

## USE OF ALTERNATIVE FERTILIZER SOURCES IN MARGINAL LANDS OF TROPICAL AMERICA

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C I A T

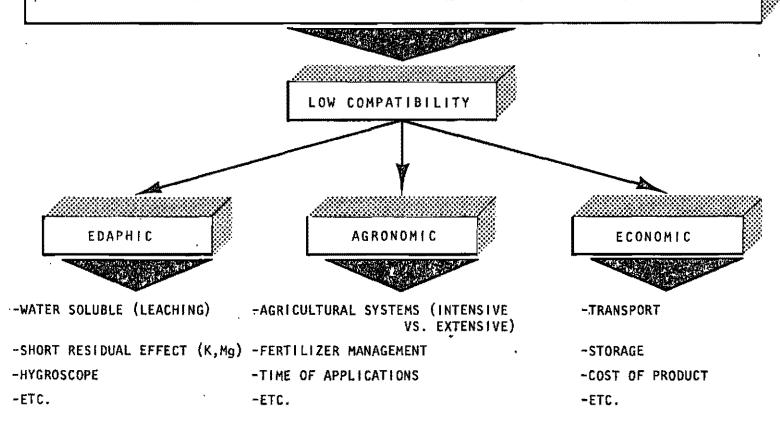


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#### OBJECTIVES

- TO EVALUATE IN ACID SOILS (pH<5.5) THE RELATIVE MERIT
  OF LOW SOLUBILITY. LESS COSTLY SOURCES OF K, Mg AND S
  SUCH AS K-FELDSPARS, Mg-SERPENTINE OR CARBONATES AND
  GYPSUM OR ELEMENTAL SULFUR.</li>
- 2. TO DETERMINE THE MOST APPROPRIATE COMBINATIONS OF
  RATES AND PLACEMENT METHODS IN TERMS OF INITIAL AND
  RESIDUAL EFFECTS ON TROPICAL PASTURES (FOOD CROPS).

### ACTUAL FERTILIZER TECHNOLOGY VS. AGRICULTURAL TECHNOLOGY FOR MARGINAL LANDS



### FERTILIZER PRODUCTION AND CONSUMPTION IN SEVERAL COUNTRIES OF TROPICAL AMERICA DURING 1980/81. (THOUSAND METRIC TON: N-P-K)

Country	N		P		K	
	Production	Consumption	Production	Consumption	Production	Consumption
BRAZIL	384	906	708	867	0	1089
COLOMBIA	42	152	20	33	0	63
ECUADOR	2	41	3	6	0	15
PERU	, . 74	82	0,5	7	0	9
VENEZUELA	145	113	10	34	0	42

SOURCE: FAO, Fertilizer Yearbook, 1982.

TYPICAL MINERAL COMPOSITION OF K-FELDSPAR ROCKS FROM HUILA, COLOMBIA

MINERAL COMPOUND	CONTENT	(%)
SiO <sub>2</sub>	72.63	
A1 <sub>2</sub> 0 <sub>3</sub>	15.69	
Fe <sub>2</sub> 0 <sub>3</sub>	0.21	
TiO <sub>2</sub>	0.14	
P <sub>2</sub> O <sub>5</sub>	0.26	
CaO -	. 0.78	
MgO	0.42	
MnO	0.01	
Na <sub>2</sub> 0	1.78	
K <sub>2</sub> 0	7.61	
SO <sub>3</sub>	0.47	
K-FELDSPAR (K20.A1203. 6 SIO2)	45.01%	
Na-FELDSPAR (Na <sub>2</sub> 0. Al <sub>2</sub> 0 <sub>3</sub> . 6 SiO <sub>2</sub> )	15.05%	

# BY THE YIELD OF Brachiaria decumbers GROWN IN A CARIMAGUA OXISOL AT THE GREENHOUSE

Potassium Source	Ро	(Kg K/ha eq.)	)	
	10	20	40	80
	(7.6)	(7.8)	(7.7)	(8.6)
KC1*	100a	100a	100a	100a
Algeciras 1	64c	91a	91a	97a
Rio Blanco	95a	87ь	95a	107a
Algeciras 2	90a	90a	96a	77b
Ospina	101a	85ь	95a	87ь
Hobo	86ь	87ь	80ь	94a



<sup>\*</sup> Yields of the KCl treatments are assumed 100% at each K rate; numbers in parentheses are yields in g/pot.

Control: (4.0)



### ALTERNATIVE SOURCES OF NUTRIENTS FOR ACID, INFERTILE OXISOLS AND ULTISOLS IN MARGINAL LANDS OF TROPICAL AMERICA

- DO NOT NECESSARILY INVOLVE REDUCED QUANTITIES OF FERTILIZERS, BUT DO INVOLVE FERTILIZER WITH REDUCED COST.
- DO INVOLVE USE OF INDIGENOUS RATHER THAN IMPORTED INPUTS.
- DO INVOLVE UTILIZATION OF RESIDUALLY AVAILABLE NUTRIENTS FOR LONG TERM MAINTENANCE OF PASTURES AND/OR CROPS.

### RESEARCH PRIORITIES

### MINERALOGICAL STUDIES:

- DESCRIPTION AND DETERMINATION OF MINERAL COMPOSITION OF THE ROCKS
- NUTRIENT RELEASE RATES
- MINERAL DIGESTIBILITY
- THERMAL TRANSFORMATIONS
- NUTRIENT CONCENTRATION PROCESSES
- ETC.

#### RESEARCH PRIORITIES

### AGRONOMIC STUDIES:

- AGRONOMIC POTENTIAL OF INDIGENOUS K, Mg AND S RESOURCES IN TROPICAL AMERICA
- AGRONOMIC EFFECTIVENESS OF K, Mg AND S SOURCES AS INFLUENCED BY CROP/SOIL PROPERTIES
- EFFECTS OF PHYSICAL (GRANULAR SIZES) AND CHEMICAL MODIFICATIONS
  TO THE INDIGENOUS FERTILIZER SOURCES ON THEIR AGRONOMIC
  POTENTIAL
- COMBINATIONS OF RATES AND PLACEMENT METHODS IN TERMS OF
  INITIAL AND RESIDUAL EFFECTS AS INFLUENCED BY CROP/SOIL PROPERTIES