COMPARING SOIL TEST LABORATORY RECOMMENDATIONS Gary M. Lessman Institute of Agriculture The University of Tennessee Knoxville, TN

Abstract

Differences in fertilizer recommendations have been noted as producers have sent similar samples to various soil testing laboratories. Differences in philosophy of nutrient replacement on "high" testing soils as well as experience with research results from field experiments on the various soils in the cotton growing region are probably the major factors affecting the small differences found.

Introduction

After a producer receives his results from a soil testing laboratory, they include the fertilizer recommendations for a particular crop. Recommendations are based on judgements and interpretations which are themselves based on research performed in a given state. They may also differ as soils and climates change across regions. Recommendations have found to differ even if very similar samples are sent to different testing laboratories in the region which may cause confusion in the minds of the user. We will examine the differences we found from selected laboratories and attempt to explain the reason for their occurrence.

Discussion

The three laboratories which participated in the study are gave similar measurements for pH and extractable P and K. Differences in lime rates recommendations can be attributed to the high cost of lime in some states. All laboratories reported the soil sample to be "high" in available P and K even though Mehlich I and III were both used as extractants. More differences were found in the P recommendations for cotton at the very low level of availability than at any other level. Two of the four states recommended fertilizer K at the "high" level. Research results and personal experiences with soils and climates across the region are probably responsible for the differences in the recommendations that do exist.

Summary

Differences in fertilizer recommendations occur as a result of research experiences in respective states. Fertilizer recommendations with cotton

Reprinted from the Proceedings of the Beltwide Cotton Conference Volume 1:44-45 (2000) National Cotton Council, Memphis TN while different at very low levels of soil test P, differed little at other levels of soil test P and for K. Philosophical differences as to the need for replacement of nutrients removed in the crop on fertile soils may contribute to different recommendations.

Table 1. Soil test results and fertilizer recommendations for soybean and cotton

Lab	pН	Р	K	Cott	ton
		lbs/A		lbs. P ₂ 0 ₅	lbs K ₂ 0
А	4.5	94	300	20	100
В	5	97	353	30	30
С	4.7	56	256	30	60

All laboratories suggested the need for lime, ranging from 2 tons/A for Lab B to 4 tons/A for lab C.

Table 2. Recommended levels of P_2O_5 for cotton related to Bioavailable P.

T.11	VL ²	L	М	Н	VH			
Lab		lbs. P ₂ 0 ₅ /A						
А	60	60	30	0^{3}	0			
В	90	70	40	0	0			
С	120	80	40	0	0			
D	90	90	60	30	0			

1. State laboratories.

2. Very low (VL), Low (L), Medium (M), High (H), Very High (VH).

3. If 2 bale yield is attainable, then 30 lbs. P_2O_5/A should beapplied.

Table 3. Recommended levels of K_20 for cotton related to bioavailable K.

T . 1 1	VL^2	L	М	Н	VH			
Lab	lbs K ₂ 0/A							
А	90	90	60	30	0^{3}			
В	120	80	40	0	0			
С	120	90	60	40	0			
D	120	120	90	60	0			

1. State laboratories.

2. Very low (VL), Low (L), Medium (M), High (H), Very High (VH).

3. If 2 bale yield is attainable, then 30 lbs. K_20 should be applied.