



TEXAS PLANT & SOIL LAB, Inc.
 5115 W. Monte Cristo Rd Edinburg, TX 78541 (956) 383-0739

INTERPRETATION GUIDE TO SOIL TEST REPORT

TPSL CONTINUALLY UPGRADES ANALYTICAL PROCEDURES SO THAT THE MOST ACCURATE RECOMMENDATIONS CAN BE MADE. CO₂ method works well with all types of soils. WE PARTICIPATE IN CHECK SAMPLE PROGRAMS.

Our Atomic Absorption Spectrophotometer accurately determines available (H₂O) and extractable (CO₂) minerals in the soils. These natural methods, along with a detailed soil history of treatments, yields & goals allow for more reliable recommendations.

TEXTURE Range from: 1-Sand through 3-Loam to 6-Heavy Clay
CEC TEXTURE determines CEC. TEX 1 = 3-8 ranges thru 6 = 30-50 CEC
 O.M. (humus fraction) increases CEC. (About 3.5 for each % increase in humus.)

O.M. (Humus %) Organic Matter improves CEC, tilth (soil physical condition), water and nutrient holding capacity, (AVAILABILITY) ---- the more the better.
 IDEAL LEVELS: Texture 1-6 respectively 2.8 - 3.1 - 3.6 - 4.1 - 4.5 - 4.8

NATURAL EXTRACTING (CO₂) Plants Produce Natural Carbonic Acid in the root zone therefore TPSL mimics the same extraction to obtain nutrient values that are more Realistic & calibrates to plant uptake. Most labs extract with much stronger reagents, thus much higher numbers with no calibration.

NO₃ (N) This highly soluble nitrate ion moves easily up & down with water and is a constantly changing value. Plant uptake is rapid. Excess can be toxic.

P₂O₅ (P) Extracted with CO₂ -- amount reported in lb. per acre for the top foot of soil. Amount reported is available to a crop in a normal growing season. Responses can be expected below 40 lb. per acre and high requiring crops may respond to additional phosphate up to a 200 lb. per acre test.

K Extractable Potassium (CO₂) -- is the amount available to the crop in a growing season. 80 PPM minimum and up to 120 PPM for crops with high potash needs. Soil availabilities vary with texture, soil moisture conditions, interference from sodium levels & ratios of Na to Ca & Mg.

pH Acidity measurement is variable. Most crops prefer 6.5 - 7.3. Neutral is 7.0 -- above is alkaline, below is acid. TPSL air dries soil for more accurate test.

EC SALTS A measure of Total water-Soluble Salts expressed as mmhos/cm, EC = Electrical Conductivity x 640 = Total Dissolved Solids ppm

SALT CATIONS H₂O -Water-soluble cations determined on Atomic Absorption Spectrophotometer. Calcium important - should exceed 100 PPM. CO₂ - Extractable (Carbonic Acid equivalent), same as the plant root process. SODIUM is the main extractable harmful element, should be below 180 PPM. The amount of extractable CALCIUM reserve in the soil is also reported and must be known to properly manage excess salts.

Na (CO₂) /Ca (H₂O) These ratios help evaluate salt problems and are indicators of the soil's physical condition for water & root penetration.
 Na/Ca ratio should be less than 6.
 Na/Mg ratio should be below 20 for regular crops and below 10 for sugar producing crops of melons, citrus, sugar cane, etc...

TPSL EXPERIENCED PROFESSIONALS IN CHEMISTRY, AGRONOMY, HORTICULTURE AND PLANT PHYSIOLOGY are at your service to help you maximize profits.

WE ARE STRIVING TO HELP YOU MAKE THE BEST BETTER.
 [We determine needs and make recommendations --- We do not sell or endorse products.]

RATING GUIDE TO TPSL SOIL TEST REPORT

CALIBRATED BY PLANT ANALYSIS (UPTAKE)

NITRATE	1- 9	very low	0-12" sample	PHOSPHATE	1-10	very low
NO₃-N	10-19	low	ppm= lb/ac ÷ 4	P₂O₅-P	11-19	low
lb/ac	20-29	upper low		lb/ac	20-39	upper low
	30-59	medium	ppm P x 2.291 = P₂O₅		40-59	low medium
	60-89	high medium			60-79	medium
	90-139	high			80-119	low high
	> 140	very high -- caution, seedling injury possible			120-199	high
		> 200				extremely high - Micros may tie up.

POTASSIUM	1-39	very low	0-12" sample
K - ppm	40-59	low	lb/ac = ppm x 4
(CO₂)	60-79	medium	ppm K x 1.205 = K₂O
	> 80	high	

CO₃ - Free Carbonates - Mostly Ca & Mg - Rated 0 = None --- EH = Extremely High

CALCIUM	H₂O	CO₂	MAGNESIUM	H₂O	CO₂
Ca - ppm	< 19	very low	Mg - ppm	< 9	very low
	20-59	low		10-12	low
	60-79	marginal		13-14	marginal
	80-99	medium		15-18	medium
	> 100	high		> 18	high
					> 100

EC SALTS	< 0.49	very favorably low	TEXTURE = CEC
mmhos/cm	0.50 - 0.99	low	1
	1.00 - 1.59	slight accumulation	2
	1.60 - 1.99	medium --- little problem - caution.	3
	2.00 - 3.99	high -- affects many crops, treatment needed.	4
	> 4.00	affects most crops, treatment essential	5
			6
			30 - 50

SODIUM H₂O/Na should be over 50% of the CO₂/Na so it can leach thru the soil profile.
Na - ppm The solubility of the Na is affected by Sulfur (acidity) and soluble Calcium.

When the H₂O/Na is over 50% of the CO₂/Na and the EC (total soluble salt) is high this indicates that better internal drainage is needed. Subsoils need testing.

When CO₂/Na is high (>180) and the H₂O/Na is less than 50% this indicates need for chemical treatment to increase soluble Na so it will leach. Also, test soil for soluble (H₂O) cations especially Ca & Na to determine best salt management treatment.

THE MOST ACCURATE WAY TO PREDICT THE AVAILABILITY OF SOIL NUTRIENTS IS BY USING THE TPSL NATURAL METHOD OF EXTRACTING WITH CARBON DIOXIDE (CO₂). Even this is still an estimate of availability which is influenced by many field (environmental) conditions. CO₂ WORKS BEST ON ALL SOILS - ACID OR ALKALINE - SANDS OR CLAYS.

PLANT ANALYSIS is the only way to determine what nutrients the plants actually get (UPTAKE). PLANT NUTRIENT REQUIREMENTS change with the age and development of the plants. ADEQUATE FIELD INFORMATION IS NEEDED FOR PROPER INTERPRETATIONS OF THE ABOVE INFORMATION TO ALLOW THE MOST EFFICIENT USE OF THE FERTILIZER MONEY.