

Introduction to Section 16 (16c - Irrigation Water, Soil & Plant Tissue Analysis/Guide for Pecan)

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| 1 | Producer: Orchard in El Paso, Tx | Crop: Pecan | Yield: 1,000 lbs./ac. | Irrigation Water: Rio Grande (48" applied) |
| 2 | Tillage Operations: to be discussed in the field | | Note: Trees are 5-years old (not producing yet); i.e., 1000 lbs. used as reference for nutrient recommendation. | |
| 3 | Soil Texture: Silty Clay Loam and Silty Clay | | Soil Structure: to be evaluated at workshop | |
| | | | Aggregate Stability to be evaluated at Workshop | |

| 4 | Nutrients ON = Organic Nitrogen mineralized | Irrigation Water Analysis (ppm x 0.227 x 48" = lb./ac.) | | Soil Analysis 0-6" depth Bulk Density = 1.4 g/cm ³ ppm x 1.90 = lb/ac (6" depth) | | Nutrient Inputs (recommendations) Lbs./ac. (based on 1000 lb./ac. yield) | Plant Tissue Analysis Note: N is kjeldahl nitrogen & Sulfur is total Sulfur | | Should I Apply Nutrients? - Yes (Y) No (N) - Maintenance (M) - Not Sure (?) - Other (O) | Conservation Practices to consider for achieving sustainability |
|----|--|--|-----------------|---|-------------------|--|--|---|---|---|
| | | ppm or mg/l | Pounds per Acre | ppm or mg/Kg | Low Adequate High | | % or ppm & Rating (Low - High) Q = Optimum | Sufficiency Range (leaf: midshoot leaflets) | | |
| 5 | Organic Matter | | | 0.6% | 11,400 Low | | | | Manure? | ♥ Cover Crops |
| 6 | N mineralized | | | ON | 12.0 Low | Manure? | | | n/a | |
| 7 | Nitrate-Nitrogen | 1.12 | 12.2 | 4.5 | 8.55 lbs./ac | 55.0 N | 2.66% Q | 2.49 - 2.8% | Yes | |
| 8 | Phosphorus | | | 5.0 | Low | 22.5 P ₂ O ₅ | 0.12% Q | 0.11 - 0.3% | Yes | ♥ Crop Rotations |
| 9 | Potassium | 8.23 | 89.5 | 122.0 | Low | 18.3 K ₂ O | 0.95% Q | 0.74 - 1.25% | Yes | ♥ Manure or Compost |
| 10 | Sulfate-Sulfur | 45.03 | 490.0 | 20.7 | Adequate | none | 0.22% Q | 0.19 - 0.4% | No | |
| 11 | Calcium | 54.32 | 591.0 | 2,948.0 | High | none | 1.21% Q | 0.89 - 1.5% | No | ♥ Minimum-Till (No-Till); Residue mgt. |
| 12 | Magnesium | 13.44 | 146.2 | 187.0 | Low | 9.4 MgO | 0.31% Q | 0.29 - 0.6% | Not Sure? | |
| 13 | Zinc | | | 0.4 | low | 3.3 | 58.22 ppm Q | 49 - 100 ppm | Yes | |
| 14 | Iron | 0.85 | 9.3 | 4.6 | low | 5.1 | 135 ppm Q | 49 - 300 ppm | Yes | ♥ IWM |
| 15 | Manganese | 0.02 | 0.22 | 4.2 | low | 3.3 | 58.1 ppm L | 99 - 800 ppm | Yes | |
| 16 | Copper | | | 0.6 | adequate | none | 5.8 ppm L | 9 - 30 ppm | Yes | ♥ Soil Amendments (e.g. gypsum) |
| 17 | Boron | 0.12 | 1.31 | 0.4 | low | 0.9 | 105.4 ppm H | 29 - 45 ppm | No | |
| 18 | Molybdenum | | | | | none | not | analyzed | No | |
| 19 | Sodium | 54.41 | 592.0 | | use SAR | | 0.02% Q | 0 - 0.1 | No | ♥ IPM |
| 20 | Chloride | 71.96 | 783.0 | | | | not analyzed | > 0.5% excess | No | |
| 21 | Bicarbonate | 175.68 | 1,911.4 | | | | | | | |
| 22 | Carbonate | 2.40 | 26.1 | | | | | | | |

Additional Assessments to Consider in evaluating your Cropping System (soil pH, free lime & CEC)

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| <ul style="list-style-type: none"> • Electrical Conductivity of Irrigation Water (ECiw) = 0.81mmhos/cm • Sodium Adsorption Ratio (SAR) from water test = 1.71 & pH = 7.9 • Irrigation Water Quality infiltration assessment (degree of restriction on use is <u>none</u>). Total Dissolved Solids = 518.40 mg/l • Soluble salts applied = 5,640.2 lb./ac./yr. | <ul style="list-style-type: none"> • Soluble Salts = 0.36 mmhos/cm (Satisfactory) • Soil pH = 8.7 (Problem. e.g., nutrient availability) • Sodium is 2.6% of Total Cation Exchange Capacity (Satisfactory) • Refer to Crop Salt Tolerance Table (Section 2) to evaluate for potential yield reduction (No yield reductions due to existing salinity levels) |
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Refer to the NRCS Nutrient Uptake Tool: <http://npk.nrcs.usda.gov/> for calculating NPK removal by crop

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Agronomy Tech Note 76 (<http://www.nm.nrcs.usda.gov/technical/handbooks/iwm/nmiwm.html>)