Two Years of Advancing Soil Health Through Science, Partnership, and Regional Action

Special Anniversary Edition | February to July 2026

Two years since our June 2024 launch

— This edition covers progress from February to July 2026

Contents

From the Editor's Desk

Building the foundations for healthier soils across West Africa and the Sahel

Healthy soils do not result from a single intervention. They depend on interconnected systems — reliable data, strong laboratories, skilled professionals, innovative technologies, and partnerships capable of translating science into decisions.

Two years after its establishment, the Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel has focused on strengthening the scientific, institutional, and partnership foundations needed to transform soil health across the region.

This special anniversary edition highlights progress in providing in-country technical assistance, supporting national laboratory capacity, building country-level technical expertise, and translating regional collaboration into action.

By the Numbers

A snapshot of the Hub's reach and scientific output during the reporting period, drawn from the stories in this edition.

2
Years since the Hub's launch in February 2024

8
Countries engaged across West Africa and the Sahel

6
Consortium partner institutions working together

268
Participants in the "From Signature to Soil" webinar

641
Legacy soil samples recovered for analysis in Sierra Leone

250
Primary Sampling Units in Sierra Leone's nationwide soil survey

10,000–15,000
Soil samples analyzed annually at the IITA laboratory

~90%
Lower cost per sample with dry chemistry (~US$7) vs. wet chemistry (US$60–70)

From the Director

Two Years of Building the Foundation for Healthier Soils

Two years ago, the Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel began its journey with a clear mandate: to translate science into practical solutions that strengthen soil health, improve fertilizer management, and support sustainable food systems across the region.

Since then, the Hub has evolved into a platform for regional collaboration, bringing together governments, research institutions, development organizations, and technical partners to address one of the most fundamental challenges facing agriculture today: the need for healthier soils.

The systems being built today are designed to deliver value beyond individual activities or project cycles. Reliable soil data, stronger laboratory networks, improved technical capacity in countries, and evidence-based recommendations represent long-term investments in the agricultural future of West Africa and the Sahel.

As we celebrate this milestone, we remain committed to working with our partners and countries to develop solutions that restore the soil, strengthen climate resilience, and support farming communities across the region.

Thank you for being part of this journey.

Lionel Axel Kadja

Director, Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel

From Partnership to Implementation: Turning Soil Health Commitments into Action

Transforming soil health across West Africa and the Sahel requires more than shared ambition. It requires coordinated action, aligned expertise, and partnerships that move from agreement to implementation.

The Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel and the Soil Values Program are demonstrating how collaboration can accelerate solutions for healthier soils and more resilient agricultural systems.

On 26 February 2026, the Hub and the Soil Values Program formalized their collaboration through a Memorandum of Understanding at the International Institute of Tropical Agriculture (IITA) headquarters in Ibadan, Nigeria during a three-day consortium workshop hosted by the Regional Hub.

The partnership brings together complementary expertise and resources to advance soil information systems, digital soil mapping, nutrient recommendations, and capacity strengthening across the Sahel.

Just three months after the agreement, partners gathered to assess early progress and explore pathways for implementation during the webinar, "From Signature to Soil: Turning Partnership into Results." The session attracted 268 participants from West Africa, Europe, and beyond, highlighting growing interest in collaborative approaches to soil health transformation.

The discussions showcased joint activities already underway in Nigeria, including standardized soil sampling, nutrient omission trials for maize and rice, digital soil mapping, and the identification of soil degradation hotspots in the Komadugu-Yobe and Yartiti watersheds.

> ***"We have to show good examples of unity, coming together and joining forces to combat issues facing our population."***
>
> — Lionel Axel Kadja, Director, Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel

The collaboration reflects a broader shift in the region, from isolated interventions toward coordinated systems that bring together science, policy, investment, and implementation.

Read more →

From Sample to Science: Strengthening the Laboratory Backbone of Soil Health

Deputy Minister for Technical Services, Honorable Solomon Hedd-Williams and Liberia team at the commissioning of the AAS in the soil testing laboratory

Every soil map and fertilizer recommendation begins with a soil sample, but that sample is only as valuable as the laboratory systems that analyze it.

Behind every soil health decision is a network of laboratories capable of generating accurate, timely, and reliable data.

> ***"The quality of data from laboratories determines the fertilizer recommendations that are made, the quality of the fertilizers themselves, and the quality of the soil maps that are produced."***
>
> — Joseph Uponi, Laboratory Manager at IITA and consultant to the Regional Hub

Strengthening these systems is therefore essential to building the evidence needed for better fertilizer recommendations, sustainable land management, and informed agricultural policies.

Across West Africa and the Sahel, the Regional Hub is supporting countries to strengthen national laboratory systems through technical assessments, capacity development, and institutional partnerships.

Laboratory assessments conducted in Nigeria, Liberia, Sierra Leone, and Togo have identified opportunities to improve equipment, quality assurance systems, data management, and technical capacity. These assessments are helping countries better understand their laboratory needs and prioritize investments for stronger, more sustainable national systems.

In Liberia, the Hub, working with national institutions and the Soils4Liberia Project, supported efforts to establish a functional reference soil laboratory, strengthening the country's capacity to generate reliable soil data for research and decision-making.

Building stronger laboratory systems also means investing in people. In March 2026, researchers and technicians from Mali's **Institut d'Économie Rurale (IER)** received hands-on training at the Hub in Mid-Infrared (MIR) Spectrophotometry, strengthening national capacity for rapid soil analysis and supporting the future development of a national soil spectral database.

Together, these efforts are contributing to a long-term vision: a connected network of capable national laboratories generating reliable soil data to support Soil Information Systems, improve fertilizer recommendations, and advance sustainable land management across the region.

Read more →

Complementing Wet Chemistry: How Dry Chemistry is Transforming the Speed and Scale of Soil Data Generation

A MIR spectrophotometer machine used for dry chemistry analysis in the Regional Hub

Reliable soil information is becoming increasingly important as countries across West Africa and the Sahel work to improve fertilizer recommendations, manage soil degradation, and strengthen climate-resilient agriculture. Generating it at national and regional scale requires analytical systems that are not only scientifically rigorous, but also faster, more affordable, and easier to scale.

A faster, more affordable pathway

Soil analysis has traditionally relied on wet chemistry, the global standard for measuring properties such as pH, organic carbon, and total nitrogen. It is highly accurate but resource-intensive: a full analysis can cost US$60–70 per sample and take three to four days to process 100 samples.

At the Regional Hub's dry chemistry laboratory, Mid-Infrared (MIR) spectroscopy and X-Ray Fluorescence (XRF) technology can analyze up to 100 soil samples within a single day, at around US$7 per sample. MIR scans soil to produce a spectral "fingerprint," while XRF rapidly measures elemental composition, including phosphorus, calcium, and iron. Rather than replacing wet chemistry, these tools work alongside it: a subset of samples is still analyzed through wet chemistry to calibrate and validate the predictive models.

US$60–70
Per sample with traditional wet chemistry — 3–4 days to process 100 samples

~US$7
Per sample with MIR + XRF dry chemistry — up to 100 samples in a single day

Building one of Africa's most valuable soil libraries

Every sample analyzed through wet chemistry is archived at International Institute of Tropical Agriculture ***IITA***, which currently analyzes between 10,000 and 15,000 soil samples annually. The International Institute of Tropical Agriculture ***IITA*** Analytical Services Manager Joseph Uponi notes that once a country builds a well-characterized dataset of 20,000–30,000 samples, model calibration becomes robust enough that as little as five percent of new samples require full wet chemistry verification.

By reducing the cost and time required for soil analysis, dry chemistry is reshaping the economics of soil data, helping governments and partners build richer national databases and generate more accurate, location-specific fertilizer recommendations at scale.

> ***"Every new sample analyzed today strengthens the accuracy and efficiency of tomorrow's recommendations."***
>
> — Joseph Uponi, Laboratory Manager at IITA and consultant to the Regional Hub

Read more →

Inspired by Nature's Signals: How Soil Health is Shaping West Africa's Climate Future

Climate change and soil degradation are deeply interconnected challenges affecting agricultural systems across West Africa and the Sahel. Rising temperatures, changing rainfall patterns, erosion, desertification, and declining soil fertility are weakening the region's ability to sustain productive and resilient food systems.

Soil health plays a critical role in climate action. Beyond supporting crop production, soils are a vital natural resource for climate resilience. Healthy soils can store carbon, improve water retention, reduce erosion, support biodiversity, and help agricultural systems better withstand climate shocks.

Climate-Smart Agriculture provides a pathway for restoring soil health through approaches such as efficient fertilizer use, Integrated Soil Fertility Management, organic amendments, agroforestry, crop diversification, and improved water management.

Soil carbon sequestration is also increasingly recognized as a nature-based climate solution. By capturing and storing carbon through improved land management practices, healthy soils contribute to both climate mitigation and agricultural resilience.

Through its work across West Africa and the Sahel, the Regional Hub for Fertilizer and Soil Health is supporting countries to strengthen soil information systems, promote evidence-based nutrient management, restore degraded soils, and integrate climate considerations into agricultural planning.

Read more →

Soil Information Systems for Sustainable Agriculture in Liberia: The Role of the Regional Hub

Group picture of trained technicians, IITA Lab Manager and Liberia's Deputy Minister for Technical Services before the installation of the AAS machine

Liberia's agricultural transformation depends on better understanding its soils. Yet for decades, outdated soil information and limited laboratory capacity have constrained the ability of farmers, researchers, and policymakers to make informed decisions on fertilizer use, land management, and agricultural investments.

Through collaboration with national institutions and partners under the Soils4Liberia Project, the Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel is supporting Liberia to build the systems needed for stronger soil-based decision-making.

A nationwide soil survey is generating updated information on soil properties, land suitability, and soil health indicators, creating the foundation for a modern Soil Information System to guide agricultural planning and sustainable land management.

A major milestone has been the establishment of a functional reference soil laboratory at the University of Liberia. Through infrastructure improvements, equipment support, technical training, and the installation of new analytical equipment, including an Atomic Absorption Spectrometer (AAS)—the initiative is strengthening Liberia's capacity to conduct reliable soil analysis and generate the data needed for better agricultural decisions.

The Hub is also supporting field-based research to move beyond blanket fertilizer recommendations. Farmer-led trials across Bong, Margibi, and Lofa counties are generating evidence to develop more locally appropriate nutrient recommendations for rice production under different soil and farming conditions.

"Without this kind of equipment, a laboratory cannot be considered fully functional for modern soil analysis."

— Dr. Samuel A. Mesele, Soil Scientist and Regional Hub focal point, Liberia

Together, these efforts are helping Liberia transition from limited and fragmented soil information toward a stronger national system that supports better fertilizer decisions, healthier soils, and a more productive and resilient agricultural future.

Read more →

From Launch to Delivery: Sierra Leone Advances Soil Health and Fertilizer Management Under Feed Salone

Field campaign activity in Sierra Leone

Months after the launch of technical assistance under the World Bank-supported Food Systems Resilience Program (FSRP), Sierra Leone is making steady progress towards building the scientific foundation for smarter fertilizer and soil management.

Implemented by the Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel, the initiative is supporting nationwide digital soil mapping, fertilizer and lime response trials across 10 districts, and capacity development for national technical teams. So far, 641 legacy soil samples have been recovered for analysis, while a nationwide sampling campaign covering 250 Primary Sampling Units is generating new data to strengthen the country's soil information system.

These activities are laying the groundwork for site-specific fertilizer recommendations that will help advance Sierra Leone's Feed Salone agenda, supporting higher agricultural productivity, improved food security, and more efficient fertilizer use.

Read more →

SECTION 4: PARTNERSHIPS THAT POWER PROGRESS

The transformation of soil health systems across West Africa and the Sahel cannot be achieved by one institution alone.

The Regional Hub's progress is built on partnerships that bring together scientific expertise, local knowledge, innovation, and implementation capacity. Through collaboration with research organizations, development partners, governments, and technical institutions, the Hub is supporting solutions designed to respond to the region's diverse soil challenges.

APNI: Connecting Science, Extension, and Farmers

Building the Foundations for Smarter Agricultural Advisory Systems in West Africa

Across **Liberia, Ghana, and Côte d'Ivoire**, national stakeholders are taking practical steps to strengthen agricultural systems and farmer-centered innovation under a shared regional agenda led by the **African Plant Nutrition Institute (APNI)** through the **Regional Hub for Fertilizer and Soil Health for West Africa & the Sahel.**

The program focuses on building nationally owned, technically coherent agronomic advisory systems through standardized and coordinated stakeholder engagement, capacity strengthening, and harmonized implementation frameworks. The process combines 4R Nutrient Stewardship and On-farm Experimentation (OFE) approaches with country-led institutional platforms to support scalable, data-driven, and context-specific advisory delivery.

"PCAAP in Liberia is emerging as a nationally discussed, technically refined, and increasingly institutionally-anchored reform initiative for professionalizing extension advisory services."

— Dr. Canon Savala Engoke, APNI Senior Scientist

In Liberia, discussions centered on the development of the **Professional Certified Agronomy Advisor Program (PCAAP),** a framework designed to professionalize extension and advisory services through competency-based certification. During a national validation workshop and subsequent meetings with the Minister of Agriculture, stakeholders emphasized that Liberia does not need another short-course training model. Instead, the country is pursuing a system that strengthens extension workers through recognized certification, career-linked progression, and institutional alignment with the existing agricultural extension policy.

"Ghana's workshop stands out as a significant milestone. It shows that the Hub's preparatory functions are moving from concept into operational tools, that Ghana remains one of the most ready environments for piloting PCAAP and OFE, and that both are being taken seriously by national actors as practical pathways for strengthening advisory systems and farmer learning."

— Dr. Canon Savala Engoke, APNI Senior Scientist

In **Ghana**, stakeholders reviewed and validated both PCAAP and the **On-Farm Experimentation (OFE)** operational manuals in development. The PCAAP discussions focused on improving advisory quality by defining competencies in technical agronomy, advisory practice, and professional ethics. At the same time, OFE discussions reinforced the importance of involving farmers directly in identifying production challenges, testing solutions, interpreting results, and adapting innovations to local conditions. Ghana also demonstrated strong policy momentum, with discussions linking PCAAP to the country's evolving certification framework for extension officers.

Joint PCAAP and OFE manual validation workshop held in Accra, Ghana

Meanwhile, in **Côte d'Ivoire**, stakeholders from National Agricultural Research Centre (CNRA), National Agency for Rural Development (ANADER), the Ministry of Agriculture, and APNI met in Abidjan to develop and validate the national OFE operational manual. Participants emphasized that the OFE manual should function as a practical operational framework guiding researchers, extension agents, and farmer organizations through farmer-led experimentation, data collection, learning, and scaling. The workshop highlighted integrated soil fertility management, stakeholder coordination, and stronger collaboration among research institutions, extension services, and producers.

OFE manual validation workshop *held in Abidjan, Côte d'Ivoire*

Together, these country processes show that agricultural transformation depends not only on technologies but also on the systems that support their delivery, adaptation, and adoption.

PCAAP focuses on strengthening **the delivery of advisory services.** OFE focuses on strengthening **how innovations are tested, adapted, and scaled across farming communities, cropping systems regions and institutions.**

Across the region, these complementary frameworks are laying the foundation for more professional advisory systems, stronger farmer learning, healthier soils, and more resilient farming systems.

IFDC (Soil Values Program): Testing Innovations for Improved Soil Fertility

Improving Soil Health and Fertility in Burkina Faso with Barbary Plante

With a commitment to promoting sustainable and resilient agricultural systems, the Soil Values program supports farmers in testing innovative solutions to improve soil fertility, water management, and agricultural productivity. One of these innovations is Barbary Plante, a water-retaining fertilizer being tested in the provinces of Balé and Houet in Burkina Faso, in trials on tomatoes, peppers, and maize.

> ***"We had a pump break down, and before the repair, the plants in the control plot started to wilt. Those treated with Barbary Plante fared better, thanks to improved water retention in the soil"***
>
> — Fernand Sanou, farmer, Bobo-Dioulasso

In Houet, Barbary Plante is being tested directly on farmers' fields under the supervision of agricultural agents, evaluating the technology under real production conditions. Tomato producer Yacine Sanou Ouattara, who took part in Soil Values training, saw her treated plants produce their first fruits just 35 days after transplanting, while the untreated control plot remained at the flowering stage.

> ***"This experience has been very beneficial. It has allowed producers, agricultural agents, and other stakeholders to discover firsthand what the technology is and to appreciate its performance.***
>
> — Serge Kambiré, promoter of the Barbary Plante technology

As trials progress toward the final harvest stage, the Soil Values program and its partners hope the findings will support wider dissemination of Barbary Plante across Burkina Faso and the wider Sahel.

Soil Values is a 10-year program (2024–2033) funded by the Dutch Directorate-General for International Cooperation (DGIS) and led by IFDC, in consortium with SNV and Wageningen University and Research (WUR), alongside knowledge partners including AGRA, CIFOR-ICRAF, IITA, ISRIC, and IWMI.

Read the full Barbary Plante trials story →

Building Momentum Through Leadership and Partnership

The Hub's progress is strengthened by engagement with regional leaders, policymakers, and scientific institutions committed to advancing soil health transformation.

Recent visits and engagements have reinforced the importance of collaboration in connecting science, policy, and implementation.

CGIAR Chief Scientist Explores the Science Driving Better Soil Decisions in the Hub

The Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel welcomed CGIAR Chief Scientist Dr. Sandra Cristina Milach during a visit to the International Institute of Tropical Agriculture (IITA) headquarters in Ibadan, Nigeria, where she explored how the Hub is translating advances in soil science into practical solutions for countries and farmers across the region.

The engagement highlighted the science, partnerships, and innovations supporting the Hub's work—from improving soil information systems and developing site-specific nutrient recommendations to strengthening national laboratory capacity and digital advisory services.

During discussions with the Hub team, Dr. Milach learned how the Hub combines soil datasets, field sampling, laboratory analysis, remote sensing, and modelling approaches to generate more reliable information for agricultural planning and fertilizer management.

The discussions also highlighted the Hub's vision for a stronger regional laboratory network based on a **hub-and-spoke model**. Under this approach, regional reference laboratories would provide quality assurance, standardized methods, technical support, and capacity development to strengthen national laboratory systems across West Africa and the Sahel.

By connecting scientific expertise, data systems, laboratory networks, and digital tools, the Hub is helping countries build the foundations needed for better fertilizer recommendations, improved soil management, and more resilient food systems.

Read more →

ECOWAS Reaffirms Regional Commitment to Soil Health

The Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel welcomed **H.E. Dr. Kalilou Sylla, then-ECOWAS Commissioner for Economic Affairs and Agriculture**, during a visit to the International Institute of Tropical Agriculture (IITA) headquarters in Ibadan.

The then-Commissioner, accompanied by a high-level delegation including **Dr. Simeon Ehui, Director General of IITA; Dr. Tahirou Abdoulaye, Deputy Director General for Partnerships for Delivery and Scaling; and Dr. Ibnou Dieng, Director of Strategic Planning and Chief of Staff**, received updates on the Hub's establishment, progress, and contributions toward strengthening fertilizer and soil health systems across the region.

The visit reaffirmed ECOWAS' commitment to supporting the Hub as a regional mechanism for advancing coordinated action on soil health, fertilizer management, and sustainable agricultural transformation.

DRC Minister Visits Regional Hub to Explore Collaboration on Soil Health

The Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel welcomed H.E. Muhindo Nzangi Butondo, Minister of State for Agriculture and Food Security of the Democratic Republic of Congo, during a broader visit by a high-level delegation to the International Institute of Tropical Agriculture (IITA) headquarters in Ibadan.

The engagement provided an opportunity to discuss pathways for collaboration in agricultural research, technology transfer, capacity development, and support for country-led agricultural transformation priorities.

During the visit, the Minister was introduced to the Hub's work in strengthening soil information systems and advancing science-based fertilizer recommendations across West Africa and the Sahel. He toured the Hub's laboratory, where scientists showcased how high-quality soil data generated through laboratory analysis supports the development of digital soil maps and evidence-based nutrient recommendations. The Minister commended the laboratory's role in generating reliable soil data to inform sustainable soil fertility management and agricultural decision-making.

The visit also highlighted the Hub's role as a regional platform supporting countries to strengthen soil information systems, improve fertilizer recommendations, and promote sustainable soil health management through science, innovation, and technical collaboration.

As countries across Africa continue to strengthen their agricultural systems, partnerships that connect science, policy, and implementation remain essential to building resilient food systems and advancing sustainable agricultural transformation.

CLOSING

Thank You to Our Partners

The Regional Hub's journey over the past two years demonstrates what is possible when science, partnerships, and regional commitment come together.

The progress highlighted in this edition is possible because of the commitment of governments, institutions, researchers, development partners, and technical experts working together to advance soil health across West Africa and the Sahel.

By strengthening soil information systems, building institutional capacity, supporting innovation, collaborating with partners and delivering technical assistance to countries, the Hub is helping to create the systems needed for healthier soils and more resilient food systems across West Africa and the Sahel.

The next chapter is about turning stronger foundations into wider impact.

Stay Connected

This work moves faster when shared. Follow our journey, contribute your stories and experience, and stay connected as we continue advancing soil health solutions across the region.

LinkedIn | Facebook | Web