



Scaling soil health and fertilizer management in Africa for regenerative agriculture

Funding is urgently needed to harmonize the scaling in Africa of “regenerative agriculture” – diverse practices whose outcomes include better productivity and environmental quality, economic feasibility, social inclusivity, and nutritional security. CIMMYT proposes the creation of an advanced data management system, training, and protocols for spreading extension innovations such as digital approaches and agronomic recommendations to farmers via handheld devices. The work should be developed and scaled consistently across countries. Outcomes will include a massive, unique knowledge base for governments, NGOs, and the private sector, as well as local soil fertility and management recommendations for regenerative agriculture and best practices in extension innovation using modern data tools. Our aim is to revolutionize extension, helping to catalyze farmer innovation and to rebuild soil health for resilience, nutrition, and food security.



Modern informatics can be harnessed to empower farmers, through innovative digital ICT approaches using inexpensive handheld sensors, mobile apps, and call-back systems to improve farmers’ capacity and agency, arming them with information on soils, practices, and other timely advice. Village-based advisors will serve as personal resource persons, helping to train agri-traders, liaise with public extension, and support dense farmer networks. This is key to scaling out regenerative agriculture and reaching remote farmers.

Innovations in local extension can provide fit-for-purpose information. Remote sensing and AI are being used to improve the targeting of options through spatial information, but this has been less than successful in Africa, where market opportunities, soils – even portions of a single field – and agricultural practices can vary drastically. Local knowledge must be linked to remote-sensed information, if soil health measures (use of fertilizers, manure, lime) are to be well suited and constitute sound investments, as fine-tuned by local managers.

New approaches leverage digital tools to maximize the use of human, socioeconomic, and biophysical resources to reach millions more farmers with actionable advice.

Public-private research partnerships spark farmer innovation in regenerative agriculture. Farmer networks, advisors, and agri-traders can be trained in the use of handheld devices that provide cheap, real-time information on soil properties, linked to digital ICT on agronomic options. This leads to measurable, statistically proven increases in farmer innovation and in the use of regenerative agriculture practices, particularly among women who are part of dense farmer networks. Results from Ethiopia, Malawi, and Tanzania show marked enhancements in farmer innovation. Government and private sector investments in these breakthrough technologies for extension and mobile soil testing are starting, but there has been very limited attention paid to the data management systems that are required to institutionalize this approach or to learning lessons that can be replicated in other countries.

Reaching millions is now possible. An investment and convening power are needed to synthesize the evidence and agricultural recommendations

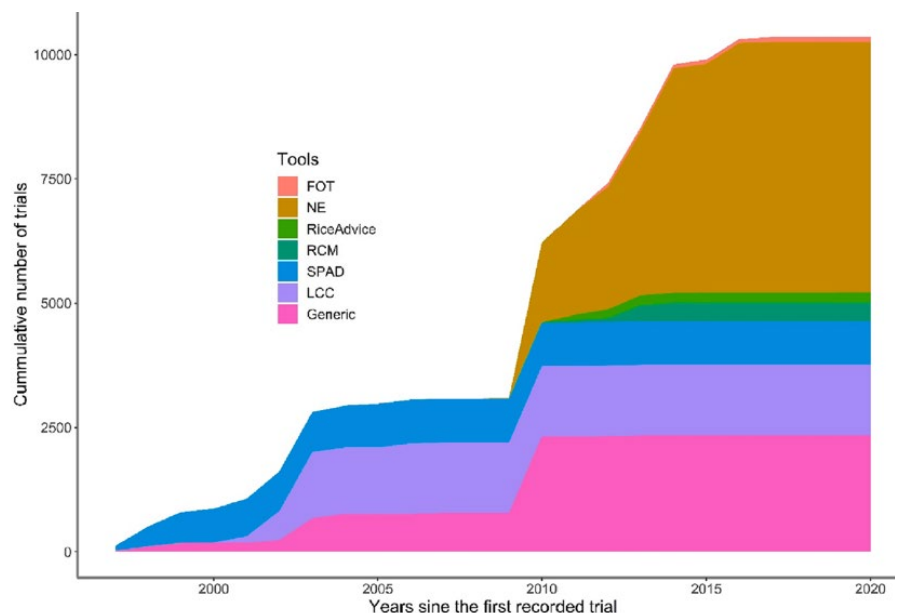
coming out of the multiple public and private initiatives utilizing novel handheld soil sensor technologies. This data synthesis is the missing step. Addressing this will enable taking sensors to scale and reaching tens of millions of farmers with hyper-local soil information.



CIMMYT has taken pioneering steps, including hosting agricultural recommendation harmonization meetings with the governments of Malawi, Tanzania, and Zambia, CIAT, delivery organizations (AGRA, OneAcre, IFDC), and private sector organizations (Meridian

Africa and Optichem). As a result, the use of soil advisory tools has grown markedly.

For more information or to contribute or participate: Dr. Sieg Snapp, Program Director, Sustainable Agrifood Systems, CIMMYT s.snapp@cgiar.org



@CIMMYT
 @CIMMYT
 @CIMMYT
 flickr.com/CIMMYT

[linkedin.com/company/CIMMYT](https://www.linkedin.com/company/CIMMYT)
[youtube.com/CimmytOrg](https://www.youtube.com/CimmytOrg)

CIMMYT Headquarters

Apdo. Postal 041, C.A.P. Plaza Galerías,
Col. Verónica Anzures, 11305 CDMX, México
Email: cimmyt@cgiar.org
www.cimmyt.org