AFRILAB-III/21/Report

Report of the third meeting of the African Soil Laboratory Network (AFRILAB)

Virtual meeting, 18 October 2021

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2021

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1. Introduction

Based on the decision made at the fourth GLOSOLAN meeting in November 2020, all meetings of the Regional Soil Laboratory Networks (RESOLANs) will be focused on decision making only. In this regard, all trainings are being implemented in the form of webinars throughout the year.

The third meeting of the African Soil Laboratory Network (AFRILAB) took place on 18 October 2021, on the online platform Zoom (see the meeting agenda in Annex I) and was held in English, with simultaneous interpretation available in French and Portuguese. The meeting was attended by 106 participants from 37 countries (see list of participants in Annex II). Mr. Joseph Uponi, AFRILAB Chair and Ms. Nopmanee Suvannang, GLOSOLAN Chair opened the meeting by reminding participants about the importance of soil laboratories for decision making, for fighting climate change and for eradicating hunger worldwide. A note was made on the importance of national reference laboratories in establishing National Soil Laboratory Networks (NASOLANs) and trigger actions at the national level.

2. GLOSOLAN updates

Ms. Lucrezia Caon, GLOSOLAN Coordinator, introduced GLOSOLAN objectives and areas of work to new AFRILAB members, recalling that GLOSOLAN operates through regional and national soil laboratory networks. Thereafter, Ms. Caon informed participants that on October 12, the network counted on 148 members from the African region. This and other information, including availability of GLOSOLAN publications on the GLOSOLAN webpage in English, Spanish, French, Arabic, Russian and Chinese. Ms. Caon also reminded participants that the GLOSOALN webpage and its subpages contain frequently asked questions that GLOSOLAN members can consult before contacting the GLOSOLAN Coordinator by email.

Ms. Caon concluded by thanking all those members of AFRILAB that volunteered to translate GLOSOLAN documents, record training videos and act as trainers in webinars. In this regard, she made a call for more experts to support these activities.

<u>Update on the harmonization on the writing of Standard Operating Procedures (SOPs):</u> the working groups are intensively working to harmonize information provided by GLOSOLAN members. Regional harmonization was already achieved, whereas the global harmonization of information for most of the methods is ongoing. Overall, GLOSOLAN faced major delays on the preparation of the matrixes on soil biological parameters because of the presence of few experts on these methods in the working groups, and the few inputs submitted by GLOSOLAN members.

<u>Update on the GLOSOLAN PT2021:</u> 280 set of soil samples are available. Each set contains 10 self-seal bags of 10g homogenized soil material labeled with a unique sample code: GLO-01, GLO-02, GLO-03, GLO-04, GLO-05, GLO-06, GLO-07, GLO-08, GLO-09 and GLO-10. 249 laboratories replied the survey distributed by the GLOSOLAN Coordinator on their wish to participate to this global exercise. Overall, only 8 laboratories did not wish to participate in the PT2021. Laboratories that will participate in the GLOSOLAN PT2021 will be selected based on:

- geographical balance: we will involve at least 1 laboratory per country;
- number of parameters (in the list provided below) that interested laboratories can measure;
- method of analysis (in the list below) that the interested laboratories can perform;
- first come, first serve basis.

A decision on the laboratories that will participate in the PT will be made by the end of October 2021. The shipment of the soil samples will start in November 2021. Participants will receive clear instructions on the analysis to perform on the samples, which should focus on organic carbon, available phosphorus and total nitrogen. PT results should be submitted through an online platform accessible through the GLOSOLAN website.

3. AFRILAB updates

Mr. Filippo Benedetti, GLOSOLAN alternate coordinator briefly spoke about the status of the regional network by reporting the number of laboratories from Africa that registered in GLOSOLAN in 2021 (27 new members of AFRILAB, from 12 different countries). Mr. Benedetti highlighted that the GLOSOLAN coordinators will work to liaise with the GSP Focal Points and FAO Offices in countries where a National Reference Laboratory had not been nominated yet and where no laboratory is registered in the network. Mr. Benedetti recalled the importance of National Soil Laboratory Networks (NASOLANs) in (i) improving the efficacy and outcomes of GLOSOLAN activities, (ii) developing ad-hoc programs to better face global and local challenges, and (iii) in reaching a larger number of laboratories. The role played by National Reference Laboratories in leading the establishment of NASOLANs was stressed as well. After providing a general overview of the status of NASOLANs in the region, Mr. Benedetti kindly asked participants to inform GLOSOLAN coordinators about any initiative in this regard, in order to keep the country profile in the NASOLAN database updated.

4. Projects of regional interest

Participants were informed on activities with a link to soil analysis and soil laboratories ongoing in the region:

- **Capacity building on sustainable soil management for Africa**
  Mr. Yuxin Tong (GSP Secretariat) briefly presented two projects under implementation in Uganda and Rwanda to build the capacity on sustainable soil management, in the framework of the China Aid program. The project aim to procure equipment to soil laboratories to improve the efficiency of soil and fertilizer analysis. Beneficiary laboratories will also receive assistance for the equipment installation and training on the use of the procured instrumentation.

- **Global Soil Doctors Programme**
  Mr. Sebastian Brahene (GSP Secretariat) introduced the Global Soil Doctors Programme to participants; a farmer-to-farmer training programme to promote the practice of sustainable soil management, and to support the work or cover the lack of national extension services. Mr. Brahene reported that many African countries expressed an interest in the programme by completing an online survey. Since the programme counts on the use of a soil testing kit, AFRILAB members could contribute to the implementation of the programme by preparing and supplying reagents for the soil testing kit.

4.1 How to apply for a Technical Cooperation Programme (TCP) project

GLOSOLAN is a self-financed initiative that receives no financial support from the FAO. Financial resources come from projects granted to the Global Soil Partnership (GSP). As a result, budget is mostly allocated to the implementation of global activities since the GSP has very few regional and national projects. GLOSOLAN members are kindly invited to make an effort to mobilize financial resources for the implementation of national and regional activities. The GLOSOLAN coordinator can help countries and laboratories in preparing the concept notes to submit to donors.

There is the possibility for countries to approach FAO as donor by submitting requests for Technical Cooperation Programme (TCP) projects. General information:

- TCP projects are assigned by FAO every 2 years. All proposals should be submitted within specific deadlines;
- TCP projects provide maximum US$ 500 000;
- TCP projects should be implemented on average in one – one and a half years' time;
- TCP projects can be used to kick off activities, assess needs and write a second phase project proposal.

Application steps:

1. Know what you want in terms of activities and final objective. The GLOSOLAN coordinator can support the country in the project formulation if needed.
2. Ask your government (e.g. Ministry of Agriculture) to send an official letter requesting a TCP project to your country FAO office (for national TCPs) or to the regional FAO office (for regional TCPs). The letter should mention: the problem/challenge faced by your country, the request for a TCP project with a note on how the TCP will help to tackle the problem/challenge. Please copy the GLOSOLAN coordinator to your email for internal follow up on the request.
3. Prepare the project document. Please note that there is a ready template, that countries cannot prepare it on their own. The GLOSOLAN coordinator and the TCP officer at the FAO country or regional office should be involved in the preparation of the project document.
4. Submission of the project document, waiting for approval and an eventual start of its implementation.

5. AFRILAB main needs

Mr. Filippo Benedetti showed the results of an online survey that was launched before the meeting, to collect preliminary information on the AFRILAB main needs. These are:

- provision of regular training on SOPs, laboratory management, equipment use and maintenance, implementation of internal and external QC procedures, and soil spectroscopy;
- adoption of more modern methods (e.g. soil spectroscopy), as well as more sustainable (reduced risk for the human health, reduced risk for the environment) methods for soil analysis;
- harmonization of Standard Operating Procedures (SOPs);
- adoption of health and safety measures in the laboratory;
- adoption of quality control (QC) procedures;
- support for accreditation to international organizations;
- better waste management policies.

Survey results were used as a base to open the discussion among meeting participants and to develop an ad-hoc regional work plan, especially in regards to the organization of a series of webinars in English and French.

Participants were also asked to express an opinion on the level of awareness of national governments on soil laboratories' activities. Fifty-three percent of participants stated that governments are somewhat aware of what is going on in laboratories but should be more informed. Otherwise, 32 percent of attendees reported that governments are not aware on soil laboratories activities at all. Only 10 percent of meeting participants affirmed that their governments are fully aware of soil laboratories activities, while 5 percent was not sure about that and thus preferred not to answer to this question. Therefore, the strong majority of meeting participants asked GLOSOLAN to work on the preparation of awareness raising material which may result in a larger technical, financial and political support to soil laboratories operating in the region.

Mr. Christian Hartmann (IRD France) and Mr. Michael Watts (British Geological Survey) shared with participants a comprehensive presentation on the importance of joining proficiency tests (PTs). Presenters stressed the need of identifying PT sample providers and PT organizers on a regional scale, in order to allow each RESOLAN to implement regional (and national) PTs. Mr. Hartmann and Mr. Watts provided step-by-step guidelines on how to prepare samples for a PT, giving details on the equipment and know-how needed. A call was launched among AFRILAB member laboratories to identify volunteers to provide and prepare samples for the implementation of an AFRILAB PT.

6. Position of AFRILAB in GLOSOLAN

AFRILAB members were asked to express an opinion on the main topics for discussion at the upcoming 5th GLOSOLAN meeting:

- **Standard Operating Procedures (SOPs):** Ms. Caon informed participants that so far GLOSOALN gave priority to the harmonization of soil chemical parameters, those parameters that are most important to soil fertility, and the most used methods in the world. However, in 2020, GLOSOLAN started to work also on soil physical and soil biological parameters (see table 1).

Table 1. SOPs harmonized by GLOSOLAN since 2018

2018	2019	2020 (ongoing)
• Sample pre-treatment • Inorganic carbon (CaCO3 eq.) • OC Walkley and Black • Total carbon (Dumas – dry combustion)	Bray I Bray II Olsen P Mehlich I Mehlich III (postponed to 2020) pH in water pH in KCl pH in CaCl2 EC saturated paste EC in water N Dumas	• Particle size-distribution by pipette method and hydrometer • Bulk density • Moisture content by gravimetric method • Particulate organic carbon by physical fractionation • Quasi-total elements by digestion using aqua regia and EPA. This includes total heavy metals • Exchangeable bases and CEC by ammonium acetate • Available micronutrients (Fe Zn Cu Mn Mo Ni Cd) – extraction using DTPA • Boron by hot water extraction

	N Kjeldahl Mineral N (still under writing) Tyurin	• Mehlich III for macro and micronutrients (including S and B) • Microbial biomass C and N by chloroform fumigation-extraction • Microbial enzyme activities • Soil respiration rate

A reflection was made on the fact that five years after the establishment of GLOSOLAN, the network might be ready to make a step forward and start working on those methods that are less frequently used but have lower risks for the human health and the environment. This might help the transition towards the use of more sustainable methods.

After recalling how SOPs are harmonized in GLOSOLAN and the role that regional leaders play in it, Ms. Caon opened the discussion on the SOPs AFRILAB would suggest GLOSOLAN to harmonize in 2022. These are:

Chemical parameters

- Exchangeable Acidity by KCl method. Regional leaders: Joseph Uponi (Nigeria), Rose Ndango (Cameroon), Rolf Mabicka Obame (Gabon);
- Total carbon by loss of ignition. Regional leaders: Alie Kamara (Sierra Leone), Takesure Tendayi (Zimbabwe);
- Soil buffer capacity using KOH. Regional leader: Charles Shey Nying (Cameroon);
- Available phosphorus by KCl. Regional leaders: Lewis Ndirangu (Kenya), Washington Mutatu (Zimbabwe).

Physical parameters

- Water retention (pF). Regional leaders: Hanane Aroui (Senagal), Gideon Musukwa (Zambia)
- Density by pycnometer. Regional leader: Hanane Aroui (Senegal).

Biological parameters:

- Estimate the amount of microbial population in the soil

AFRILAB was informed that in 2021, GLOSOLAN struggled to harmonize some SOPs because of the few inputs received from soil laboratories (completion of the harmonization matrix) and the few experts in the working group. AFRILAB suggested to keep on using the harmonization matrixes for the methods used by few laboratories only. Indeed, GLOSOLAN should aim to retrieve as much information as possible when working on harmonization. GLOSOLAN should also ask top experts on each specific method and topic to lead the SOP writing and invite laboratories that perform specific type of analysis to join the network. In this regard, National Reference Laboratories should take action in spreading the voice on GLOSOLAN and in inviting them to register to the network.

- **Range and reference values.** The Global Soil Partnership asked GLOSOLAN to work on range and reference values to facilitate the provision of recommendations to farmers and other stakeholders.

Range values indicate the range of validity of the method. E.g. Method X is reliable for SOC content from xx to xx. This information should be included in the GLOSOLAN SOPs. **Reference values** provide an indication on the status of soil.

Participants to the meeting expressed the following opinion on the topic:

- *Range values*: it is fine to include them but a working group should be established to do a literature review on the topic

- *Reference values*: it is fine to work on reference values but these would be specific to each method

7. AFRILAB Governance

The governance of AFRILAB was defined at the first AFRILAB meeting in 2019. At present, the AFRILAB counts on the support of a Chair and two vice-Chairs, one to represent French speaking countries and the other to represent English speaking countries. The mandate for these positions is two years after election.

Building on the extraordinary experience of the Latin American Soil Laboratory Network (LATSOLAN), AFRILAB agreed to establish a Steering Committee to support the Chair and Vice-Chairs in triggering and implementing national and regional actions. Thus, the AFRILAB governance was revised as following:

- 1 AFRILAB Chair
- 2 AFRILAB Vice-Chairs
- 1 Steering Committee composed by a few (maybe 5?) active members of the network

The GLOSOLAN coordinator will draft the Terms of Reference for the Steering Committee and send them to AFRILAB members for review by email.

In order to strengthen the position of the Chair and Vice-Chairs of AFRILAB and allow them to do real follow ups in each country and in the overall region. GLOSOLAN proposed AFRILAB to review the Terms of Reference (TORs) for the position of Chair and Vice-Chairs and to have TORs common to all RESOLANs. The proposal was endorsed. The GLOSOLAN coordinator will draft the revised Terms of Reference for the position of RESOLAN Chair and Vice-Chair and send them to AFRILAB members for review by email.

Ms. Caon closed this session by thanking Dr. Joseph Uponi from Nigeria (AFRILAB Chair), Dr. Abdourahaman Moustapha from Niger (AFRILAB vice-Chair for francophone countries) and Dr. Lesego Mooketsi-Selepe from Botswana (AFRILAB Vice-Chair for Anglophone countries) for supporting the network from 2019 to 2021. Ultimately, the network elected their new representatives for the years 2021-2023. Dr. Lesego Mooketsi-Selepe from Botswana was elected AFRILAB Chair, Mr. Takesure Tendayi from Zimbabwe was elected AFRILAB vice-Chair for Anglophone countries and Mr. Sougueh Cheik Sougueh from Djibouti was elected AFRILAB vice-Chair for francophone countries.

8. Venue and time of the next meeting

The third AFRILAB meeting will take place online between September and October 2022.

9. Acknowledgments

GLOSOLAN coordinators would like to thank Dr. Sougueh Cheik (Pedology Lab, CERD - Djibouti) and Ms. Julia Mousquer (Global Soil Partnership) for the kind support in providing the simultaneous interpretation for the entire meeting in French and Portuguese, respectively.

Annex I. Agenda

Monday, **18 October 2021**	
10:00 – 10:10 AM	**Opening, endorsement of the agenda and group picture** *Mr. Joseph Uponi, AFRILAB Chair* *Ms. Nopmanee Suvannang, GLOSOLAN Chair* *Lucrezia Caon, GLOSOLAN Coordinator, GSP/FAO*
10:10 – 10:30 AM	**Item 1. Global Soil Laboratory Network updates** - Network growth - GLOSOLAN proficiency test (PT) 2021 - Online trainings - Standard Operating Procedures (SOPs) under harmonization - Publications and translation of GLOSOLAN material - Procurement of soil laboratory equipment - GLOSOLAN website - 5th GLOSOLAN meeting *Ms. Lucrezia Caon, GLOSOLAN Coordinator, GSP/FAO*
10:30 – 11:10 AM	**Item 2. AFRILAB updates followed by an open discussion** - AFRILAB growth: trends on the registration of new laboratories - National Soil Laboratory Networks (NASOLANs): establishment and activities *Mr. FIlippo Benedetti, GLOSOLAN Alternate Coordinator, GSP/FAO*

	- Presentation of the projects implemented/under implementation in the region (both by GSP and other organizations): ○ **Capacity building on sustainable soil management for Africa.** Implementation of two projects in Rwanda and Uganda ○ **Global Soil Doctors Programme**: eventual provision of reagents to the soil testing kits and preparation of a poster on the interpretation of laboratory results ○ **GSP mapping activities**: provision of good quality data from GLOSOLAN laboratories - Discussion on country-specific project proposals *Mr. Abdourahmane Elh Moudi Moustapha , AFRILAB Vice-Chair for French speaking countries* *Panelists from the Global Soil Partnership Secretariat, FAO: Ms. Carolina Olivera, Mr. Yuxin Tong, Mr. Yusuf Yigini, Ms. Lucrezia Caon, Mr. Sebastian Brahene*
11:10 – 11:40 AM	**Item 3. AFRILAB main needs** - Presentation of the results of the online survey - Discussion of the regional work plan - Organization of an AFRILAB PT *Panelists and moderators: Mr. Filippo Benedetti, GLOSOLAN Alternate Coordinator, GSP/FAO, Mr. Christian Hartmann, IRD France, and Mr. Michael Watts, British Geological Survey*
11:40 AM – 12:15 PM	**Item 4. Position of AFRILAB in GLOSOLAN** - Proposals on the SOPs to harmonize in 2022 - Requests on specific topics for GLOSOLAN online trainings (presentation of the survey results) - Definition of range values and reference values in GLOSOLAN SOPs - Other requests Moderators: *Lucrezia Caon, GSP Secretariat and Ms. Lesego Mooketsi-Selepe, AFRILAB Vice-Chair for English speaking countries*

12:15 – 12:50 PM	**Item 5. AFRILAB governance** - Review the Terms of Reference for the position of the Chair and Vice-Chair(s). Proposal to give more coordination, technical support and monitoring control to these positions in the region. - Proposal to establish a Steering Committee to support the work of the Chair and Vice-Chair(s) - Presentation of candidates for the role of AFRILAB Chair - Presentation of candidates for the role of AFRILAB Vice-Chair for the English-speaking countries - Presentation of candidates for the role of AFRILAB Vice-Chair for the French-speaking countries - Election of the new Chairs and Vice-Chairs (online poll) *Moderators: Filippo Benedetti, GSP Secretariat and Ms. Lucrezia Caon GSP Secretariat*
12:50 – 13:00 PM	**Closing remarks by the former and new Chair and Vice-Chairs**
13:00 PM	**Closure of the meeting**

Annex II: List of participants

Ms. Lucrezia Caon, Global Soil Partnership Secretariat, FAO HQ

Mr. Filippo Benedetti, Global Soil Partnership Secretariat, FAO HQ

Mr. Sebastian Brahene, Global Soil Partnership Secretariat, FAO HQ

Mr. Yusuf Yigini, Global Soil Partnership Secretariat, FAO HQ

Mr. Yuxin Tong, Global Soil Partnership Secretariat, FAO HQ

Ms. Nopmanee Suvannang, GLOSOLAN Chair

Mr. Rob de Hayr, GLOSOLAN Vice-Chair

Mr. Michael Watts, British Geological Survey

Mr. Christian Hartmann, IRD France

Country	Name of laboratory	First Name	Last Name
Benin	L2A2S2E	Cossi Tiburce Brice	Oussou
Botswana	SOIL AND PLANT LAB DAR	Geoffrey	Mmusi
Botswana	Betach	Gaofenngwe	Ntoko
Botswana	Soil and Plant Analytical Laboratory	Baboloki	Kethobile
Botswana	Betach Pty Ltd	Jacquiline	Mbada
Botswana	Soil and Plant Analytical Laboratory	Lesego	Mooketsi-Selepe
Botswana	BIUST Soil Science Teaching Laboratory (Soil Science Lab), Botswana	Trust	Manyiwa
Botswana	Soil and Plant Analytical Laboratory	Gabobonwe	Sejong
Botswana	Lisbeth Investments	Lisa Keatlhokile	Masilo
Botswana	National Environmental Laboratory	Luisa	Moipolai
Brazil	GSP	Julia	Mousquer
Burkina Faso	BUNASOLS	Joseph	Sanon
Burkina Faso	BUNASOLS	Harouna NANA	Nana

Burkina Faso	bunasols	Sangare Yalwi	
Burkina Faso	Laboratoire d'analyses sol, eau, plante, engrais du BUNASOLS	Harouna	Nana
Cameroon	IITA	Rose	Ndango
Cameroon	Laboratory of Soils, Plants, Waters and Fertilisers Analyses l	Bertrand	Zing Zing
Cameroon	LNAD-DRCQ-MINADER	Charles Shey	Nying
Cameroon	Laboratoire d'analyses des sols, plantes, eaux et engrais	Armelle	Youtha
Cameroon	Laboratoire d'analyse des sols, eaux plantes et engrais	Bita	Zambo Tarcisius Romain
Cameroon	Laboratoire d'Analyses des sols, plantes, Eaux et Engrais	Mfopou Mewouo	Yvette Clarisse
Cameroon	LASPEE IRAD	Aline Beatrice	Nzeket
Cameroon	National Laboratory for diagnosis analysis and quality control of agricultural products and inputs	Patrice	Kuitekam Dongo
Cape Verde	Cabo Verde	Angela	Moreno
Cape Verde	LASAP	Jacques	Tavares
Chad	Laboratoire d'Analyse de sols, Eaux et Plantes (LASEP)	Wavel	Mouaromba
Comores	FST	Ibrahim Ahmed	Kassim

Côte d'Ivoire	Laboratoire Central Sols-Eaux-Plantes/LCSEP (Centre National de Recherche Agronomique-CNRA)	Guy Fernand	Yao
Democratic Republic of Congo	University of Kinshasa, faculty of agronomic sciences	Joel	Tungi Tungi
Djibouti	Laboratoire de Pédologie	Mohamed Egueh	Walieh
Djibouti	Pedology Lab, CERD, Djibouti	Sougueh	Cheik
Djibouti	Laboratoire de Pédologie	Mohamed	Nasser
Eritrea	Samuel Berekt Ghebremariam	Samuel	Ghebremariam
Eswatini	Soil Testing Unit	Senzo	Ntshakala
Ethiopia	Soil laboratory of HARC	Musefa Redi	Abegaz
Ethiopia	National Soil Testing Center	Tofik	Hussien
Gabon	Laboratoire d'Analyses des Sols et Environnement	Neil-Yohan	Musadji
Gabon	Laboratoire d'analyse des sols ADAG	Rolexin NGANGORI	
Gabon	Laboratoire d'Analyse des Sols et Environnement	Rolf Gaël	Mabicka Obame
Gabon	Labosol	Lazare	Ossende-Essanga
Gabon	Laboratoire Pluridisciplinaire des Sciences	Jean Aubin	Ondo
Ghana	CSIR-SARI Environmental Analytical Laboratory	Prosper	Amenuvor

Ghana	Analytical Services Laboratory	Adams	Sadick
Ghana	KNUST SOIL SCIENCE LAB	Awudu	Abubakari
Kenya	USL	Hannah	Karuri
Kenya	KALRO-NARL	Lewis	Ndirangu
Kenya	NARL soil analytical laboratory	Njeru	Gachini
Kenya	University of Eldoret Biotec center	Odipo	Osano
Kenya	National Agricultural Research Laboratories, KALRO Kabete	Anne	Muriuki
Kenya	Soil Plant Spectral Diagnostics Laboratory - CIFOR ICRAF	Elvis	Weullow
Malawi	Agrilab	Wesley	Feldmann
Malawi	Agricultural Research and Extension Trust	Alick	Mphembera
Malawi	Chitedze Soils Laboratory	Moses	Munthali
Malawi	Soil and Plant Analytical Research Laboratory	Emmanuel	Mbewe
Mali	LPCM	Suleymane	Dambe
Mauritanie	Laboratoire de pédologie	Cheikh	Ahmed El Moctar
Mozambique	Momade Ibraimo	Momade	Ibraimo
Mozambique	Soil and Plant nutrition	Clemente Oliveira Jone	Zivale
Mozambique	Instituto de Investigação Agrária de Moçambique	Domingas	Rafael
Niger	LASEVE	Saidou	Addam Kiari
Niger	LASEVE	Abdourahaman Elh Moudi	Moustapha

Nigeria	National Fertilizer Reference Laboratory, Kaduna	Williams	Egbe
Nigeria	IITA Analytical Service Laboratory Ibadan	Joseph	Uponi
Nigeria	Centre for Dryland Agriculture, Bayero University Kano, Nigeria	Hashim	Yakasai
Nigeria	Soil Science Laboratory, Department of Soil Science FUT Minna, Nigeria	Koleola Abidemi Adedayo_Nigeria	
Nigeria	Central services laboratory & Bioscience	Abdul	Baba Kudu
Nigeria	National Soil Testing Laboratory Complex, Kaduna	Surajo M.	Usaini Rimi
Nigeria	SMO Laboratory Services	Omotosho	Mohammed
Nigeria	National Soil and Water Laboratory, Kaduna	Daniel	Auta Danjuma
Nigeria	National soul and water laboratory	Idowu	Afolabi
Nigeria	Phosphorus lab.	Suleiman	Garba
Nigeria	Central Research Laboratory FUTA Akure ONDO STATE	Ibitoye	Abolarin
Republic of Guinea	SENASOL	Moussa Tady	Diallo
Rwanda	sirikare sylvere	Sylvere N.	Sirikare
Sao Tome and Principe	Laboratorio do CIAT-STP(LabCIAT)	Antónia Dos	Neto

Sao Tome and Principe	laboratorio do CIAT-STP	Antónia	Neto
Senegal	LAMA IMAGO IRD	Patricia	Moulin
Senegal	IRD	Hanane	Aroui
Senegal	LNRPV	Aissatou	Diouf
Senegal	LAMA Dakar	Marie Pierre	Tine
Senegal	Ceres locustox	Anna	Ndiaye
Senegal	Institut de technologie nucléaire appliquée	Alassane	Traore
Sierra Leone	Njala University Quality Control Laboratory	Alie	Kamara
Tanzania	CENTRAL SOIL LAB	Khalfan Mtua	
Tanzania	TARI Mlingano	Sibaway	Mwango
Tanzania	TARI MLINGANO CENTRAL LABORATORY	Michael	Madumba
Thailand	Land Development Department	Nopmanee	Suvannang
Togo	Laboratoire d'Analyse des Sols et des Végétaux	Gbénonchi	Mawussi
Uganda	Wakiso	Crammer Kaizzi	Kayuki
Uganda	NaSARRI Soil chemistry laboratory	Beatrice	Sadina
Uganda	NaSSARI Soil Chemistry Laboratory	Charity	Akao
Zambia	University of Zambia Soil Science Service Laboratory	Gideon	Musukwa
Zambia	Zambia Agricultural Research Institute - National Soil Advisory Laboratory	Belinda	Kaninga

Zimbabwe	University of Zimbabwe	Thembinkosi	Mbedzi
Zimbabwe	Soil Science and Environment	Takesure	Tendayi
Zimbabwe	Washington Mutatu	Washington	Mutatu
Zimbabwe	FSG Superfert	Tonderai	Chihota
Zimbabwe	Zimlabs	Spicer	Munjeri