Abstract

A total of 74 farms were selected from Machakos, Mwingi and Makueni districts in Kenya, using participatory techniques and classified in three categories on the basis of soil fertility management (low level, medium and high level). Soil fertility management was monitored, using the NUTrient MONitoring methodology, which appears a suitable and appropriate tool for the diagnostic phase of Farming System Analysis and Design in Arid and Semi-Arid Lands of Kenya. The participatory inventory and monitoring procedures applied, involving the farmers in the analysis of their own situation, forced the farmers to think about the processes and flows associated with the nutrient balances and the associated consequences for the quality of their soil resource base. Farmers' performance during the feedback, through farmers' workshops, of the results of soil analyses and the discussion on possible solutions for the identified problems, creates confidence that in the participatory learning and action phase, farmers will be equally involved and willing to adopt suggested adaptations. The first results of the quantitative analyses of nutrient balances at farm level show that farm balances for NPK are negative. This is in agreement with earlier work in the high-potential areas of Kenya and elsewhere in East Africa, as well as those from semi-arid regions in West Africa. It has been shown that client characterisation, as an emerging component of a research approach towards design of sustainable agricultural production systems, helps in identifying major potential recommendation domains and related research and development problems and opportunities, and potential interventions on which to focus the research agenda.