

# Stakeholders' Knowledge Levels and Training in Soil Fertility Management Technologies in the Central Highlands of Kenya

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## **Abstract:**

Soil nutrient depletion has been recognized as one of the major biophysical constraints affecting agricultural production in Sub Saharan Africa. Despite many researches that have developed various soil fertility management options, few of the recommendations from these researches have been put into use by the targeted end users. This has been associated with low levels of knowledge and understanding about these technologies among the stakeholders. The objective of the study was therefore to identify and understand the knowledge levels among various stakeholders as well as identify training requirements of the farmers and extension agents for effective and enhanced uptake and utilization of these technologies in the central highlands of Kenya. The study was carried out in Meru South, Maara and Mbeere South districts. Five focus group discussions were conducted in every district to complement data collected through questionnaires. To determine the socioeconomic factors influencing farmers' levels of knowledge, individual household interviews were conducted from 300 randomly selected farmers. Structured questionnaires were used to collect information from 55 extension agents from the study area. Data was analyzed using descriptive statistics. Chi-square and ANOVA were used to test the magnitude of the association between dependent and independent variables. Logit regression was used to predict the demographic factors influencing the farmers' levels of knowledge in manure, fertilizers and manure + fertilizers in the study area using statistical package for social sciences (SPSS) programme version 12.0. Results showed that, 75% of the respondents in the study area had high levels of knowledge in use of animal manure. In the use of inorganic fertilizers, 73% of the respondents had high levels of knowledge. However, with regard to the use of manure + fertilizers, 43% of the respondents had moderate levels of knowledge. The use of soil fertility technologies in the study area increased with an increase in levels of knowledge. Logit regression model identified age of the household head ( $r=0.028$ ), training in the use of animal manure ( $r=0.509$ ) and group membership ( $r=0.304$ ) as possible predictor factors likely to influence the household levels of knowledge in use of animal manure at  $P<0.05$ . On knowledge in the use of fertilizers, group membership ( $r=0.364$ ), age of the household head (HHH) ( $r=-0.084$ ) and total farm size ( $r=-0.138$ ) were identified as possible predictor factors likely to influence the household levels of knowledge in inorganic fertilizers at  $P<0.05$ . With regard to the use of manure + fertilizers, Logit regression identified gender of the HHH ( $r=-0.713$ ), household size ( $r=0.100$ ), training on manure + fertilizers ( $r=0.598$ ), group membership ( $r=0.254$ ) and total farm size ( $r=-0.122$ ) as possible predictor factors likely to influence the household levels of knowledge in manure + fertilizers at  $P<0.05$ . The priority training need for farmers in the study area was soil testing (mean of 4.4) while for the extension agents was the use of animal manure + fertilizers (mean of 4.6). The most preferred training methods by the farmers were field days and on-farm demonstrations while the extension agents preferred on-farm demonstrations. These results imply that there is need for regular farmers' training based on their identified training needs. The findings provide a guide to the policy makers in designing capacity building modules and materials targeted at different stakeholders, thereby increasing stakeholders' levels of knowledge and adoption levels of the soil fertility management technologies. This is envisaged to lead to increased crop production and reduction of extreme poverty.