



CORN - SORGHUM - Maximum Economic Yield

SOIL TEST - to evaluate soil for nutrient supplying capability & to guide preplant application or corrective actions during growing season. TPSL Soil test is unique as it shows *available* nutrients as well as other factors that affect plant growth; texture, humus (O.M.), nitrate, soluble calcium, soluble salts and free carbonates.

TPSL extracts soil nutrients with carbon dioxide (CO₂ the same way plant's roots do by excreting CO₂ that reacts with soil moisture to form weak carbonic acid to solubilize soil minerals for root uptake). Most labs use strong acids or bases to extract plant nutrients giving unrealistic numbers. **TPSL VALUES ARE CALIBRATED BY PLANT ANALYSIS FOR AVAILABILITY RATINGS.**

A REPRESENTATIVE - COMPOSITE sample of the soil from the root zone is essential for a good soil test. Be sure to take a slice or core of soil 0-12" from several areas in the field, mix thoroughly & send 1/2 pint to the lab. The lab can only analyze what is in the sample, **MAKE IT REPRESENTATIVE.**

Subsoil's (12-24") should also be tested when **Maximum Economic Yield** is expected from **Best Management Practices**. Top & subsoil tested as a pair the subsoil fee is about 1/2 of top soil fee. **TESTING PROGRAM COSTS** only 1 to 2 Bu/ac depending on level of management & goals.

PLANT TESTING - 3 Critical Stages in Corn (Grain Sorghum Plants)

1. Less than 12" - analyze entire plant for nitrogen plus minerals (P-K-Ca-Mg-Na) & Micronutrients (Zn-Fe-Mn-Cu)



- Pull 15 plants including roots - wash off all dirt before wilting - air dry thoroughly & place in paper (NO plastic) sacks for shipment to lab.
- Take plants from a representative area of the field, one plant from every 5th row in a diagonal pattern across field, start at least 50' inside fields, away from edges, do not mix problem areas.
- At this critical period, before plants form the embryo of the ear and determine how many rows of grain will be on the ear, needed nutrients can be adjusted to affect yield potential.
 - ◆ Foliar apply a balanced formula fortified with deficient nutrients such as Zn-Mn-P-Mg-etc.
- Also help overcome weather stress with plant growth hormones & enzymes in foliar sprays.
- Only minimal rates are needed when sprayed directly on plants
- * (By 5-6 leaf embryo of ear is forming – balanced nutrition adds rows of grains.)

2. AT BOOT - less than 15% of tassels or heads peaking out.



- pull 12 leaves from most recently mature leaf – full dew lap (sheath) showing - cut at dew-lap for entire leaf including base of mid rib - Mature leaves will have most of the sheath showing.
- same area & pattern of field as before.
- at this point moisture and all nutrients are entering maximum usage period
- ◆ apply foliar or in water any deficient nutrient especially Zinc for Nitrogen use efficiency and the proper plant growth. Hormones can stimulate root & grain growth.

3. AT POLLINATION - (corn silks turning dark) major need is nitrate or urea nitrogen for grain filling



- pull 12 ear leaves - same pattern & area as before – full leaves.
- NITROGEN, FOLAIR or WATER applied at this stage has increased yields - 15 to 20 Bu per acre when needed, only soil nitrate or urea (Soil & Foliar) works this late.
- this test evaluates how well this crop has been fed and aids as a tool for adjustment next year's fertility program.