



Empresa Brasileira de Pesquisa Agropecuária - EMBRAPA  
Vinculada ao Ministério da Agricultura  
Centro de Pesquisa Agropecuária do Trópico Úmido - CPATU



**1º Simpósio  
do Trópico Úmido**

**1<sup>st</sup> Symposium  
on the Humid Tropics**

**1º Simpósio  
del Trópico Humedo**

**RESUMOS  
ABSTRACT  
RESUMEN**

223

Resumós...

1984

PC-2005.00223



30559-1

m, PA

84



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**1.º SIMPÓSIO DO TRÓPICO ÚMIDO**  
Belém, PA, 12 a 17 de novembro de 1984

# **R E S U M O S**

Belém, PA  
1984

**Embrapa**

Unidade: AT. Se. de  
Valor aquisição: \_\_\_\_\_  
Data aquisição: \_\_\_\_\_  
N.º N. Fiscal/Fatura: \_\_\_\_\_  
Forma de: \_\_\_\_\_  
N.º OCS: \_\_\_\_\_  
Origem: Doação  
N.º Registro: 0223/05

EMBRAPA-CPATU. Documentos, 31

Exemplares desta publicação podem ser solicitados à:  
EMBRAPA-CPATU

Trav. Dr. Enéas Pinheiro s/nº

Caixa Postal, 48

66000. Belém, PA.

Telex: (091) 1210

Simpósio do Trópico Úmido, 1, Belém, PA, 1984.  
Resumos. Belém, EMBRAPA-CPATU, 1984.  
474p. (EMBRAPA-CPATU. Documentos. 31).

1. Agricultura — Congresso — Trópico. I.  
Empresa Brasileira de Pesquisa Agropecuária. Cen-  
tro de Pesquisa Agropecuária do Trópico Úmido  
Belém, PA. II. Título. III. Série.

CDD: 630.601

SOIL SAMPLING FOR ESTIMATION OF MICRONUTRIENT  
AVAILABILITY AND PHYSICO-CHEMICAL PROPERTIES OF A  
REPRESENTATIVE SOIL TYPE OF MARAJÓ ISLAND, PARÁ

Ramendra Singh<sup>1</sup>, Waldemar de Almeida Ferreira<sup>1</sup>  
e José Ferreira Teixeira Neto<sup>1</sup>

A study was carried out to determine the number of core samples required to make a composite sample for a given area to estimate micronutrient availability and physico-chemical properties of a representative soil type viz. Ground Water Laterite (having sandy surface and clayey subsoil, poor drainage and periodic flooding and level slope) of Marajó Island. Fifty two core samples (0 - 20 cm) were taken at random from 1 ha area under native pasture at the rate of 13 samples per block of 0.25 ha. The C.V. for the available Zn, Cu, Mn and Fe extracted by 0.005M DTPA (pH 7.3) varied from 40.5 to 51.8% with the sequence of the nutrients for it being: Cu > Mn > Fe > Zn. A confidence limit 30% of the mean value of different soil characteristics was used to determine the number of core samples required to make a composite sample. In the case of micronutrients it was found that 7, 9, 11 and 13 core samples were needed to prepare a composite sample to estimate the availability of Zn, Fe, Mn and Cu respectively.

Estimation of soil pH (H<sub>2</sub>O) required only one representative soil core sample.

To estimate macronutrient fertility, while total N and available P (Mehlich 1) required 3 core samples, organic carbon required 5 to make a composite sample. In the case of available K extracted by Mehlich 1, C.V. was found to be 123.8%, the highest for any soil characteristic and thus required 69 core samples for making a composite sample.

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<sup>1</sup> EMBRAPA-CPATU. Caixa Postal 48. CEP 66000. Belém, PA, Brasil.

For determination of effective C.E.C., exchangeable  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Na}^+$ ,  $\text{H}^+$  and  $\text{Al}^{3+}$  could be analysed from a composite sample made respectively from 13, 12, 4, 3 and 2 core samples.

Soil texture could be defined from the analysis of soil separates of a composite sample prepared from a minimum of 6 core samples as in the case of silt, C.V. (37.6%) was much higher than that for sand or clay.

In general, it was concluded that for the soil studied under the given field conditions, a good estimation of available micronutrients, macronutrients and other physico-chemical properties required a composite sample prepared from at least 15 core samples per hectare. The only exception to this was found to be available k.