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Cultivation of Yam (*Dioscorea spp.*) and Soil Fertility Aspects in the Kpalimé Region, Togo

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Abstract

As in many parts of West Africa, yam (*Dioscorea spp.*) is a very important staple food crop in the Kpalimé region of Togo, situated 250 m above sea level with an average temperature of 25°C and 1500 mm rainfall from March until November. As yam has high demands concerning humidity, temperature, and soil fertility (pH, structure, nutrients), its cultivation by farmers can serve as an indicator for high soil fertility.

The aim of our investigation was to describe farmers' possibilities to overcome the decline in soil fertility which takes place due to a growing population and therefore shorter time of fallow period in the shifting cultivation system. Therefore yam growing farmers in the region of Kpalimé were interviewed concerning their methods of growing yam as to rotation, field preparation, cultivation, harvest, and nutrient balances (plant residues and fertiliser application). On the same farms soil samples were taken and analysed concerning texture, organic matter (C, N), pH, and plant available nutrients. Our results show that in the Kpalimé region, after clearing by slash and burn, yam is cultivated only in the first year. The fields are not fertilized, as farmers can not afford fertilisers and fertiliser transport is difficult. Soil analyses showed that the content of organic matter is medium (2.2–3.1%), but that these (loamy) soils are too acid (pH (0.01 m calciumchloride) 4.1–5.6) and their contents of plant available P (0.7–1.5 mg P-CAL/100 g) and ammoniumacetate exchangeable K (0.16–0.29 cmol(+)/kg) are too low for high yields.

To ameliorate soil fertility in the yam fields of Kpalimé, it is recommended to fertilise, e.g. with organic fertilisers (farmyard manure, compost etc.), in order to apply P and K and other nutrients; to replace natural fallow by controlled green fallow with legumes and to intensify legume cultivation; and to incorporate plant residues into the soil instead of burning them in order to avoid losses of organic matter with C, N and S.

Keywords: Soil fertility, Togo, yam