

VIII. Soil Test Rating System

1. Introduction

The Clemson University Agricultural Service Laboratory Soil Test Rating System describes the essential plant nutrient element concentration range, defining the fertility status of the tested soil. In turn, the expected crop response to an addition of the determined plant nutrient element is correlated to the soil test-determined concentration level.

With this rating system, expected crop response to an applied essential plant nutrient element as fertilizer will depend on whether:

- adequate soil moisture is available
- other environmental conditions are equally favorable
- cultural factors (planting date, seed quality, plant spacing, seed bed preparation, etc.) are at their optimum

It is also assumed that the soil pH is within the recommended range, and that weeds, insects and disease organisms are not present, therefore not factors that would interfere with the normal growth of the crop.

2. Rating System

Plant nutrient element soil test levels are divided into 5 categories that define the soil nutrient element status and expected crop response to applied fertilizer amendments.

a. Low: soil plant nutrient element level is deficient and an application of this element will result in a significant yield increase. A high application rate is needed to:

- meet the crop requirement
- compensate for soil interaction
- build the soil reserves

If the soil temperature is low (<60°F), part of the fertilizer, especially P, should be banded beside the row for row crops when planted in the spring.

b. Medium: soil plant nutrient element level is adequate for moderate agronomic crop yields, but a yield response can be expected about 50% of the time from an application of this element. For Soil Groups 1 and 2, it may not be either possible or economical to build K, Ca, and/or Mg higher than this level. For moderate yield goals, there is probably a sufficient amount of this plant nutrient element without the need to add more than that expected to be removed by the crop; however, for high yield goals, the recommendation should be greater than that needed to compensate for crop removal.

c. Sufficient: soil plant nutrient element level is in that range adequate to meet the crop requirement as well as that needed for consistent high crop yield production. A maintenance application rate is recommended to compensate for expected crop removal. Maintaining the surface soil within the "Sufficient" range will ensure that the subsoil essential plant nutrient element level will not be depleted.

- d. High:** this soil plant nutrient element level can adversely affect crop yield and product quality, and a further increase can lead to crop yield decreases as well as plant nutrient element imbalances. Therefore, no addition of this element is recommended, unless needed to compensate for expected high crop removal.
- e. Excessive:** this soil plant nutrient element level will adversely affect plant yield, create nutrient element deficiencies due to imbalances, and can lead to potential ecological damage to the surrounding environment.

Range in Extractable Phosphorus, Potassium, Calcium, and Magnesium Represented by the Soil Test Ratings of the Clemson University Agricultural Service Laboratory

Soil Test Rating	P		K	Ca	Mg	
	Soil Groups 1,2,3&6	Soil Groups 4&5	All Soil Groups	All Soil Groups	Soil Groups 1,2,3&5	Soil Groups 4&6
			<i>lbs/acre</i>			
Low	<31	<21	<71	<401	<33	<47
Medium	31 – 60	21 – 40	71 – 156	401 – 800	33 – 60	47 – 100
Sufficient	61 – 80	41 – 54	157 – 182	801 – 1600	>60	>100
High	81 – 120	55 – 80	183 – 235	1601 – 2000		
Excessive	>120	>80	>235	>2000		

Soil Test Ratings and Corresponding Ranges in Extractable P and K for Peanuts.
(Applicable for all soils on which peanuts are grown)

Soil Test Rating	P	K
	<i>lbs/acre</i>	
Low	<11	<29
Medium	11 – 19	29 – 40
Sufficient	20 – 35	41 – 60
High	36 – 50	61 – 100
Excessive	>50	>100

IX. Interpreting Soil Test Rating for Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sulfur, Manganese, Zinc, Boron, and Copper

1. Explanation of Recommendations

The Clemson University Agricultural Service Laboratory Soil Test Report-includes lime and fertilizer application recommendations based on:

- correction of soil acidity, or that needed to sustain the existing soil pH level