

Mitigation of Zinc Deficiency in Ethiopia: How Can Zinc Uptake by Tef (*Eragrostis tef*) Grown on Vertisols Be Increased?

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In Ethiopia, Zn deficiency is commonly observed in crops, animals and humans. The deficiencies in humans are expressed in a number of symptoms such as hair loss, nail deformation, diarrhea, and mental retardation. Among the cultivated crops, tef (*Eragrostis tef* (Zucc.) Trotter) grain and straw are major sources of Zn for local animal and human populations. Tef occupies 31% of the cultivated land and is a staple food for 70 million people. Tef also accounts for 27% of crop residues for animal feed. It is ecologically well adapted to the widespread vertisols in Ethiopia. The extent of Zn deficiency problems in vertisols of Ethiopia is not known.

Therefore, the aim of the project is to survey vertisols and tef that is grown on vertisols, and to increase the understanding of Zn bioavailability to tef in these soils. The project is anticipating to examine Zn speciation and bioavailability in a range of vertisols under different conditions using advanced chemical speciation techniques and geochemical modelling. It will examine the variation of different tef varieties in Zn uptake to better understand the mechanisms of soil-water-plant relationships affecting Zn uptake in specific soil – root – plant experiments.

The findings of this project will be integrated in a decision-support tool that should help farmers with management options to increase Zn uptake in tef. The findings will hopefully help establishing a continuous supply of Zn to humans and livestock in Ethiopia to maintain adequate health and growth.