



Effects of agroecological practices on nutrient contents in bean and maize grains, in South Kivu (DR Congo)

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ABSTRACT

Objective: The strategies for improving crop quality include improving micronutrients availability. The objective of this study was to evaluate the effect of the agroecological practice consisting of a mixture of leguminous shrubs, grasses, and *Mucuna pruriens* cover crop on nutrient contents in maize and bean grains in different sites.

Methodology and Results: The experiments were carried out on two degraded sites using a split-plot design, with the main plot treatment consisting of agricultural practices. These practices consisting of planting mucuna cover crop, grasses and shrubs. The common practices of burning crop residues and weeds by resource-poor farmers served as control treatments. They were subdivided into four subplots, each corresponding to one variety of beans intercropped with three varieties of maize. The agroecological treatment improved micronutrient contents in both beans and maize grains compared to the common practices at both sites. This practice improved the iron of 14.5 % (69.7 mg/kg against 63.8 mg/kg) and zinc of 26.0 % (42.6 mg/kg against 33.8 mg/kg) content in bean grains. Similarly, for maize, an increase of 7.0 % (18.4 mg/kg against 17.2 mg/kg) for iron and 0.5 % (21.7 mg/kg against 21.6 mg/kg) for zinc was observed in maize grains harvested in the plots with the agroecological practice. In addition, the micronutrient content varied with the site. Zinc content in bean grains was significantly higher in Mulungu (46.6 mg/kg) compared to Mushinga (33.8 mg/kg).

Conclusion and application of results: Micronutrient contents in the grain beans and maize were enhanced with agroecological practices. The application of this practice in the condition similar to those of these trials could contribute to reducing the rate of malnutrition because of the performance of this practice in improving micronutrient contents in harvest products, especially in maize-bean cropping system.

Keywords: Agroecology, biofortified crops, burning, improved fallow, cove crop, micronutrient.