

Engaging Communities in soil fertility management for Sustainable Agricultural Production: Case studies from Kakamega and Nakuru districts

Abstract

By

F.N. Wegulo, and P. Wandahwa, W. A. Shivoga, I. Tabu, N.Muhia.

Egerton University

P.O. Box 536, Egerton, Kenya

Universities and other institutions of higher learning in Africa have been accused of not responding as they should, to challenges confronting the continent. These include the escalating poverty, food scarcities, the compounding environmental degradation, diseases, among others. Pedagogies are discipline based and stress intellectual pursuits at the expense of problem solving; the research agenda is equally irrelevant. Efforts to reverse this trend through engaging local communities in participatory research and learning are urgently required in the face of increasing demand for sustainable development. This paper presents preliminary results on an on-going project that is working closely with local communities with a view to empower them to mitigate soil fertility decline in two districts – Kakamega and Nakuru, Kenya. Sustainable agricultural production demands that soils are managed by preventing erosion and replenishing the nutrients. The project is conceived as a partnership between an interdisciplinary team of university based researchers, local communities (read farmers) Ministry of Agriculture extension officers, Kenya Agricultural Research Institute researchers and CBOs/NGOs operating in the two study areas. Participatory Action Research has been used in several stages of the project including soil fertility diagnosis, farmer perception of soil fertility, and capacity building of the participating farmers. The project has so far worked with a small number of nuclear farmers in both study district in phase one, but will soon be up scaled to cover over 200 others in phase two. Preliminary results indicate that farmers are aware of the declining soil fertility which they describe in qualitative terms based on observations made on crops, soils and farm weeds. Soil analysis reveals that in Kakamega, soils are strongly acidic ($\text{pH} < 5.5$), have low organic carbon ($< 0.2\%$), high bulk density, more sandy in texture and low basic cations than those in Nakuru district. While soils in Kakamega are deficient in nitrogen and phosphorus, those in Nakuru are sufficient in most plant nutrients except phosphorus. Efforts made by farmers to address the declining fertility include among others the use of inorganic fertilizers, manure and terracing. However, poor utilization of inorganic fertilizers in both amounts and types is evident. Moreover, the manure used and terraces constructed are of poor quality. These weaknesses and shortcomings form the basis for current interventions - empowering efforts that focus on provision of the required knowledge and skills by the farmers. Preliminary findings underscore the essence of developing and utilizing synergies between and among experts, local communities, and other stakeholders towards realizing the goal of sustainable agricultural development.

Key words: Sustainable agriculture, farmer empowerment, participatory action learning, soil fertility perception, soil management, participatory action research, University-Community Partnerships.