WHEAT NUTRIENT MANAGEMENT

Mark McFarland, Texas A&M AgriLife Extension Soil Fertility Specialist

Developing an efficient fertilization plan is fundamental when preparing for the growing season. Before producers determine type and rate for crop nutrients, they are encouraged to soil test. Strategic planning can effectively aid producers in maintaining inputs for optimal yields while potentially reducing fertilizer costs. Use these nutrient management guidelines to better manage nutrients in your wheat fields.

TEXAS A&M AGRILIFE EXTENSION

Texas Wheat

Texas Wheat Producers
5405 W. Interstate 40
Amarillo, TX 79106
806.352.2191
www.texaswheat.org

1. **Determine end use of each field**
   a. Will the field be used for grazing, grain or dual purpose?
2. **Consider field history**
   a. What was the previous crop?
      » Legumes fix nitrogen from the atmosphere
      » If hay or silage has been removed, nutrient levels will be lower
   b. Was nutrient uptake by the previous crop limited by weather, disease, insects, etc.
      » Residual fertilizer nutrients can reduce fertilizer application rates and save money
3. **Obtain a soil test**
   a. Take soil samples at a 6-inch depth for nutrient analysis.
      » Nitrogen (N), Phosphorus (P), Potassium (K), secondary nutrients and micro nutrients should be measured
   b. Take a second sample from 6-12, 6-18, or 6-24 inches (deeper is better) to test for plant available nitrogen
      » Nitrogen can move deeper than the typical 6-inch testing depth, but remain in the crop rooting zone
      » ests across Texas have shown available plant nitrogen from 20 pounds to 200 pounds per acre found at depths of 2 to 4 feet
4. **Decide application rate, timing and method of application**
   a. Yield potential of the field along with the soil test will dictate fertilizer rate
   b. A portion of the nitrogen and all of the other nutrients recommended by the soil test should be applied pre-plant or at planting.
   c. Incorporation or subsurface banding of nutrients is superior to broadcast applications because it places the nutrients into the root zone of the crop.
5. **Watch nitrogen (N)**
   a. N can leach out of the root zone of a crop, or can volatize into the atmosphere
   b. Split N applications are recommended
      » Apply only part of the necessary N pre-plant or at planting
      » Wait to apply remaining amount as rate will depend on crop conditions and yield potential during the season
6. **For grazing only:**
   a. Typically apply 20 to 60 pounds pre-plant or at planting depending planned grazing intensity.
   b. ncorporate N at least 2 inches deep; and preferably 5 to 6 inches to reduce potential for volatilization losses
   c. Add P, K and other nutrients if needed based on soil test
   d. Incorporate or subsurface band nutrients into the moisture zone – plants are able to secure nutrients for longer periods of time versus surface application
7. **For grain only:**
   a. Wheat requires 1.5 pounds of nitrogen per bushel of grain
      » For a 50-bushel wheat yield goal, figure 75 pounds of total N needed from residual amounts and/or applied N
8. **Application Rates**
   a. Split applications are recommended with one-third of N demand applied early and two-thirds applied prior to jointing
   b. Topdress timing reduces potential for freeze damage, disease pressure and potential for leaching and denitrification
      » Adjust topdress rates based on yield potential, but allow time for rain/snow to incorporate N into the soil prior to jointing
      » It is better to topdress N too early than too late since jointing is a critical time for N and determines yield potential
      » N applications after jointing will not affect yield but may improve grain protein
   c. Dual purpose wheat needs more fertilizer:
      » 2 pounds per bushel from a combination of residual fertilizer, irrigation water and applied fertilizer in needed
9. **Consider amounts of other nutrients**
   a. Phosphorus (P) is especially important for forage
      » Placement is critical: a band 5 to 6 inches deep is the most effective and most efficient application method
      » Substantial yield response has been seen when (P) is applied deep
      » Soil test recommendations can be reduced by 50% if P fertilizer is subsurface banded
10. **Be wary of "non-traditional" fertilizers**
    a. Products with no significant amount of research on when and how they work should be avoided