NENALAB-II/21/Report

Food and Agriculture Organization of the United Nations

GLOBAL SOIL PARTNERSHIP

Report of the second meeting of the Near East and North African Soil Laboratory Network (NENALAB)

Virtual meeting, 28 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 second meeting of the Near East and North African Soil Laboratory Network (NENALAB) took place on 28 October 2021 on the online platform Zoom (see the meeting agenda in Annex I). The meeting was attended by 46 participants, from 14 NENA countries (see list of participants in Annex II). Mr. Rachid Moussadek, NENA Soil Partnership Chair, Mr. Abdelmjid Zouahri, NENALAB Chair and Ms. Nopmanee Suvannang, GLOSOLAN Chair opened the meeting by reiteratingthe importance of soil laboratories for decision making, fighting climate change and 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 new NENALAB members to GLOSOLAN objectives and areas of work, recalling that GLOSOLAN operates through regional and national soil laboratory networks. Thereafter, Ms. Caon informed participants that on October 12, the network counted on 68 members from the NENA 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 NENALAB members 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, while 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 on 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. NENALAB updates

Mr. Filippo Benedetti, GLOSOLAN alternate coordinator, briefly spoke about the status of the regional network, by reporting the number of laboratories from NENA that registered in GLOSOLAN in 2021 (13 new members of NENALAB, from 7 different countries). Mr. Benedetti highlighted that the GLOSOLAN coordinators will work to liaise with the GSP Focal Points and FAO Offices in those 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:

- Global Soil Doctors Programme

  Ms. Carolina Olivera Sanchez, 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. Ms. Carolina reported that several NENA countries expressed an interest in the programme by completing an online survey. Since the programme counts on the use of a soil testing kit, NENALAB 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. Since, INSII faces several constrains in terms of data availability, data quality and harmonized data, it would be advantageous 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 modelling. 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 in the project formulation if needed.
2. Ask the 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 an internal follow up on the request.
3. Prepare the project document. Please note that there is a ready template for this, so 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.

Introduction to the TCP 3802 RAB "Capacity Development for the Sustainable Management of Soil Resources in NENA Region to Achieve the Sustainable Development Goals"

In 2019, national focal points to the GSP in the NENA region put great effort to write the policy brief "The multi-faced role of soil in the Near East and North Africa", that was presented at the Land and Water Days in 2019. By raising the awareness of national governments on the importance of soils, letters of support to the launch of a regional TCP project on soil were sent to the FAO office for the Near East (FAORNE). Ultimately, a project on "Capacity Development for the Sustainable Management of Soil Resources in NENA Region to Achieve the Sustainable Development Goals" was endorsed and started on 21 October 2021. The

project involves the twelve countries in NENA that sent letters of support (Egypt, Jordan, Iran, Morocco, Lebanon, Iraq, Sudan, Tunisia, Yemen, Palestine, Oman and Syria) and directly benefits their national reference laboratories in GLOSOLAN. Beneficiary laboratories will undergo an assessment of their capacities and needs, and subsequently receive a twelve day training tailored to their specific needs. The project also serves to collect information on all those laboratories needs that cannot be addressed through the project. These will be used for the writing of a second phase project.

5. NENALAB main needs

During the meeting, participants were asked to answer a series of polls to identify laboratories' main needs in the region. These are:

- adoption of health and safety measures in the laboratory;
- harmonization of Standard Operating Procedures (SOPs);
- provision of regular training on SOPs, soil spectroscopy, equipment use and maintenance, and the implementation of internal QC procedures;
- adoption of quality control (QC) procedures.

These inputs will be used to develop an ad-hoc regional work plan, especially in regards to the organization of a series of webinars in French and Arabic.

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, only 27 percent of attendees reported that governments are not aware on soil laboratories activities at all. The remaining 20 percent of meeting participants affirmed that their governments are fully aware of soil laboratories activities. Therefore, the 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.

6. Position of NENALAB in GLOSOLAN

NENALAB members were asked to express their 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 has given 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	Bray I Bray II Olsen P Mehlich I	• particle size-distribution by pipette method and hydrometer • bulk density • moisture content by gravimetric method • Particulate organic carbon by physical fractionation

• Total carbon (Dumas – dry combustion)	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	• 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 suggested by NENALAB , for GLOSOLAN to harmonize in 2022. These are:

Chemical parameters

- Loss of ignition. Regional leader: Zouahri Abdelmjid (Morocco)

Physical parameters:

- Water retention (pF). Regional leader: Zineb El Mouridi (Morocco)
- Aggregate stability by Le Bissonais. Regional leader: Zineb El Mouridi (Morocco)
- Particle density by pycnometer. Regional leader: Nuha Abdalla Mohamed Khamis (Sudan)

Biological parameters: none

NENALAB 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 of the meeting expressed the following opinions on the topic:

- *Range values*: it is fine to include them, but it will not be easy because there are many things to consider. Still, it is not possible to indicate range values for all parameters and methods (e.g. P), it

is necessary to proceed case by case. If ranges are set for a method, then there is the need to recommend methods for the ranges that are left out. Ranges also depend on the soil type. Providing a range is not sufficient for farmers to make SSM decisions (what about climate?).

- *Reference values*: it is fine to work on reference values but these would have to be soil type specific. What about talking about INDICATIVE REFERENCE VALUES instead? Shall these be related to pollution values (for example: some elements like Cu and Zn become like pollutants after a fixed limit)?

7. NENALAB Governance

The governance of NENALAB was defined at the first NENALAB meeting in 2020. At present, the NENALAB counts on the support of a Chair and two vice-Chairs, one to represent countries in the Near East and the other to represent countries in North Africa. The mandate for these positions is two years after election.

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

- 1 NENALAB Chair;
- 2 NENALAB 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 NENALAB members for review by email.

In order to strengthen the position of the Chair and Vice-Chairs of NENALAB, and allow them to do real follow ups in each country and in the overall region. GLOSOLAN proposed NENALAB 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 NENALAB members for review by email.

8. Venue and time of the next meeting

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

Annex I. Agenda

Thursday, **28 October 2021**	
10:00 – 10:10 AM	**Opening, endorsement of the agenda and group picture** *Mr. Rachid Moussadek, NENA Soil Partnership Chair* *Mr. Abdelmjid Zouahri, NENALAB 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 – 11:15 AM	**Item 2. NENALAB updates followed by an open discussion** - NENALAB 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)
	  o **TCP RAB 3802:** Capacity development for the sustainable management of soil resources in the NENA region to achieve the Sustainable Development Goals (SDGs)
	  o **Global Soil Doctors Programme**: eventual provision of reagents to the soil testing kits
	  o **GSP mapping activities**: provision of good quality data from GLOSOLAN laboratories
	- Discussion on country-specific project proposals
	Moderator: Ms. Hana Nabil , NENALAB Vice-Chair for North Africa
	Panelists from the Global Soil Partnership Secretariat, FAO: Ms. Carolina Olivera, Mr. Yusuf Yigini, Ms. Lucrezia Caon
	Ms. Domitille Vallee, FAO RNE

11:15 – 11:50 AM	**Item 3. NENALAB main needs** - Presentation of the results of the online survey - Discussion of the regional work plan - Organization of a NENALAB PT *Panelists and moderators: Mr. Filippo Benedetti, GLOSOLAN Alternate Coordinator, GSP/FAO, Mr. Christian Hartmann, IRD France*
11:50 AM – 12:30 PM	**Item 4. Position of NENALAB 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 Mr. Riham Zahalan, NENALAB Vice-Chair for the Near East*
12:30 – 1:00 PM	**Item 5. NENALAB 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) *Moderators: Filippo Benedetti, GSP Secretariat and Ms. Lucrezia Caon GSP Secretariat*
1:00 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 Sanchez, Global Soil Partnership Secretariat, FAO HQ

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

Ms. Nopmanee Suvannang, GLOSOLAN Chair

Mr. Rob de Hayr, GLOSOLAN Vice-Chair

Mr. Christian Hartmann, IRD France

Country	Name of laboratory	First Name	Last Name
Bahrain	Soil & Fertilizers	Ebrahim	Ahmed
Egypt		Eabdalhamid Alghadban Eabd Allatif	Sharif
Iran	Soil and Water Research Institute	Mojgan	Yeganeh
Iran	Soil and Water Research Institute	kobra sadat	Hasheminasab
Iran	Parham Gostar Labratories	Seyed	Cheraghi
Iran	Kimia AB Environmental and Agricultural Consulting Laboratory	Taher	Ahmadzadeh Kokya
Iran	SWRI-Lab	Karim	Shahbazi
Iran	Khakazma Pars	Seyed Hashem	khadem
Iraq	Soil Chemistry	Basim	Al-Obaidi
Iraq	Soil Fertility and Fertilizers	Saadi Mahdi	Al-Ghrairi
Iraq	Soil Chemistry Lab	Sadeq	Dwenee
Iraq	Soil Physic - D	Alaa	Ati
Jordan	Soil and water	Isra`a	Al-kharabsheh
Jordan	Soil Laboratory	Nabeel	Bani Hani
Lebanon	Lebanese Agriculture Research Institute	Valerie	Azzi
Lebanon	LARI	Yara	Khairallah
Lebanon	LARI	Dany	Romanos
Lebanon	FAFS/AuB	Isam	Bashour
Lebanon	Soil Characterization Lab - AUB	Sandra	Yanni
Morocco	Soil Plant and Water laboratory analysis	Karima	Bouhafa
Morocco	Laboratory of Soil, Water and Plant Analysis	Abdelmijid	Zouahri
Morocco	INRA ICARDA	Rachid	Moussadek
Morocco	Laboratoire de Pédologie ENFI	Hana	Nabil
Morocco	Laboratoire De Sol Al Hoceima,INRA	Khalid	Benzhir
Morocco	Lab of Soil Analysis-Agropole-INRA Oujda	Karim	Andich
Oman	Oman Soil Lab	Saud	Al Farsi

Oman	Soil & Water Lab. Directorate General of Agriculture and Livestock Researches	Hamood	Al-Hashmi
Palestine	Nablus Central Laboratory	Nahawand	Souqia
Palestine	Central Nablus Laboratory	Helana	Derbashi
Sudan	Land Use, Protection and Conservation	Intisar	Arabi
Sudan	Consultant	Mohamed Salih	Dafalla
Sudan	Soil Analysis Laboratories Unit (SALU)	Nuha	Khamis
Syria	Damascus lab	Riham	Zahalan
Syria	Lattakia laboratory	Solaf	Halloum
Tunisia	LCUS	Leila	Ben Dhiab
Tunisia	LCAS	Rafla	Attia
Tunisia	ENIS	Karem	Saad
United Arab Emirates	Central testing lab	Ayeda	Al Hosani
Yemen	Soil, water, plant and fertilizers laboratory	Mohammed	Al-Mashreki