SOIL TEST INFORMATION SHEET NO. F-580

Prepared by Extension Fruit and Nut Specialist Dr. Michael Polozola

Pecans (Homeowners)

1. Pecan trees grow best in soils with a pH between 6.0 and 6.5.

2. For soil testing purposes, sample to a depth of 8 inches under the tree canopy.

3. Nitrogen (N) is the most important nutrient for pecan growth and nut production.
   - Apply nitrogen in late February or early March.
   - A general rate is 1 pound of actual nitrogen per inch of trunk diameter, measured 4–5 feet above the ground.
   - Use a fertilizer like calcium nitrate or urea, and spread it evenly under the canopy, avoiding the trunk. Avoid ammonium nitrate unless you are familiar with its handling and local regulations permit its use.

4. Apply Phosphorus (P) and Potassium (K) only if recommended by a soil test.
   - If needed, apply in January or February in South Louisiana and February or March in North Louisiana.
   - These nutrients are important for root development, nut fill, and winter hardiness.

5. Zinc (Zn) is essential for leaf development and nut production, especially on older or upland soils. If trees show signs of zinc deficiency (small, narrow leaves or rosetting), apply zinc sulfate:
   - 10–15 pounds per tree the first year.
   - 3–5 pounds per tree in following years
   - For young trees, apply ½ pound of zinc sulfate per inch of trunk diameter.

6. Additional Tips: Apply fertilizer when the soil is moist, and water trees after application if rainfall is not expected. Keep fertilizer at least 12 inches away from the trunk. In areas with poorly drained or waterlogged soils, consider delaying fertilization until conditions improve. If the soil remains saturated into spring, a later application may be more effective and reduce nutrient loss.

7. Blackened or shriveled kernels may indicate a boron deficiency. An economical option is to apply 20 Mule Team Borax at a rate of 1 tablespoon per tree per year, broadcast evenly under the canopy and watered in well.
   - Use caution—boron is needed in very small amounts, and overapplication can cause toxicity.

8. Contact your county agent for additional information and help in your fertilization program. The agent also receives a copy of this report for the parish office files.

Revised 7/2025

Pecans (Commercial Orchards)

1. Pecan trees grow best in soils with a pH between 6.0 and 6.5.

2. For soil testing purposes, sample to a depth of 8 inches especially in the root zone under the tree canopy. Avoid sampling near roads, fences, or abnormal areas. If your orchard includes areas with different soil types or management histories, submit separate soil samples for each distinct area.

3. Nitrogen (N) is the most important nutrient for pecan growth and nut production.
   - Apply N to maintain 8–12 inches of annual terminal shoot growth on at least 50% of trees. This level of growth supports consistent yields and healthy canopy development.
   - Typical rates range from 100 to 200 pounds of N per acre, depending on tree vigor, crop load, and irrigation.
     - In irrigated orchards with a known crop load, apply 10 pounds of nitrogen per acre for every 100 pounds of expected crop.
   - Split applications are preferred:
     - First application: late February to early March
     - Second application: May or June
     - Optional third and fourth applications: early August and early September (only in heavy crop years)
   - Avoid excessive nitrogen, which can lead to overly vigorous growth, shading, and reduced nut quality.

4. Apply phosphorus (P) and potassium (K) based on soil test recommendations.
   - In South Louisiana: apply in January or February
   - In North Louisiana: apply in February or March
   - Potassium is especially important in heavy crop years to prevent leaf scorch and premature defoliation. Maintain a leaf nitrogen-to-potassium (N:K) ratio near 2:1 to avoid nutrient imbalances.

5. Zinc is essential for shoot elongation, leaf expansion, and nut development.
   - On upland soils with rosette symptoms:
     - Apply 10–15 pounds of zinc sulfate per tree initially.
     - Follow with 3–5 pounds per tree annually until symptoms are corrected.
   - For non-bearing trees:
     - Apply ½ pound of zinc sulfate per inch of trunk diameter.
   - Foliar sprays (2–3 pounds zinc sulfate per 100 gallons of water) are effective for rapid correction and maintenance.

6. Apply magnesium and calcium only if soil or foliar tests indicate a deficiency.
   - Use dolomitic lime to correct low pH and supply both calcium and magnesium
   - Maintain soil pH between 6.0 and 6.5 for optimal nutrient availability

7. Boron plays a key role in kernel development and nut retention. Deficiencies can lead to poor kernel fill and blackened kernels. While boron is often included in foliar tests, it may not be part of standard soil panels.

8. Growers should also be alert to signs of nickel (Ni) deficiency, which causes "mouse ear" symptoms—rounded leaf tips and stunted growth. This condition is more common in orchards with a history of heavy zinc use or on sandy soils, and may not appear in routine testing.

9. Because pecan trees lack root hairs and are slow to respond to soil-applied nutrients, foliar (leaf) analysis is essential for managing fertility in commercial orchards.
    - Sample leaves between July 7 and August 7.
    - Collect middle-pair leaflets from the middle leaf of current season's growth.
    - Compare results to established sufficiency ranges to guide nutrient adjustments.
    - Foliar testing is especially important for monitoring nitrogen, potassium, zinc, boron, and magnesium. It provides a more accurate picture of nutrient uptake than soil testing alone and is especially valuable in orchards using fertigation, poultry litter, or organic amendments.

10. Additional Notes:
    - If your orchard is prone to waterlogging in early spring, consider skipping or delaying the first nitrogen application until soils begin to dry. Applying fertilizer to saturated soils can lead to nutrient loss and reduced uptake.
    - Fertilization should be paired with a strong insect and disease management program to maximize tree health and yield.
    - Consider integrating cover crops or legumes to improve soil health and supplement nitrogen naturally.
    - For orchards using fertigation or poultry litter, adjust rates accordingly and monitor leaf nutrient levels closely.
    - In "on" years with heavy crop loads, consider splitting nitrogen into three applications (spring, early August, early September) to support kernel fill and maintain leaf health. In "off" years, reduce nitrogen to avoid excessive vegetative growth and shading.
    - Maintain a leaf nitrogen-to-potassium (N:K) ratio near 2:1 to prevent nitrogen scorch and premature defoliation, especially in sensitive cultivars like 'Desirable' and 'Schley'.
    - Use annual terminal shoot growth as a visual guide for nitrogen status. Aim for 6–10 inches of new shoot growth. Less than 4 inches may indicate under-fertilization; more than 12 inches may suggest excess nitrogen.
    - If using poultry litter, apply in spring only to avoid phosphorus buildup and nutrient runoff. Supplement with synthetic nitrogen in late summer if crop load is high.

11. Contact your county agent for additional information and help in your fertilization program. The agent also receives a copy of this report for the parish office files.