LATSOLAN-IV/21/Report

Report of the Fourth Meeting of the Latin American Soil Laboratory Network (LATSOLAN)

Virtual Meeting, 25 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 fourth meeting of the Latin American Soil Laboratory Network (LATSOLAN) took place on 25 October 2021 on the online platform Zoom (see the meeting agenda in Annex I). The meeting was attended by 93 participants from 19 countries (see list of participants in Annex II). Ms. Miriam Ostinelli, LATSOLAN 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 LATSOLAN 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 184 members from the Latin American and Caribbean region. This and other information, including GLOSOLAN availability of 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 LATSOLAN 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.

Update on the harmonization on the writing of Standard Operating Procedures (SOPs): 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.

Update on the GLOSOLAN PT2021: 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 to 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 on 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. LATSOLAN updates

Ms. Flora Bertsch, LATSOLAN vice-Chair briefly reported on the main activities and main achievements of the network since its establishment in 2018. Ms. Bertsch also informed participants about the status of the regional network, by reporting the number of laboratories from Central America, Caribbean and South America that registered in the network from 2018 to 2021. To note that in 2021, 81 new laboratories registered in the network. This allowed GLOSOLAN to be present in 6 countries that were not previously represented. Ms. Miriam Ostinelli, LATSOLAN Chair presented the organigram of the regional network, highlighting the roles played by the LATSOLAN Chair and vice-Chair, the members of the Steering Committee (established after the 3rd LATSOLAN meeting), the National Reference Laboratories and the other soil laboratories registered in the network. Ms. Ostinelli 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. Lastly, Ms. Ostinelli provided a general overview of the status of NASOLANs in the region, by presenting the results of an online survey that was launched among LATSOLAN members prior the meeting to get some preliminary information on the status and the activities of the national networks established in the region and on the relations between the latter and the regional and global networks.

4. Projects of regional interest

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

- SOILCARE Project

  Ms. Carolina Olivera (GSP Secretariat) presented the SOILCARE Project, which aims to strengthen the Caribbean Small Islands Developing States (SIDS), with the necessary tools for adopting policies, measures and reforming legal and institutional frameworks to achieve Land Degradation Neutrality (LDN) and Climate Resilience. The project involves English-speaking countries in the Caribbean and was developed together with the Partnership Initiative on Sustainable Land Management (PISLM). The project is made up of five implementation phases (components). Ms. Olivera focused on the support that LATSOLAN members may provide to boost laboratories operating in the Caribbean sub-region in regards to Component 1, which expects Caribbean countries to generate and use soil data to make sound decisions on sustainable soil management practices in response to climate change, land degradation and improved food production.

- Global Soil Doctors Programme

  Ms. Carolina Olivera 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. Ms. Olivera reported that many Latin American countries expressed an interest in the programme by completing an online survey. Since the programme counts on the use of a soil testing kit, LATSOLAN members could contribute to the implementation of the programme by preparing and supplying reagents for the soil testing kit.

- GSP mapping activities

  Mr. Yusuf Yigini (GSP Secretariat) introduced the International Network of Soil Information Institutions (INSII) to participants; the GSP network, in charge of preparing global maps, databases and information systems through a country-driven approach. However, INSII faces several constrains in terms of data availability, data quality and harmonized data, it would be good if INSII and GLOSOLAN could collaborate. INSII can provide GLOSOLAN with the infrastructure for storing, serving and exchanging soil lab information/spectral services (in relation to the Global Soil Information Systems - GloSIS). It can also implement the harmonization of laboratory data, and build the capacity of laboratories in data processing, storing, mapping and modeling. Otherwise, GLOSOLAN can support INSII by providing fresh measured data, harmonized data, and good quality data. Mr. Yigini made some proposals on how the INSII-GLOSOLAN collaboration could be implemented. A possibility would be to establish a joint working group to implement specific activities, and to connect GLOSOLAN and INSII members from the same country.

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 a 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 with 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's 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 for this, that countries cannot prepare 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. LATSOLAN main needs

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

- 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;
- adoption of quality control (QC) procedures;
- adoption of health and safety measures in the laboratory;
- better infrastructure (e.g. facilities, storage, internet connection, etc.);
- harmonization of Standard Operating Procedures (SOPs);
- support for accreditation to international organizations;
- provision of regular training on SOPs, implementation of internal and external QC procedures, laboratory management, soil spectroscopy, laboratory health and safety, and equipment use and maintenance;
- 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 Spanish , as well as in English and in Portuguese.

Participants were also asked to express their opinion on the level of awareness of national governments on soil laboratories' activities. Fifty percent of participants stated that governments are somewhat aware of what is going on in laboratories but should be more informed. Otherwise, 41 percent of attendees reported that governments are not aware on soil laboratories activities at all. Only 4 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. Daniel Carreira (LATSOLAN Steering Committee) presented the results of an online survey that was launched before the meeting to get an overview on the main challenges faced by laboratories during the Covid-19 pandemic, and to share preventive and control measures taken in response to the pandemic. Survey results showed that all laboratories developed a specific operating protocol related to the chance of a staff member testing positive to Covid-19. Moreover, all respondents stated that the pandemic and its

restrictions have negatively affected the routine laboratory work, causing total or partial suspension of activities and delays in delivering results of soil analysis. Other drawbacks caused by the Covid-19 pandemic resulted in deterioration of laboratory equipment, lowering of quality control procedures and delay in retrieving consumables. Forty-three percent of survey respondents reported that their laboratories are currently back at full capacity, while 14 percent are working at 75 percent of their potential. Still, 43 percent of respondents stated that their laboratories are in half-capacity.

Mr. Christian Hartmann (IRD France) 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 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 LATSOLAN member laboratories to identify volunteers to provide and prepare samples for the implementation of a LATSOLAN PT.

6. Position of LATSOLAN in GLOSOLAN

LATSOLAN 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; the 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 N Kjeldahl Mineral N (still under writing) Tyurin	• 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 • 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, LATSOLAN would suggest GLOSOLAN to harmonize in 2022. These are:

Chemical parameters

- Exchangeable acidity by KCl 1M. Regional leaders: Daniel Vidal (Brazil), Floria Bertsch (Costa Rica);
- A transfer function to link between electrical conductivity by saturate paste with EC 1:5. Regional leader: Jorge Etchevers (Mexico).

Physical parameters:

- Water retention (pF). Regional leader: Laura Casas (Colombia);
- Bulk density for fine particles. Regional leader: Jorge Etchevers (Mexico);
- Aggregate stability. Regional leader: Ana Silbermann (Uruguay).

Biological parameters:

- Nitrifying bacteria. Regional leader: Laura Casas (Colombia).

LATSOLAN 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.

- 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 may seem an easy topic, but it is not, since range values depend on the method and the equipment. Thus, it is necessary to evaluate the different SOPs in laboratories with different capacities. More discussion is needed.

  - *Reference values*: it is rather challenging to include them in the GLOSOLAN SOPs because there are many variables. GLOSOLAN should coordinate with other technical networks, estimation services, etc. The question is, should we care on what is happening outside the walls of the lab?

7. LATSOLAN Governance

The governance of LATSOLAN was defined at the first LATSOLAN meeting in 2018. At present, the LATSOLAN counts on the support of a Chair, a vice-Chair and a Steering Committee. The mandate for these positions is two years after election. In order to strengthen the position of the Chair, Vice-Chairs and

Steering Committee of LATSOLAN and allow them to do real follow ups in each country and in the overall region. GLOSOLAN proposed LATSOLAN to review the Terms of Reference (TORs) for these positions and to have TORs common to all RESOLANs. The proposal was endorsed. The GLOSOLAN coordinator will draft the revised Terms of Reference and send them to LATSOLAN members for review by email.

8. Venue and time of the next meeting

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

Annex I. Agenda

Monday, **25 October 2021**	
4:00 – 4:10 PM	**Opening, endorsement of the agenda and group picture** *Ms. Miriam Ostinelli, LATSOLAN Chair* *Ms. Nopmanee Suvannang, GLOSOLAN Chair* *Ms. Lucrezia Caon, GLOSOLAN Coordinator, GSP/FAO*
4:10 – 4:30 PM	**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* *Moderator: Ms. Miriam Ostinelli, LATSOLAN Chair*
4:30 – 4:50 PM	**Item 2. LATSOLAN updates followed by an open discussion** - LATSOLAN growth: trends on the registration of new laboratories *Ms. Floria Bertsch, LATSOLAN vice-Chair* - National Soil Laboratory Networks (NASOLANs): establishment and activities - Main points of the work plan of the Steering Committee of LATSOLAN *Ms. Miriam Ostinelli, LATSOLAN Chair* *Moderator: Ms. María C Suárez, LATSOLAN Steering Committee*

4:50 - 5:30 PM	**Item 3. Presentation of the projects implemented/under implementation in the region (both by GSP and other organizations)** - **Implementation of the Soilcare project** in Antigua and Barbuda, Barbados, Belize, Grenada, Guyana, Haiti, Jamaica, and St. Lucia - **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 *Panelists from the Global Soil Partnership Secretariat, FAO: Ms. Carolina Olivera, Mr. Yusuf Yigini, Ms. Lucrezia Caon* - Discussion on country-specific project proposals *Moderator: Mr. Filippo Benedetti, GLOSOLAN Alternate Coordinator and Ms. Ana Silbermann, LATSOLAN Steering Committee*
5:30 – 6:30 PM	**Item 4. LATSOLAN main needs** - Presentation of the results of the online survey on regional needs - Requests on specific topics for GLOSOLAN online trainings (presentation of the survey results) - Presentation of the results of the online survey on the status of soil laboratories after the COVID-19 pandemic - Organization of a LATSOLAN PT - Discussion of the regional work plan *Panelists and moderators: Mr. Filippo Benedetti, GLOSOLAN Alternate Coordinator, Mr. Daniel Carreira, LATSOLAN Steering Committee and and Mr. Christian Hartmann, IRD France* *Moderator: Ms. Miriam Ostinelli, LATSOLAN Chair*
6:30 – 7:00 PM	**Item 5. Position of LATSOLAN in GLOSOLAN** - Preparation of TORs for the positions of Chair, vice-Chair and Steering Committee common to all regions - Proposals on the SOPs to harmonize in 2022 - Definition of range values and reference values in GLOSOLAN SOPs - Other requests
	Moderators: *Ms. Lucrezia Caon, GSP Secretariat and Mr. Daniel Vidal, LATSOLAN Steering Committee*
7:00 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

Ms. Carolina Olivera, Global Soil Partnership Secretariat, FAO HQ

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

Ms. Christian Hartmann, IRD France

Ms. Nopmanee Suvannang, GLOSOLAN Chair

Country	Name of laboratory	First Name	Last Name
Argentina	Laboratorio del Instituto de Suelos de INTA - LabIS	Daniel	Carreira
Argentina	INTA - EEA Manfredi	Carolina	Alvarez
Argentina	INTA Rafaela laboratorio de suelo	Mara	Biglione
Argentina	Laboratorio de Suelo, Agua y Vegetales. INTA San Pedro	Soledad	Muñoz
Argentina	Laboratorio del Instituto de Suelos - LabIS	Miriam	Ostinelli
Argentina	Laboratorio del Instituto de Suelos - LabIS	Daniel	Carreira
Argentina	Laboratorio de Suelo, Agua y Vegetales	Rolando	Aguirre
Argentina	laboratorio de agua suelo y vegetales INTA San Pedro	Martin	Barbieri
Argentina	EEA San Luis	Juan	De Dios Herrero
Argentina	Laboratorio de Suelo y Agua - INTA EEA Sáenz Peña	Maria Florencia	Roldan
Argentina	RILSAV-EEA Anguil	Nanci	Kloster
Argentina	Argentina	Miriam Mabel	Ostinelli
Argentina	laboratorio de suelo, agua y material vegetal INTA Mendoza	Mariana	Pino
Bolivia	Laboratorio de Suelos	Roxana	Barba Aguilar
Brazil	LASP/Embrapa	Daniel	Perez
Brazil	NOVA GÊNESE	Eduardo	Ribeiro Santos Filho
Chile	Laboratorio de análisis químico de Suelos y Plantas UdeC	María De Los Angeles	Sepúlveda
Chile	laboratorio de suelos y plantas INIA Centro Sur , INIA QUILAMAPU	Carmen	Lobos Shand
Chile	AGRISERVICE SPA	Maria	Martinez
Chile	LABORATORIO DE SUELOS Y PLANTAS INIA QUILAMAPU	Graciela	Zapata
Chile	Sidal Ltda	Manuel	Araya
Chile	Laboratorio de Suelo y Plantas , Inía Centro Sur , Inía Quilamapuu	Carola	Baeza

Chile	Agroanalisis UC	Liza	Jofre Manquez
Chile	Laboratorio Análisis de Suelo Cooprinsem	Ingrid	Castro
Chile	Laboratorio de Ecología Microbiana y Biogeoquímica de Suelos	Humberto	Aponte
Chile	Laboratorio de suelos y análisis foliar PUCV	Yasna	Peña
Chile		Rodrigo	Ortega
Colombia	CAR-DLIA	Laura	Casasº
Colombia	Laboratorio Nacional de Suelos	Vivian	Alvarez
Colombia	Labortorio Tecnianálisis S.A.S.	Laura	Uribe
Colombia	CAR - DLIA	Diana	Delgado
Colombia	Dirección de Laboratorio e Innovación Ambiental	Ramiro	Cuero
Costa Rica	GD LATSOLAN	Floria	Bertsch
Costa Rica	CORBANA	Veda	Obando
Costa Rica	Laboratorio suelos y foliares UCR	Carlos	Henríquez
Cuba	UCTB-Suelos Camagüy Cuba	Universidad	Camagüey
cuba	suelo agua y tejido vegetal	Daily	Hernandez
Cuba	Laboratorio de Suelo, agua y tejido vejetal	Olivia	Rosales
DOMINICAN REPUBLIC	LABORATORIO DE QUIMICA DE SUELOS-LABOAGRO-UASD	María	Suárez
DOMINICAN REPUBLIC	Laboratorio Agroempresarial Dominicano	Emilio	Martinez
DOMINICAN REPUBLIC	Laboratorio de química de suelos, Facultad de ciencias Agronómicas y Veterinarias, Universidad Autónoma de Santo Domingo	Libia	Mateo
Ecuador	Laboratorio de Suelos y Aguas Central de la Amazonía	Alexandra	Chanaluisa
Ecuador	Calidad de Suelos Foliares y Aguas	Pablo	Atapuma
Ecuador	Laboratorio de Suelos y Aguas-EETP-INIAP	Betty	Rivadeneira Moreira
Ecuador	INIAP LABORATORIO DE SUELOS Y AGUAS	Gabriela	Pitizaca
El Salvador	FUSADES	Flor	Sosa De Mendoza
El Salvador	Laboratorio de FUSADES	Nidia	De Landaverde
El Salvador	Laboratorio de FUSADES	Nidia	De Landaverde
Jamaica	Soil health plant tissue and water laboratory	Pamella	Mckenzie
Mexico	Fertilidad de Suelos S. de R.L. (FERTILAB)	Agustín	García
Mexico	fertilidad de suelos y quimica ambiental	Claudia	Hidalgo

Mexico	Laboratorio de Fertilidad de Suelos y Quimica Ambiental	Jorge	Etchevers
Mexico	Quimialab	Jesus Angel	Santacruz
Mexico	Laboratorio de Edafología Ambiental	Maricarmen	Salazar
Mexico	LBRM	Sergio	De Los Santos Villallobos
Mexico	Laboratorio de Diagnóstico Ambiental	Vicente Arturo	Velasco Velasco
Mexico	LADIIPA	Ana	Coria
Mexico	Laboratorio de suelo, agua y planta	Rosa	Martínez
Mexico	Laboratorio de Suelos y Agua de la Universidad Autónoma de Baja California Sur	Sergio	Zamora
Mexico	Laboratorio de Ciencias de la Tierra y Medio Ambiente. IIGERCC UNICACH	Silvia Guadalupe	Ramos Hernández
Mexico	Laboratorio de Fertilidad de Suelos y Química Ambiental del Colegio de Postgraduados Campus Montecillo	Juliana	Padilla-Cuevas
Mexico	LabSueP-FCA	José Manuel	Cena Velázquez
Mexico	Laboratorio Agroindustrial, Suelo, Planta y Agua	Armando	Guerrero-Peña
Mexico	Departamento de Análisis de Materiales	Martínez	Vargas
Mexico	Lab. de suelos, aguas y plantas-DICA-ICUAP	José Víctor	Tamaríz Flores
Mexico	LABSAP	Sandra	Rocha
Mexico	Laboratorio de Diagnóstico Ambiental del Instituto Tecnológico del Valle de Oaxaca	Judith	Ruiz Luna
Mexico	Quimialab	Juan Manuel	Alemán
Mexico	AGRUMLAB SC	Jose Abraham	Alvarez García
Mexico	Galdy Hernández Zárate Hernández Zárate	Galdy	Hernández-Zárate
Mexico	Laboratorio CDT Villadiego	Ana Laura	Cornelio
Nicaragua	Laboratorio de suelos y agua comandante Fidel Castro Ruz	Pedro	Muñoz
Nicaragua	LABSA	Leonardo	Garcia
Nicaragua	Laboratorio de suelos y agua	Edder	Gonzalez
Panama	Laboratorio de suelos del Idiap	Jose	Villarreal
Panama	Jhon Alexander Villalaz Pérez	Jhon Alexander	Villalaz Pérez
Peru	Laboratorio de Análisis de Suelos, Plantas, Aguas y Fertilizantes (LASPAF)	Juan Miguel	Guerrero Lázaro
Peru	Microbiología de suelo- UNCP	Fredy	Rivas Yupanqui
Peru	Universidad Nacional del Centro del Perú	Giuliana Shelly	Lizana Flores

Trinidad and Tobago	Soils Laboratories, DFP, The UWI, St. Augustine	Deneil	Lara
Uruguay	Laboratorio suelos DGRN-MGAP	Ana Virginia	Silbermann
Uruguay	INIA	Irene	Purtscher
Uruguay	Estudiolab	Monica	Fernandez
Uruguay	LABORATORIO KEMIA	Mauricio	Silvestri
Uruguay	ILEANA AVILA	Ileana	Avila