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Managing soil fertility in Africa – why, where, how, and by whom?

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Abstract

Why?

There is growing evidence that soil fertility in Africa is declining, as nutrients taken up by harvested crops are not sufficiently replenished by inputs. Reasons for concern are manifold and include crop yield stagnation, looming scarcity of finite nutrients such as phosphorus, declining topsoil carbon stocks, and perhaps the key question: how reversible and costly is this decline? At the same time, population growth in Africa implies a growing food market and opportunities for agriculture to thrive.

Where?

Major differences in soil fertility levels exist in Africa requiring customized management approaches. Fragile sandy soils in the Sahel produce less than the deep red clay soils on the volcanic Rift Valley slopes. Next levels of relevance are toposequence and heterogeneity management, often related to cherishing plots with high value crops. Manure management is an important element. Meanwhile, the more fertile farms in Africa become smaller all the time, gradually falling below household food security levels.

How?

It has become increasingly clear that a combination of organic and mineral fertiliser gives the highest return on investment. The current regenerative agriculture debate turns this too much into an ‘either-or’ issue. It is necessary to better know soil nutrient levels and crop needs to maximise nutrient use efficiency. Plant analysis should play a more prominent role here. Also a broader Genotype * Environment * Management approach is needed for effective soil fertility strategies. Larger system changes may come into the picture (e.g., cluster farming), but will meet with loss of employment.

By whom?

Producers, policy makers and private sector interaction is the (not so surprising) answer. The 2024 Africa Fertiliser and Soil Health Summit delivered promises on implementation at national level. The private sector should now see that agriculture in Africa is a growth market. Farmers should be encouraged with knowledge, local business development, and digital tools to keep young people interested. Meanwhile, a lot goes on including large programmes on soil fertility improvement funded by Germany (ProSoil, Soil Matters) and The Netherlands (Soil Values, TRANSFORM, managed by IFDC).

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