University of Hohenheim

Faculty of Agricultural Sciences

Institute for Soil Science and Land Evaluation

Prof. Dr. Thilo Rennert

Participative terrain mapping as basis for scientific field trials relating to food security in Ilolo, Tanzania

Bachelor Thesis

Ottilie Gebhardt

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7 Summary

In Central Tanzania farmers have to deal with frequent droughts, soil degradation and little access to fertilizers and high quality seeds. In regard to the climate change the existing problems will get more severe.

The research, done in the frame of the Trans-SEC project, is intended to contribute to increased food security in Tanzania. The aim of this study is to develop a local soil map which should serve as a basis for choosing sites for further investigation on the question how crop production can be done more effectively in the area. The creation of the soil map was done with the participation of local farmers in order to benefit from the local knowledge of the farmers who know their soils best. The apparent root zone of described reference profiles were analyzed according to soil texture, soil reaction, electrical conductivity and fertility status. On the basis of these results and the field description of the reference profiles the suitability of the sites for the cultivation of sunflowers as cash crop and pigeon pea as valuable protein plant for human nutrition and green manure was evaluated. Gamma ray measurements of potassium were taken and correlated with potassium values analyzed in laboratory with the Bray method to detect if it is possible to define the amount of plant available potassium out of gammaray measurements of potassium.

No correlation detected. In regard to the suitability of the soils for pigeon pea and sunflower cultivation, pigeon pea potentially grows best on Kichanga, Mfinyanzi and Tifutifu soil types. According to Sys et al. (1993) the Kichanga, Ikanganyika, the soil of the fifth profile and the Tifutifu soil type are marginally suitable for sunflower cultivation. The remaining soil types are unsuitable. Some unsuitable soils can be turned into suitable cultivation areas as the unsuitable Mfinyanzi soil type can be limed to rise the low pH. If the two crops are grown together, the legume pigeon pea could compensate the lack of plant available nitrogen for the sunflower.

To get good results in participatory conducted studies about soils it is recommended to crosscheck gained information, to ask a lot of different people about soils and to observe the different soil types on the site together with local farmers. Moreover, it is recommended to do the correlation of gammaray and laboratory results for potassium with more values in order to get a more precise result.