

## SURVEY OF MICRONUTRIENTS IN SASKATCHEWAN SOILS

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During 1966 and 1967 soil and plant samples (at different growth stages) were taken from twenty-six of the cereal variety trials throughout Saskatchewan. The plants were dried and analysed and the soils were characterized in an attempt to obtain information on the micronutrients Copper, Zinc, Manganese and Iron and to develop analytical tests that could be used to predict micronutrient deficiencies. It is hoped that methods presently being developed will allow the chemical characteristics of soil associations (which are determined on a routine basis on soil survey) to be used in predicting deficiencies. For instance, the amount of copper in the 0-6" depth of soil that may be extracted by an  $\text{EDTA}-(\text{NH}_4)_2\text{CO}_3$  extractant was related to the soil properties by the following formula:

$$\begin{aligned} \text{EDTA Cu (0-6")} &= -32 + 0.1 \% \text{ Fine Clay} - 0.4 \% \text{ Organic C} \\ &+ 0.62 \text{ pH. } (r^2 \times 100 = 79.64 \quad \text{Probability of F} = 0.00005) \end{aligned}$$

The amount of copper in dried plant material gave a high correlation coefficient with the amount in the EDTA extract (0-6" and 0-12"). These chemical extractants could be used with other soil properties to predict the amount of copper in the dried plant material harvested at 4-5 weeks. eg.  $\text{Plant Cu} = -9.28 + 0.471 \text{ EDTA Cu} + 1.988 \text{ pH} + 0.099 \text{ Fine Clay}$  ( $r^2 \times 100 = 64.95$  Probability of  $F = 0.00088$ ).

The results of this investigation will be discussed along with some background data obtained from small test plots.