

POSTER SUMMARY**EVALUATION OF THE AVAILABLE AND RESERVE POOLS OF SOIL MICRONUTRIENTS
IN THE ZIMBABWE SUGAR INDUSTRY****Siyakisa FM¹, Rambwawasvika H² and Mutatu W²**

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Abstract

Although they are required in trace quantities, micronutrient deficiencies can result in a significant yield reduction. Anecdotes of micronutrient deficiencies have been reported in some soils of the Zimbabwe Sugar Industry (ZSI), which has prompted the need to investigate the soil properties that are likely to suffer deficiencies. A total of 342 soil samples were collected across the ZSI and analysed for the available and reserve fractions of copper (Cu), iron (Fe), manganese (Mn) and zinc (Zn), as well as their physicochemical properties, such as texture, pH, Organic Matter (OM), phosphorus content and Electrical Conductivity (EC). The micronutrient reserve pools were always higher than the available fractions in the soils of all textural classes. The available fractions of all micronutrients increased with an increase in the clay content and OM. There was a weak negative correlation between the soil pH and the availability of micronutrients, copper and zinc. All the soil textural classes had copper above the critical concentration, except the sand-loam (SaL) from Mwenezana, where 1% of the samples were below the threshold of 0.8 ppm. Overall, 40% of the samples used in the study had a zinc deficiency, with Mkwesine recording 49% of its samples below the critical threshold, followed by the Hippo Valley, Mkwesine, Triangle and the ZSAES, with 48%, 40%, 33% and 16%, respectively. There was a weak, but significant, negative correlation between the available phosphorus and zinc content in the soil. Sugarcane farmers in the ZSI should consider zinc supplementation, to compensate for the deficiencies in some of the fields.

Keywords: micronutrients, available, total, reserve, deficiencies, physicochemical, critical concentration