ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

Plant Tissue Report

Printed on 8/3/2023

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

Report for:
Cannivera, LLC

Lab No: 81054 **Field:** Row C
Date Sampled: 08/03/2023 **Sample:** zone 1 Tomato

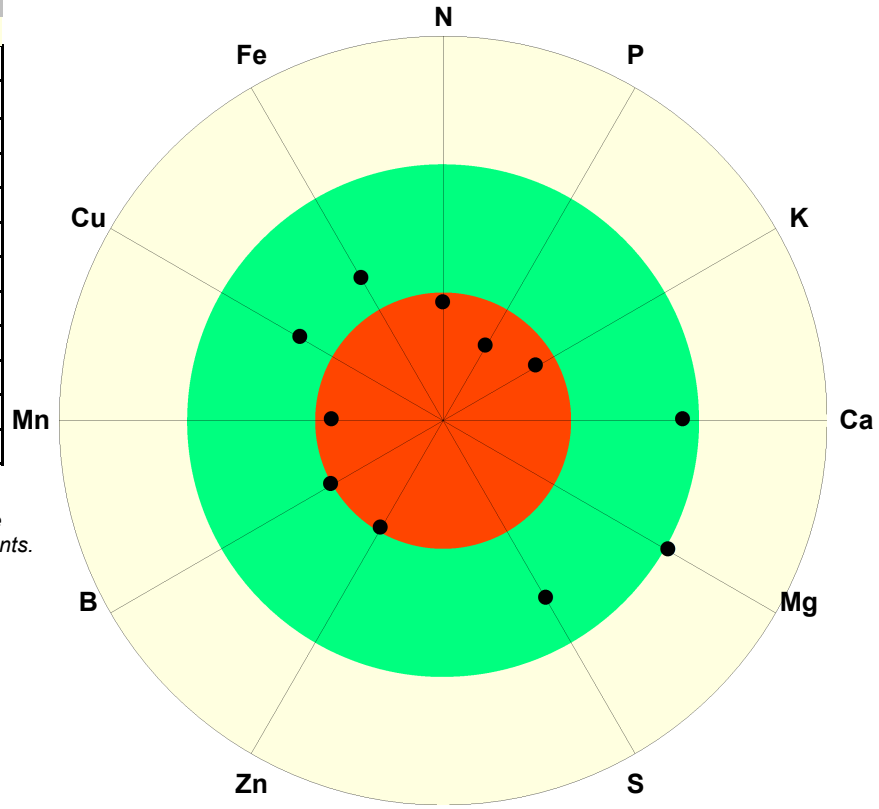
Plant Results

	Low	Sufficient	High
N%	3.65		
P%	0.33		
K%	2.43		
Ca%		2.75	
Mg%			0.63
S%		0.81	
Zn ppm	20		
B ppm		25	
Mn ppm	35		
Fe ppm		84	
Cu ppm		9.33	

Cl ppm
Al ppm
Na ppm 353

Al, Na, Chloride are nonessential elements.

Sufficiency Ranges



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:-37		K:-5 N:4 Mg:1	Ca:39
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 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'.
-This plant sample is low or deficient in phosphorus. Possible causes of this are low available soil phosphorus levels, inadequate phosphorus fertilization, poor drainage or root problems.
-The leaves of phosphorus deficient plants appear most often as dark bluish green, frequently with tints of purple or bronze and stunting occurs.
-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.
-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 manganese. This could possibly result from low soil manganese availability, inadequate manganese fertilization or high soil pH levels. Manganese fertilizers should be row, band or foliar applied and not broadcast.

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