

DISTRIBUTION AND ACCUMULATION OF SELECTED HEAVY METALS IN TEA PLANT

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirements for the award of
Bachelor of Science in Tea Technology and Value Addition

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2014

ABSTRACT

Tea (*Camellia sinensis* (L.) O. Kuntze) is the mostly consumed beverage in the world after the water. And with the increasing of consumption of tea, the concern about quality and food safety parameters have been specified by the different food related organizations all over the world. Among them, contamination of tea from heavy metals is being a critical issue in present scenario.

Hence, this experiment was carried out to investigate the responses of tea plant for Pb, Zn and Cu and to identify how they are being translocated throughout the plant. Research design was Complete Randomized Design and Control, Glyphosate and heavy metal mixture were the treatments. The concentrations of Zn, Cu and Pb were determined in the shoots, mature leaves, stem, mature roots and feeder roots. Plant tissues were digested using wet digestion procedure and heavy metals were determined using Atomic Absorption Spectroscopy.

The result revealed that distribution pattern is almost equal for Zn, Cu and Pb within tea plant. Most of heavy metals were accumulated in the feeder roots and stem. Mature roots, mature leaves and shoots shown accumulation in descending order. And there was a significant difference of treatments on accumulation of heavy metals in different parts of tea plants. This difference was between the heavy metal mixture and other treatments. Concentration of Zn, Cu and Pb were almost same in control and Glyphosate in each part of tea plant. The heavy metal ratio between shoots and roots (Translocation Factor) was calculated for each metal and treatments. TF values in heavy metal mixture were lower than the control TF values for Zn, Cu and Pb. The highest TF values were given by the Glyphosate treatment.

This implies that tea plant prevent heavy metals being transferred to the above ground part. Feeder roots and stems were the main channels of Zn, Cu and Pb transmission in tea plants, and also the main accumulation parts.

Key words: Heavy metal, Zn, Cu, Pb, Translocation Factor