ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

Plant Tissue Report

Printed on 7/21/2023

Account No. 5981
Cannivera, LLC - Chris Kearns
5917 Cty Rd Y
West Bend, WI 53095

Report for:
Chris Kearns

Lab No: 80099 **Field:** Zone 2
Date Sampled: 07/21/2023 **Sample:** Row D Tomato

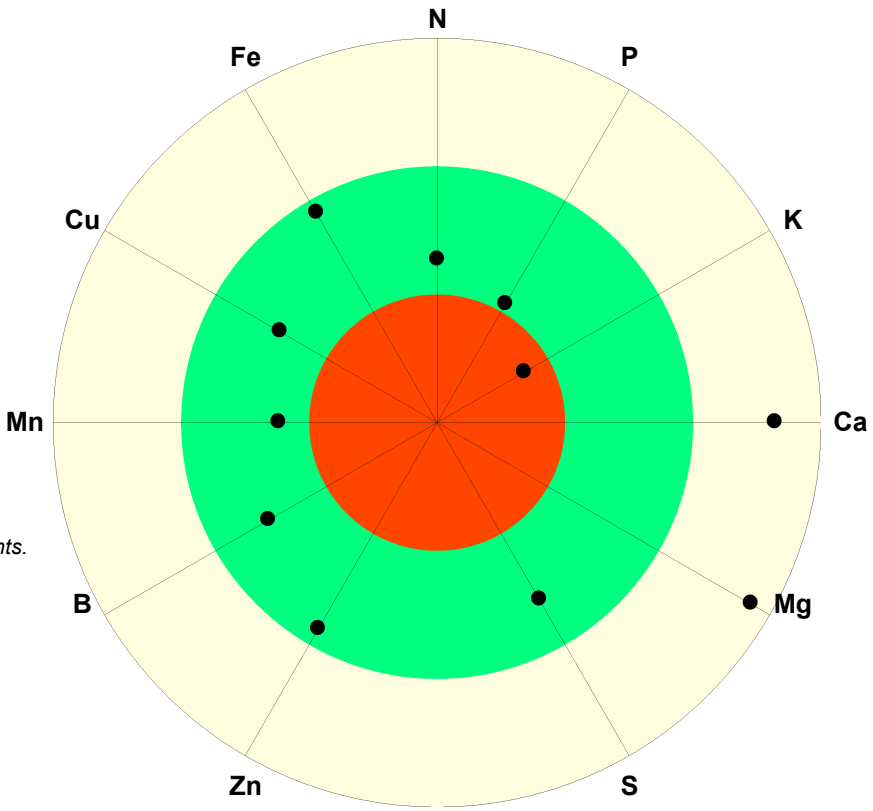
Sufficiency Ranges

Plant Results

	Low	Sufficient	High
N%		4.54	
P%		0.52	
K%	2.27		
Ca%			5.86
Mg%			1.35
S%		0.80	
Zn ppm		46	
B ppm		43	
Mn ppm		91	
Fe ppm		182	
Cu ppm		11	

Cl ppm
Al ppm 22
Na ppm 653

Al, Na, Chloride are nonessential elements.



Key
● Plant Result
X Soil Result
Low
Sufficient
High

	Lower - Upper
N%	4.00 - 6.00
NO3%	
P%	0.50 - 0.80
K%	2.90 - 5.00
Ca%	1.00 - 3.00
Mg%	0.40 - 0.60
S%	0.20 - 1.20
Zn ppm	20.0 - 50.0
B ppm	25.0 - 60.0
Mn ppm	40.0 - 250.0
Fe ppm	40.0 - 200.0
Cu ppm	5.00 - 20.00

Yield Response Interpretation Indexes

	Almost Certain	Possible	Remote	Unlikely
DRIS	P:-38 K:-21		N:-12 Mg:1	Ca:71
PASS INI	N/A	N/A	N/A	N/A

PASS DNI N/A
DRIS Diagnosis and Recommendations Integrated System. DRIS yield response categories: *Almost Certain* index < -20, *Possible* -20 < index < -15, *Unlikely* index > 25, *Remote* any index not in any other category.
PASS Plant Analysis with Standardized Scores. INI = Independent Nutrient Index, DNI = Dependent Nutrient Index. PASS yield response categories: *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

-Inclusion of an associated soil sample may provide more detailed information. Consider submitting a soil sample for this field to provide more accurate interpretations.
-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.
-As the deficiency becomes more severe, the affected area increases and the leaves or leaflets may become completely yellow and/or drop off.
-Deficiency symptoms appear first on older leaves first. In general, potassium deficiency appears as a scorching of older leaf margins.

Interpretations

Plant analysis results are interpreted by one or more of three methods: Sufficiency Range (SR); Diagnosis and Recommendation Integrated System (DRIS); or 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 an associated soil test shows conditions that can cause nutrient deficiency (low concentration, pH problem, etc...), then an increase in supply through corrections or additions will increase concentrations in the plant. 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 indicated by the middle circle. The inner circle indicates deficiency or below-optimum levels, and the outer circle marks above-optimum levels. 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 zero is ideal. The more negative the index, the greater the potential of nutrient deficiency; the greater the index, the greater the potential for excessive concentrations. The sum of these indices for a given analysis must be zero. To avoid errors in 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 a 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 crop will respond to increased availability of that nutrient. 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 two groups: those for which yield response is common, and those for which yield response is rare. 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 group of the INI are included in the DNI. PASS norms are available for alfalfa, corn, and soybean.

Source: University of Wisconsin Cooperative Extension