources if fall applications are planned and delay application until the soil temperature stabilizes below 50° F at a 6-inch depth.
 4. Incorporate broadcast urea and UAN within three days to a minimum depth of three inches.
 5. Do not apply fertilizers containing nitrogen including MAP and DAP to frozen ground.

Phosphorus Management Practices

- On fields testing high in phosphorus, apply manure at rates which satisfy crop phosphorus needs (recommended University of Minnesota rates or crop phosphorus removal) instead of crop nitrogen needs when possible. This will prevent long-term buildup.
- Subsurface band or row apply commercial phosphorus fertilizer.
- Immediately incorporate broadcast applied commercial phosphorus fertilizer.
- Control soil losses and runoff to levels considered safe for the soil resource; control to lower levels when fields have very high to excessive soil test phosphorus levels.
 1. Control sheet and rill losses by installing conservation practices including conservation tillage, contour farming, strip cropping, terraces and cover crops.
 2. Control ephemeral erosion by installing water and sediment control basins, waterways and diversions.

Manure Application Considerations

- Use a cover crop for summer applied manure to fallow ground or early harvested crops.
- Apply manure to:
 1. All available acres
 2. Land that is the furthest from surface waters
 3. The flattest ground
 4. Fields with the least amount of runoff and erosion
 5. Fields testing lowest in phosphorus
- Avoid manure applications when precipitation causing runoff is likely within 24 hours.
- Inject or incorporate manure applications within 24 hours whenever possible.
- Avoid applications when ground is frozen, snow covered or actively thawing.
- Consider agronomic, nutritional and managerial practices which reduce the amount of nitrogen and phosphorus excreted by animals including:
 1. Using high quality protein sources
 2. Feeding low protein, amino acid supplemented diets
 3. Avoiding excessive overages of dietary phosphorus
 4. Balancing diets on an available phosphorus basis
 5. Using feed ingredients that possess highly available phosphorus
 6. Using enzyme additives such as phytase to improve ability to utilize phosphorus in rations