Tissue and Soil Testing-Which for what…

Larry Forero
Ferndale, CA
10/1/2010

SOIL SAMPLE INFORMATION SHEET

A & L WESTERN AGRICULTURAL LABORATORIES, INC.

LAB USE ONLY

MODESTO OFFICE
1311 WOODLAND AVENUE, SUITE #1 • MODESTO, CA 95351 • (209) 529-4080 FAX (209) 529-4736

PORTLAND OFFICE
10220 S.W. NIMBUS AVE., BLDG K-9 • PORTLAND, OR 97223 • (503) 968-9225 FAX (503) 598-7702

CUSTOMER	GROWER	SUBMITTED BY
PHONE NO:	PHONE NO:	PHONE NO:

N / W / E / S

☐ Graphics Report ($1.00 per sample) ☐ Fax Report (____) _____ ☐ Email Report (email address required) _____

CHECK BOX IF RECOMMENDATIONS REQUIRED ☐ LBS PER ACRE ☐ LBS PER 1,000 SQ FT ☐

SAMPLE ID (5 CHARACTERS)	TEST PACKAGES									CROP OR PLANT TYPE	PREVIOUS CROP OR PLANT TYPE	PLANTING DATES	SAMPLE DEPTH	AMENDMENTS APPLIED	METHOD OF IRRIGATION
	S1B	S1BN	S2	S2N	S3C	S10C	TEXTURE	NEMATODE	OTHER ANALYSES						
_____															
_____															
_____															
_____															
_____															
_____															
_____															
_____															
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EXPLANATION OF TESTS (SUBMIT ABOUT TWO CUPS OF SOIL PER SAMPLE)

S1B: BASIC SOIL ANALYSIS. Organic matter estimated nitrogen release, phosphorus (weak Bray and sodium bicarbonate-P), potassium, magnesium, calcium, sodium, sulfate-sulfur, soil pH, buffer pH, C.E.C. and percent cation saturation (computed).
S1BN: BASIC SOIL ANALYSIS plus nitrate-nitrogen.
S2: BASIC SOIL ANALYSIS plus soluble salts and excess lime.
S2N: BASIC SOIL ANALYSIS plus soluble salts, excess line, and nitrate-nitrogen.
S3C: COMPLETE ANALYSIS. BASIC SOIL ANALYSIS (plus soluble salts, excess lime, nitrate-nitrogen, Zn, Mn, Fe, Cu, and B).
S10C: COMPLETE ANALYSIS plus saturation percentage, SAR, ESP, carbonate, bicarbonate, chloride, and saturated paste boron.
NOTE: Strong Bray Phosphorus may be substituted for Sodium Bicarbonate Phosphorus in S1B package. Ask for package S1A

NO_3-N = Nitrate - N
SO_4-S = Sulfate - S
Zn = Zinc
Mn = Manganese
Fe = Iron
Cu = Copper
B = Boron
Mo = Molybdenum
Cl = Chloride

PRINT NAME OF SAMPLER _____

SIGNATURE OF SAMPLER _____

DATE SAMPLES SUBMITTED _____

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 09-079-025 **CLIENT NO:** 1173

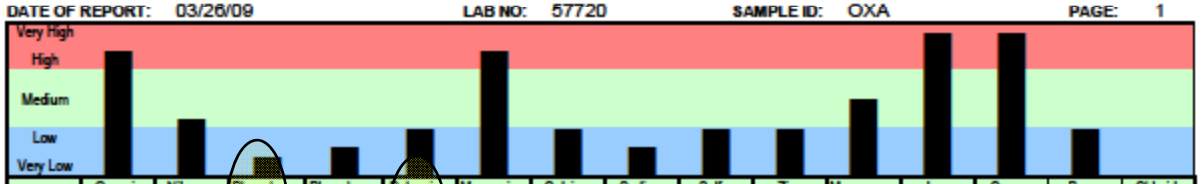
SEND TO: COOP EXTENSION
5630 BROADWAY
EUREKA, CA 95501-

GROWER: JIM O'NIEL

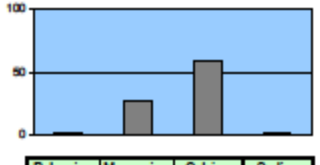
SUBMITTED BY: ALAN BOWER

Graphical Soil Analysis Report

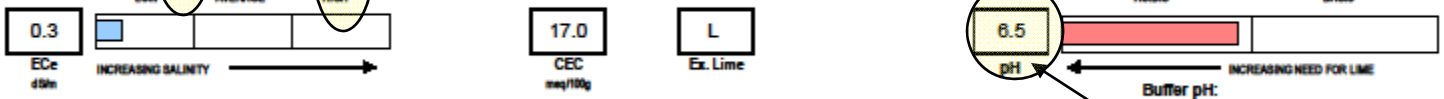
DATE OF REPORT: 03/26/09 **LAB NO:** 57720 **SAMPLE ID:** OXA **PAGE:** 1



Analyte	Organic Matter %	Nitrogen NO_3-N ppm	Phosphorus Weak Bray ppm	Phosphorus $NaHCO_3$-P ppm	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm	Sodium Na ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Chloride Cl ppm
Results	6.6	16	5	9	159	581	2046	72	12	1.0	9	106	5.9	0.6	
			LOW	AVERAGE	HIGH										



Potassium K %	Magnesium Mg %	Calcium Ca %	Sodium Na %
2.4	28.1	60.1	1.9
		ACIDIC	BASIC



Soil Fertility Guidelines

CROP: PASTURE **RATE:** lb/acre **NOTES:**

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P_2O_5	Potash K_2O	Magnesium Mg	Sulfur SO_4-S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	
		800		140	70	150							0.5	

COMMENTS

HIGH levels of organic matter should have a beneficial effect on growth and "soil" pH may not be as critical. However, watch carefully as amendments and extra nitrogen may still be necessary.

NITROGEN: Apply up to 60 lb N/ac at planting then about 1.0 lb N/ac per day of active growth. An ammonium source is best.

CONSIDER applying up to 60 lb N/ac in September/October if sufficient moisture is available. Apply up to another 60 lb/ac after January, and again after June - moisture permitting.

POTASH REMOVAL: Keep an eye on potash requirements if removing ALL the above-ground portion of the crop from the field. Large quantities of potash may be removed each year.

Mike Buttress, CPAg
A & L WESTERN LABORATORIES, INC

Table 6. Interpreting the results of soil tests and rates of fertilizer required to amend deficient soils

Nutrient	If soil test is . . .*	Suggested fertilizer rate
Phosphorus (HCO3 extractable)	< 5 ppm 5–10 ppm 10–20 ppm > 20 ppm	100 lb P2O5/acre 50 lb P2O5/acre 25 lb P2O5/acre none
Potassium (ammonium acetate extractable)	< 40 ppm 40–60 ppm > 60 ppm	200 lb K2O/acre 100 lb K2O/acre 0–50 lb K2O/acre
Zinc (DTPA extractable)	< 0.5 ppm (soil pH < 7.0) < 0.5 ppm (soil pH > 7.0)	5 lb Zn as ZnSO4/acre 10 lb Zn as ZnSO4/acre

* Source: Soil and Plant Tissue Testing in California (UC ANR Bulletin 1879).

Table 7. Guidelines for obtaining plant tissues samples and interpreting test results

Plant and growth stage	Part of plant	Nutrient	Nutrient range*		
			Deficient	Critical	Adequate
Alfalfa (regrowth length of ½ to 1 inch or just prior to 1/10 bloom)*	middle 1/3 of plant; stems only (strip leaves off)	P (PO4) ppm K %	< 500 < 0.65	500 – 800 0.65 – 0.80	> 800 > 0.80†
	middle 1/3 of plant; leaves only	S (SO4) ppm	< 400	400 – 800	> 800‡
	top 1/3 of plant	B ppm Mo ppm	< 15 < 0.3	15 – 20 0.3 – 0.9	> 20§ > 0.9#
Clovers (ladino, strawberry, white, alsike, and red clover)*	top 1/3 of plant; leaves and stems	P % K % S % B ppm Mo ppm	< 0.15 < 1.2 < 0.10 < 15 < 0.3	0.15 – 0.20 1.2 – 1.5 0.10 – 0.15 15 – 20 0.3 – 0.9	> 0.20 > 1.5† > 0.15‡ > 20§ > 0.9#
Grasses (tall fescue, orchardgrass, and others)	top 4–6 leaves, no stems	N % P % K % S %	< 2.0 < 0.18 < 1.5 < 0.10	2.0 – 2.8 0.18 – 0.24 1.5 – 2.5 0.10 – 0.15	> 2.8 > 0.24 > 2.5† > 0.15‡

* An economic yield response to fertilizer applications is very likely for values below the deficient level, somewhat likely for values in the critical level, and unlikely for values over the adequate level.

† Forages having greater than 3% potassium (K) may cause animal health problems, particularly if the magnesium (Mg) concentration is not greater than 0.25%.

‡ Forages having greater than 0.3% or 3,000 ppm SO4 sulfur (S) may intensify molybdenosis in ruminants.

§ A concentration over 200 ppm may cause reduced growth and vigor.

A concentration over 10 ppm may cause molybdenosis in ruminants.

Source: Adapted from Western Fertilizer Handbook, 9th Edition, and Intermountain Alfalfa Management (UC ANR Publication 3366).

Generally…

- Soil samples are good for P, K and pH
- Tissue samples are best for N and S

PLANT SAMPLE INFORMATION SHEET

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LAB USE ONLY

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CUSTOMER	GROWER	SUBMITTED BY
PHONE NO:	PHONE NO:	PHONE NO:

☐ Fax Report (____) _____ ☐ Email Report (email address required) _____

SAMPLE ID (5 CHARACTERS)	TEST PACKAGES									WASH SAMPLES? Y/N
	PT2	PT4	*Substitute NO_3-N	PT5A	PT5	NO_3-N	Cl	Mo	OTHER	
_ _ _ _ _										
_ _ _ _ _										
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_ _ _ _ _										

CHECK BOX IF RATINGS ARE REQUIRED ☐ GRAPHICAL FORMAT ☐

CROP OR PLANT TYPE	GROWTH STAGE	PLANT PART	APPEARANCE/COMMENTS
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	
	_ _ _	___	

EXPLANATION OF TESTS

PT2: COMPLETE ANALYSIS
PT4: Nitrogen, Phosphorus, and Potassium
PT5A: Complete analysis, substituting NO_3-N and PO_4-P for total N and total P
PT5: Nitrate-nitrogen (NO_3-N), phosphate-phosphorus (PO_4-P) and potassium (vegetable petiole/midrib analysis)
PT 30: Fresh fruit analysis

*Substitute NO_3-N: Nitrate - N may be substituted for total nitrogen on test packages PT2 and PT4 at no additional charge

SUBMIT ABOUT TWO CUPS OF LEAVES PER SAMPLE - ONE CUP IF PETIOLES

DO NOT PLACE WET SAMPLES IN SEALED PLASTIC BAGS AS THEY MAY MOLD

PRINT NAME OF SAMPLER _____

SIGNATURE OF SAMPLER _____

DATE SAMPLES SUBMITTED _____

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REPORT NUMBER: 09-084-010

SEND TO: COOP EXTENSION
5630 BROADWAY
EUREKA, CA 95501-

CLIENT NO: 1173-D

SUBMITTED BY: ALAN BOWER

GROWER: JIM O'NIEL

DATE OF REPORT: 03/27/09

PLANT ANALYSIS REPORT

SAMPLE ID	REPORT OF ANALYSIS IN PERCENT								REPORT OF ANALYSIS IN PARTS PER MILLION							
	Nitrogen N	Sulfur S	Phosphorus P	Potassium K	Magnesium Mg	Calcium Ca	Sodium Na	Chloride Cl	Iron Fe	Aluminum Al	Manganese Mn	Boron B	Copper Cu	Zinc Zn	Nitrate-Nitrogen NO_3-N	
OXGRS	2.42	0.21	0.35	2.87	0.23	0.44	0.05		122	54	64	14	8	21		
	L	S	S	S	S	S	S		S	S	S	S	S	S		
OXCLV	3.93	0.21	0.26	2.05	0.30	1.19	0.14		141	47	79	20	11	30		
	S	L	S	S	S	S	S		S	S	S	L	S	S		
1XGRS	2.93	0.25	0.37	3.31	0.23	0.45	0.07		112	43	46	6	10	21		
	L	L	S	S	S	S	S		S	S	S	S	S	S		
NORMS	5.00	0.35	0.45	3.00	0.25	0.40	0.02		100	100	90	10	10	30		

Sample #	Date	Lab #	Crop	Stage/Part
OXGRS	/	41356	RYEGRASS	
OXCLV	/	41357	CLOVER	
1XGRS	/	41358	PER RYEGRASS	

DEFINITION OF INTERPRETATION RATINGS

When interpretation of plant analysis results are given, they will be listed as follows:

D or Deficient — Plants should be showing visible symptoms of a nutritional deficiency. Plant growth would definitely be curtailed by an insufficient amount of this element.

L or Low — Plants may be normal in appearance but probably will be responsive to fertilization with this element.

S or Sufficient — Plants contain adequate amounts of this element for maximum yield and are normal in appearance.

H or High — Optimum yields can be expected and plants are normal in appearance. However, concentration of this element is higher than normally expected.

E or Excessive — Plants probably show symptoms of a nutritional disorder or stunted growth. Yields may be reduced significantly by an excessive amount of this element.

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

Mike Buttress, CPAg
A & L WESTERN LABORATORIES, INC.