Nutrient Tie Up

IOWA'S BIGGEST NUTRIENT PROBLEM IN THE HIGH CALCIUM AND MAGNESIUM SOILS IS POTASSIUM UPTAKE BY THE CORN PLANT. SOME CONTEND THEY CAN CHANGE THE PARENT MATERIAL BY ADDING SULFUR TO LEACH OUT THE MAGNESIUM.

OTHERS THINK THE SOLUTION IS TO INCREASE THE AMOUNT OF POTASSIUM IN THE SOIL SOLUTION. WHAT IS THE BEST METHOD, OR TIME, OF APPLICATION TO INCREASE UPTAKE OF POTASSIUM? CARE MUST BE TAKEN NOT TO BURN THE ROOTS WITH HIGH SALT CONTENT OR DESTROY SOIL LIFE. WHAT EFFECT DOES TILLAGE HAVE ON POTASSIUM UPTAKE?

DR. BLACKMER AND A GRADUATE STUDENT WILL BE WORKING ON P.F.I. CO-OPERATORS FARMS NEXT YEAR TO TRY TO SOLVE SOME OF THESE PROBLEMS. DON DAVIDSON'S HIGHER POTASSIUM RATES DID NOT INCREASE PLANT POTASSIUM OR INCREASE YIELDS. HOWEVER, HIS LEAF POTASSIUM PERCENT WAS 1.7, WHICH IS CLOSE TO THE IDEAL RANGE OF 1.75 TO 2.0%. HE CONDUCTED THIS EXPERIMENT TO CONVINCE HIMSELF (AND HIS NEIGHBORS) THAT ADDITIONAL POTASSIUM IS UNNECESSARY IN HIS FIELDS, CHART 19.

CHART -19-

1988: ADDITIONAL P AND K

SOYBEAN YIELDS BU./A.

(LIQUID) →	8+24+48	NONE	DIFF. FROM NONE	L.S.D. (05)	COST PER $ ACRE	C.V. %
DAVIDSON	33.22 (a)	34.02 (a)	-0.80	1.17	25.14	2.35

CORN YIELDS BU./A.

(LIQUID) →	N 116 P 47 K 56	N 108 P 23 K 8	DIFF FROM LOW	LSD (05)	ADDIT. COST $ ACRE	C.V. %
DAVIDSON	121.9 (a)	122.23 (a)	-0.33	3.18	25.14	1.76

P.F.I.