EFFECT OF LONG TERM APPLICATION OF ANIMAL MANURE ON POLLUTION IN UP COUNTRY CULTIVATED SOIL

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The study was conducted at Nuwara Eliya and Marasssana. Lands with five years continuous application of animal manure in Nuwara Eliya and lands free from applied animal manure in Marassana were selected. Soil samples were taken from both sites randomly at depth 20cm. Vegetable samples were taken from each site for analysis. Soil samples were used to measure soil pH, organic carbon, phosphorus and heavy metals (AOAC, 1995). The experiment was conducted in a partially imbalance incomplete block design. Data were analyzed by using SAS package. The treatment means were compared using LS means ($p=0.05$). Relationship between soil pH and organic carbon analysis were done using simple linear regression.

Out of the five heavy metals tested (Zn, Mn, Fe, Cu, Cd) only three metals (Zn, Mn, Fe) were found in soil and manure at detectable level. In soil Zn, Fe contents did not change significantly between the sites and manure application. However Mn content, varied significantly between sites. Phosphorus content of the soil was significantly affected by both site and manure application. Soil organic carbon and soil pH showed no significant affect on accumulation of Zn and Mn. However, there was a significant effect of organic carbon accumulation of P in soil. Soil pH had significant effect on the accumulation of Fe ($P>0.05$). In vegetable, there was no significant effect of Zn content within vegetable type, manure type and manure application.

The application of animal manure containing heavy metals (Poultry and Cattle) did not show accumulation of heavy metals in soil and vegetables. There is a significant effect on soil P status by application of both poultry and cattle manure.