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PLANT ANALYSIS REPORT

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science, Madison, WI

Send to:
Bucky Badger
8452 Mineral Point Road
Verona, WI 53562

Lab Information	
Lab Number:	54321
Date received:	8/1/2007
Date processed:	8/10/2007
County:	Dane

Sample Information	
Sample ID:	1
Field:	Randall
Crop:	Field corn
Growth Stage:	12" tall
Plant Part:	Whole plant
Appearance:	Normal
Soil Submitted:	Yes

SUFFICIENCY RANGES

Plant Results

Element		Low	Sufficient	High
N	(%)	2.99		
P	(%)		0.31	
K	(%)	1.83		
Ca	(%)		0.45	
Mg	(%)		0.32	
S	(%)		0.19	
Zn	(ppm)	17.50		
B	(ppm)		5.60	
Mn	(ppm)		39.00	
Fe	(ppm)		94.00	
Cu	(ppm)		9.51	

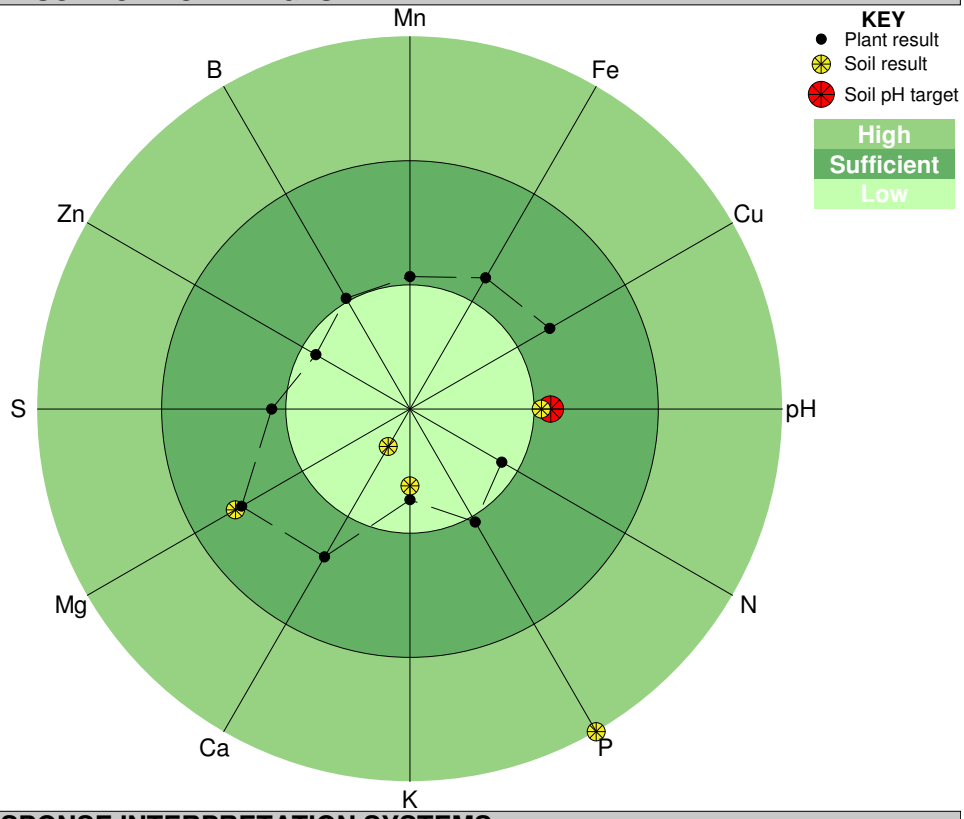
Al	(ppm)	8.80
Na	(ppm)	3.14

Soil Results

pH: 5.9, target pH = 6.0
OM: 2.6%

Element			Optimum	
P	(ppm)			54 E
K	(ppm)	65 L		
Ca	(ppm)	210 VL		
Mg	(ppm)		350	

Note: L = Low, VL = Very Low, H = High, VH = Very High, E = Excessive



YIELD RESPONSE INTERPRETATION SYSTEMS

System		Almost certain	Possible	Remote	Unlikely
DRIS	Element	**Zn**		**S P N K**	
	Index	**-27**		**-5 3 8 20**	
PASS	Element	**Zn**	B	**K S** Mn Fe **N** Ca **P** Mg	Cu
	Index	**-21**	-11	**-8 -3** -2 0 **2** 2 **3** 8	19

PASS INI: Zn:-12 B:-11 K:-8 S:-3 Mn:-2 Fe:0 N:2 Ca:2 P:3 Mg:8 Cu:19
PASS DNI: Zn:-9 S:-5 K:1 P:4 N:8

Note: DRIS = Diagnosis and Recommendation Integrated System, PASS = Plant Analysis with Standardized Scores, INI = Independent Nutrient Index, DNI = Dependent Nutrient Index
Common Response Elements are in BOLD and Rare Response Elements are NOT. DRIS yield response categories are computed as follows: "Almost Certain" - index < -20, "Possible" - -20 < index < -15, "Unlikely" - index > 25, "Remote" - any index not in any other category. PASS yield response categories are computed as follows: "Almost Certain" - common response elements with INI < -10, "Possible" - common response elements with INI+DNI < -10 and rare response elements with INI < -10, "Unlikely" - any element with INI > 10, "Remote" - any element not in any other category

COMMENTS

Nitrogen (N)
This plant sample is low or deficient in nitrogen, possibly as a result of inadequate nitrogen fertilization, excessively wet soil conditions, excessive rainfall and leaching on sandy soils, indadequate phosphorus fertilization or excessive potassium fertilization.
Symptoms of nitrogen deficiency appear first as a light green coloring of the plant. As the deficiency becomes more severe, lower leaves turn yellow and may 'fire'.

Potassium (K)
This plant sample is low or deficient in potassium. Possible causes of this are low available soil potassium levels, inadequate potassium fertilization or poor drainage.
Deficiency symptoms appear first on older leaves first. In general, potassium deficiency appears as a scorching of older leaf margins.
As the deficiency becomes more severe, the affected area increases and the leaves or leaflets may become completely yellow and/or drop off.

Zinc (Zn)
This plant sample is low in zinc. This could possibly be a result of low soil zinc availability, inadequate zinc fertilization, execessive phosphorus soil test levels or fertilization. Soils low in organic matter, soils recently leveled for irrigation, soil with high pH levels or highly organic soils may exhibit zinc deficiency. Broadcast, row or foliar application may be used to correct the problem.
This plant sample is low in zinc even though the soil zinc level is high. This may be a result of excessive phosphorus fertilization.

Interpretations

Plant analysis results are interpreted by one or more of three methods: sufficiency range (SR), diagnosis and recommendation integrated system (DRIS) and plant analysis with standardized scores system (PASS). By comparing the three methods of interpretation, it should be possible to arrive at a clearer picture of the plant's nutrient status than by using only one method.

The SR system is based on the relationship between nutrient concentration and yield-if the soil is deficient in a certain nutrient, then an increase in the supply will increase concentration in the plant and increase yield. The concentration range identified as sufficient is defined to result in 95 to 100% of maximum yield. The system is sensitive to plant maturity and plant part sampled. Interpretations are reliable only when used for the specific plant part sampled at the specific growth stages where interpretations have been developed. The diagram integrates plant analysis and the soil test results where plant analysis sufficiency range and optimum soil test levels are the middle circle. The inner circle indicates deficiency or below optimum levels and the outer circle marks above optimum concentrations. Plant nutrient concentration survey data are substituted when sufficiency range information is not available. Survey data have not been evaluated by yield response calibrations and are to be used only for general comparison.

The DRIS is a method to evaluate various combinations of ratios of nutrient concentrations rather than the actual concentrations. These ratios are combined mathematically to give an index. An index of 0 is ideal while the more negative the index, the greater potential of nutrient deficiency; the more positive the index, the greater potential for excessive concentrations. The sum of these indices for a given analysis must be zero. To avoid errors diagnosing deficiencies when deviations from zero are really random error, an in-balance range is defined as -15 to +25. DRIS norms are available for alfalfa, apple, corn, celery, lettuce, millet, oat, potato, grain sorghum, tomato and wheat.

The PASS system is a hybrid that combines an independent index (INI) as in SR and dependent index (DNI) as in DRIS. The PASS INI section is similar to SR, but instead of a nutrient category, a continuous index based on the statistical standardized score is determined and expressed on the DRIS scale. INI values between -10 and +10 are considered sufficient. An INI value of less than -10 equals the critical level and is considered deficient. The further below -10 the INI values are, the more likely the addition of that nutrient will increase yield. To avoid predicting yield responses when they are unlikely as sometimes occurs in both SR and DRIS, the nutrients in the PASS INI system are divided into 2 groups: those for which yield response is common (dark green bold values) and those for which yield response is rare (light green values). The PASS DNI is similar to DRIS where paired nutrient ratios are calculated and compared to optimum values with the standardized scores approach and expressed on the DRIS scale. The DNI is best used to confirm a deficiency indicated by the INI. Only the nutrients in the common response category of the INI are included in the DNI. PASS norms are available for alfalfa, corn and soybean.