

GUIDING ACID SOIL MANAGEMENT INVESTMENTS IN AFRICA

Locations	Ethiopia, Kenya, Rwanda, Tanzania
Dates	01/01/2021 - 31/12/2023

Summary

The effects of soil acidity on agricultural soils in Africa are a major constraint to crop production and sustainable intensification of the African smallholder farming system. To cope, the existing method is to apply blanket or spatially undifferentiated approaches including the use of lime. This project aims to devise interventions to rehabilitate soils in East Africa by understanding and communicating the differences in soil acidity and how to cost-effectively correct them. Based on data, recommendations will guide investments into appropriate and targeted approaches from the public and private sector, ensuring a maximum return on investment for farmers, governments and the private sector. In this project, CABI's focus is on enhancing access to, and use of, data related to acid soil management including soil and agronomy data which would lead to evidence-based decisions for investments.

The problem

Fifteen percent of all agricultural soils in Africa are affected by acidity issues. Soil acidity causes land degradation. It decreases the availability of plant and essential nutrients, increases the impact of toxic elements and decreases plant production and water use, affecting essential soil biological functions such as

nitrogen fixation. Therefore, making soil more vulnerable to soil structure decline and erosion.

These issues are major constraints impacting the sustainable intensification of the African smallholder farming system, in particular, current and future crop production.

Currently, the response to soil acidity is the application of blanket or spatially undifferentiated approaches (e.g. the products used and rates applied). This often involves the use of lime even when the cause of soil acidity may not respond to liming of the soil.

To help restore acidic soils, efforts are being made by sectors through rehabilitation investments. But, in order to maximize the return on these investments, there is a need for further data-driven evaluation and targeting from farmers, the private sector and governments.

The project, Guiding Acid Soil Management Investments in Africa (GAIA), proposes to guide these investments using existing data, such as geospatial datasets, secondary agronomic data and infrastructural data, alongside additional project-generated empirical data through an integrated approach.

Given the application of agricultural lime is the main solution to tackling acid soils, increased depth and utility of data and evidence related to acid soil management in the region is needed.

Once data is collated and used effectively, products can be created. These outputs provide a critical motivation for governments to build a conducive environment for the lime sector to increase its investment in the region, leading to increased adoption of lime by farmers and other options for acid soil management in East Africa.

What we are doing

For CABI, the aim of the project is to enhance access to data, and the use of it, related to acid soil management to enable evidence-based decision-making by governments, the private sector and the agricultural advisory sector.

Building on past and ongoing projects where CABI has built an understanding of soil data sharing policy and practice in Ethiopia and Rwanda since 2018, GAIA focuses on Tanzania but will also include a component of policy and practice engagement in Ethiopia and Rwanda.

CABI will lead the work to support the implementation and operationalization of national data sharing policies including:

- **Landscaping and situational analysis of data sharing in Tanzania:** an assessment of the current data landscape around soils and agronomy in Tanzania, consolidating and building relationships with key stakeholders, moving to construct an understanding of cultural, institutional and technical barriers to data access, management and sharing
- **Building an enabling environment in Tanzania for data sharing:** centered on the development of processes and capability, with those in-country, to instigate some of the behaviour changes that will be required for effective data sharing as identified in the situational analysis
- **Consolidation of policy and practice engagement in Ethiopia and Rwanda for GAIA:** drawing upon experience obtained through CABI and Overseas Development Institute (ODI) engagement in other Bill & Melinda Gates Foundation-funded soil system programmes and national system engagements, particularly in Ethiopia.

CABI will identify stakeholder needs and assess the ability and appetite for digital and non-digital sources of information on acid soil management. This work will support work with third parties to translate project outputs into a range of knowledge products including extension materials for farmers, investment plans for governments, business intelligence, dashboards to guide farmers, the liming and fertilizer industry and governments to help guide decision making.

The knowledge products will seek to guide policy interventions and investments in acid soil management, boost awareness of the need for acid soil management and support practitioners in making informed decisions on acid soil remediation.

Results so far

To date, CABI has identified the key organizations and individuals to engage with and coordinated desk reviews of existing country documentation related to acid soil management and relevant national data perspectives. We have also mapped the current flow of data within the national system relevant to GAIA, focusing specifically on barriers, and worked with stakeholders to understand a future vision for how data flow within any anticipated national soil acidity management data system will improve decision-making.

Key data assets of strategic importance have been identified together with key policy documents and perspectives of relevance to GAIA (mainly country policies through the Ministry of Agriculture and Tanzania Agricultural Research Institute (TARI) and beyond.

Challenges and barriers to data sharing and identifying opportunities to overcome these barriers have been documented and recommendations for short, medium- and long-term interventions have been made.

Donors CIMMYT

Partners Tanzania Agricultural Research Institute, The Southern Agricultural Growth Corridor of Tanzania

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