



South-Central Minnesota Management Practice Considerations for Nitrogen and Phosphorus

Nitrogen Management Practices

- Adjust nitrogen rate according to University of Minnesota Guidelines and nitrogen from 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 where appropriate.
- Plan nitrogen application timing to achieve high efficiency of nitrogen use.
 1. Spring pre-plant applications of anhydrous ammonia (AA) or urea or split applications of AA, urea, or UAN are recommended. Spring pre-plant applications of UAN are acceptable but more risky.
 2. Do not fall apply nitrogen fertilizer on coarse-textured soils. A split application or sidedress program is preferred. Use a nitrification inhibitor on labeled crops with early sidedressed nitrogen.
 3. If some nitrogen is to be fall-applied, delay application until the soil temperature is below 50° F at a 6-inch depth and use anhydrous ammonia (AA) with a nitrogen stabilizer.
 4. Incorporate broadcast urea or pre-plant UAN within three days of application to a minimum depth of 3 inches.
 5. Inject or incorporate sidedress applications of urea and UAN to a minimum depth of 3 inches.
 6. Under non-irrigated conditions apply sidedress applications before corn is 12 inches tall.
 7. 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