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Response of Home Garden Crops to Organic Amendments in Different Soils of Kakamega District, Western Kenya

ANNE NJERI KARANJA, MATHIAS BECKER, FRANK MUSSGNUG

University of Bonn, Institute of Crop Science and Resource Conservation, Germany

Abstract

Continuous cropping without external input use or the replenishment of exported soil nutrients has contributed to a low and declining productivity of farms in Kakamega district of western Kenya. The extent of soil degradation and its implications on productivity vary with soil type, which is comprised of clay Ultisols with P deficiency in the South, sandy Alfisols with N deficiency in the North, and potentially productive Nitisols in the Center of the district as well as suitable crop selection. Mineral fertilisers can partially overcome the soil-related constraints, but are rarely applied due to financial constraints of the farmers and are often unavailable. Alternatively, farmers can opt for on-farm available organic sources of nutrients, such as farmyard manure, leaves of *Tithonia diversifolia* and since recently biogas sludge compost. Such organic amendments are valuable and hence primarily applied to the higher value crops in the home gardens. These organic amendments were applied at the rate of 100 kg N ha⁻¹ on the three soil types, and the response of four home garden crops - *Phaseolus vulgaris*, *Vigna unguiculata*, *Brassica oleracea* and *Amaranthus* sp to each soil-amendment combination was observed for a period of three months for biomass accumulation and yields. Soil samples were collected at monthly intervals for the analysis of the nitrogen mineralisation rate. The decomposition rate of the three organic amendments was determined using the litterbag method. This poster presents the site-and crop-specific suitability of each organic amendment by linking it to Nitrogen mineralisation dynamics and decomposition rates of the three organic amendments.

Keywords: Low soil productivity, N-mineralisation dynamics, organic decomposition