EUROSOLAN-I/19/Report

Food and Agriculture Organization of the United Nations

GLOBAL SOIL PARTNERSHIP

Report of the First meeting of the European and Eurasian Soil Laboratory Network

(EUROSOLAN)

Chişinău, Moldova, 2-5 October 2019

EUROSOLAN-I/19/Report

Report of the First meeting of the European and Eurasian Soil Laboratory Network

(EUROSOLAN)

Chişinău, Moldova, 2-5 October 2019

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2019

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Table of Contents

Introduction 5
Highlights and conclusions 6
STATUS OF EUROSOLAN 6
Standard Operating Procedures (SOPs) 7
Quality control and quality assurance (QA/QC) 8
Proficiency Testing (PT) 8
GLOSOLAN PT 8
Position of EUROSOLAN in GLOSOLAN 9
Governance 10
Venue and time of the next meeting 11
ANNEX I. List of participants 12
ANNEX II. Agenda 14
ANNEX III. Terms of Reference for the position of Chair, Co-chair and the Working Group of EUROSOLAN 17

Introduction

Following the endorsement of the global implementation plan for Pillar 5 in June 2017 and the launch of the Global Soil Laboratory Network (GLOSOLAN) on 1-2 November 2017, the Regional Soil Laboratory Network (RESOLAN) for Eurasia and Europe was established through its first meeting in Chişinău, Moldova on 2-5 October 2019. The meeting was organized by the Global Soil Partnership (GSP) with the support of the Institute of Pedology, Agrochemistry and Soil Protection ”Nicolae Dimo”, Moldova. The meeting was opened by Mr. Ronald Vargas, FAO’s GSP Secretary and Mrs. Nopmanee Suvannang, Chair of GLOSOLAN, Land Development Department from Thailand. Twenty-four lab managers attended the meeting. The list of participants is available in Annex I.

Linking to the objectives of GLOSOLAN, the European and Eurasian Soil Laboratory Network (EUROSOLAN) aims to:

- Strengthen the performance of laboratories through use of standardized methods and protocols; and
- Harmonize soil analysis results so that soil information would be comparable and interpretable across laboratories, countries and regions.

The objectives of the first EUROSOLAN were to (i) establish the Regional Soil Laboratory Network for Eurasia and Europe, (ii) agree on the activities to implement in the region in 2019 as per the work plan of the GLOSOLAN, and (iii) collect regional inputs on GLOSOLAN work.

Highlights and conclusions

The meeting lasted three full days (see the agenda in **Annex II**) and consisted of presentations to introduce the networks highlighting their expectations about GLOSOLAN; to know the status regarding quality assurance, quality control and proficiency testing participation in each region (*i.e.,* Eurasia and Europe); to discuss about laboratory analysis, data and methods harmonization; and to define the work plan of EUROSOLAN as well as its position in GLOSOLAN.

Participants were given the opportunity to present their laboratory as well as their country potential in soil analysis. In this regard, they were kindly asked to provide information on the number of routine and mobile laboratories in their country as well as the frequency of use of soil testing kits. Thereafter, they were kindly asked to look into the weaknesses and strengths of their own laboratory, and to report about their expectations on EUROSOLAN. Individual laboratories' presentations and photos are available on the EUROSOLAN webpage in the GSP, GLOSOLAN website.

STATUS OF EUROSOLAN

As a first diagnosis of EUROSOLAN it was concluded that both regions have modern analytical equipments supported by well-trained personnel, qualified scientific support represented by soil science employees, use of ISO 17025 international standard, effective quality management system and constantly involved in international Proficiency Testing (e.g. WEPAL, BIPEA). Areas for improvement and expectations were also discussed, which are summarized below:

Areas for improvement:

- Unification process of domestic and international measurement methodologies.
- Investments in new equipment.
- Invest in human and financial resources.
- Getting funding.

- High engagement of staff in research projects and teaching.
- Sufficient coverage of lab services by national projects.
- Include methods (e.g. organic contaminants).

Summary of expectations:

- Exchange knowledge and experience.
- Harmonize soil laboratory methods at regional and global level.
- Share knowledge and experience of all participants to EUROSOLAN and GLOSOLAN.
- Initiate collaborations for future research activities.
- Support in training, implementation of new methods/technologies and improvement of laboratory staff qualification.
- Looking for new partners and new good ideas.
- Networking with European and Eurasian partners.
- Collaborate and participate in Proficiency Testing programs at regional and global level.
- Strengthen quality control programs in routine soil analysis laboratories.
- Improvement in quality control and reliability through Interlaboratorial sample exchange programme.

Standard Operating Procedures (SOPs)

Considering the absence of elements - specific information on processes and measures - to discuss SOPs, EUROSOLAN members decided not to revise the protocols. Instead, it was covenanted to compile information concerning each method - defined by GLOSOLAN - to define the status of the network as far as harmonization of methods is concerned. For this purpose, the GSP Secretariat sent excel templates in order to obtain specific information for the following methods: Sample preparation; organic carbon by Walkley & Black (by and colorimetric method); total carbon by dry combustion; and calcium carbonate equivalent (by calcimeter, neutralization, and titrimetric

methods). The participants committed to send the results by the end of the month before the third meeting of GLOSOLAN (28-30 October 2019) in Rome, Italy.

Quality control and quality assurance (QA/QC)

For QA/QC session, Mr. João Coutinho (Laboratório de Solos e Plantas da UTAD) presented about Good Laboratory Practices, explaining the importance of using reference and internal standards samples as daily Internal QC. Mr. Coutinho addressed this topic using z-score approach.

In order to complement and finalize this session, Mrs. Yasemin Demir (Soil Fertilizer and Water Resources) presented a case study showing the Good Laboratory Practices from the Soil Fertilizer and Water Resources Institute from Turkey.

Proficiency Testing (PT)

In order to introduce participants to the topic, Ms. Winnie van Vark (Wageningen University Soil Labs) presented a short introduction to PT, considering sample preparation and distribution, analysis by laboratories, reporting of data by laboratories, statistical assessment of data, performance assessment of laboratories and how to deal with outlying results using robust statistics. Ms. van Vark Kindly prepared a practical exercise with the main goal to analyse data applying different statistical robust methods (e.g. Dixon's Q Test). The activity consisted to split the attendance in three dynamic groups in order to let them work, analyse, discuss and report about their data results.

GLOSOLAN PT

The GLOSOLAN Chair, Mrs. Nopmanee Suvannang (Land Development Department) presented the global PT explaining the importance of sample preparation, data confidentiality, processing, and analysis. Mrs. Suvannang showed the global preliminary results highlight the dramatic need to

develop common SOPs in order to support global decision-making and global soil resource status reporting.

Ms. Rosa Cuevas (EUROSOLAN Coordinator from GSP Secretariat), gave soil sample to participants (**Table 1**) who had not received -and interested to participate the global PT 2019 - as well as the associated documents (sample information document, SOPs, radiation certificate, results report format and FAO's official letter for samples transportation). Mrs. Cuevas explained the process of analysis and results reporting and emphasized the importance of being part of GLOSOLAN PT. For this reason, the participants agreed to send the results before the third GLOSOLAN meeting so that their results were included during the statistical analysis.

Table 1. Countries supplied with soil samples for GLOSOLAN PT.

Participating country	Lab manager's name
Azerbaijan	Rashad Vahadzada
Belgium	Gilles Colinet
Estonia	Ülis Sõukand
Moldova	Ceban Tamara
Portugal	João Coutinho
Russian Federation	Elena Shamrikova
Slovenia	Špela Velikonja Bolta
Ukraine	Maksym Solokha
Ukraine	Viktoriia Hetmanenko
Uzbekistan	Inna Kojenkova

Position of EUROSOLAN in GLOSOLAN

Regarding EUROSOLAN's SOPs, members decided to give priority to Salinity due to the global products that are under development (GSP's Global Salinity Map), in the other hand, the

participants considered that particle size distribution is key for soil assessment. Ms. Marija Romic (Croatian Analytical Laboratory) agreed to lead Soil Salinity's SOP, for particle size distribution, the participants agreed to confirm as soon as possible.

Taking into account the experience in both regions concerning PT, providers capable of supporting the next GLOSOLAN PT were identified (see below). In this regard, it was also agreed to compile detailed information from each provider.

Potential sample providers for GLOSOLAN PT:

- Winnie van Vark, WEPAL (Netherlands)
- Olga Yakimenko, Moscow State University (Russian Federation)
- Gilles Colinet, University of Liège (Belgium)
- João Coutinho, University of Trás-os-Montes and Alto Douro (Portugal)

Finally, in order to improve, EUROSOLAN participants suggested to GLOSOLAN the following:

- The PT format reporting results should be improved; more detail is suggested for reporting each method.
- An online platform is required to store the results and avoid adding uncertainties to the results when exporting them to another file.

Governance

Mr. Giorgi Ghambashidze from the Laboratory of Soil Fertility Research Service of Georgia was nominated Chair of EUROSOLAN. Ms. Špela Velikonja Bolta from the Agricultural Institute of Slovenia was nominated vice-Chair of EUROSOLAN. Taking into account that EUROSLAN covers two regions, it was considered to have representativeness across countries and spoken languages. A set of technical working team was also discussed and created with the objective of supporting EUROSOLAN in the different activities (**Table 2**), such as preparing reports, assist countries, support

the improvement of QA / QC within the region, etc. The Terms of Reference for the position of Chair, Co-chair and the Working group of EUROSOLAN are available in Annex III.

Table 2. EUROSOLAN Chair, Co-Chair and Working Group.

Position	Name	Country	Main functions/activities
Chair	Giorgi Ghambashidze	Georgia	Maintain active communication between EUROSOLAN and GLOSOLAN
Co-Chair	Špela Velikonja	Slovenia	Support the Chairperson of EUROSOLAN
Technical working group	Gilles Colinet	Belgium	Support the Chairperson of EUROSOLAN in all activities
	Kristof Tirez	Belgium	
	Marija Romic	Croatia	
	Ülis Sõukand	Estonia	
	Lauris Leitāns	Latvia	
	João Coutinho	Portugal	
	Olga Yakimenko	Russia	
	Elena Shamrikova	Russia	
	Shovkat Kholdorov	Uzbekistan	

Venue and time of the next meeting

Mr. Giorgi Ghambashidze (EUROSOLAN Chair) kindly offered the Laboratory of Soil Fertility Research Service as the next venue for the second EUROSOLAN meeting. It was agreed to hold this meeting in October 2020 in Georgia. Additionally, Mr. Odil Jabborov offered the Soil Composition and Repository, Quality Analysis Center" as the third EUROSOLAN venue in Uzbekistan.

ANNEX I. List of participants

Country	Laboratory official name	Name
Armenia	Agrochemical Service	Milena Karapetyan
Azerbaijan	Absheron Regional Agrochemical Laboratory	Rashad Vahadzada
Belgium	Laboratory of soil science, University of Liège	Gilles Colinet
Belgium	Flemish reference laboratory for environmental monitoring, VITO	Kristof Tirez
Croatia	Analytical Laboratory of the Department of Soil Amelioration	Marija Romic
Estonia	Estonian Environmental Research Centre	Ülis Sõukand
Georgia	Laboratory of Soil Fertility Research Service	Giorgi Ghambashidze
Kazakhstan	U.U.Uspanov Kazakh Research Institute of Soil Science and Agrochemistry	Galymzhan Saparov
Latvia	Agrochemical Laboratory	Lauris Leitāns
Moldova	Testing laboratory "Quality of soil, plants and fertilizers"	Ceban Tamara
Moldova	Certification and Quality Control of Pesticides	Cincilei Angela
Netherlands	Wageningen University Soil Labs	Winnie van Vark
Portugal	Laboratório de Solos e Plantas da UTAD	João Coutinho
Russian	Lomonosov Moscow State University	Olga Yakimenko
Russian	Ecoanalytical laboratory, IB Komi SC UB RAS	Elena Shamrikova
Slovenia	Agricultural Institute of Slovenia	Špela Velikonja Bolta
Turkey	Soil Fertilizer and Water Resources, Central Research Institute	Aynur ÖZBAHÇE
Turkey	Soil Fertilizer and Water Resources, Central Research Institute	Yasemin Demir
Ukraine	Laboratory of Instrumental Soil Research Methods	Mykola Miroshnichenko
Uzbekistan	"SOIL COMPOSITION AND REPOSITORY, QUALITY ANALYSIS CENTER" State Unitary Company	Odil Jabborov
Uzbekistan	Uzdaverloikha Institute	Askarjon Ergashev
Uzbekistan	"SOIL COMPOSITION AND REPOSITORY, QUALITY ANALYSIS CENTER" State Unitary Company	Inna Kojenkova
Uzbekistan	"SOIL COMPOSITION AND REPOSITORY, QUALITY ANALYSIS CENTER" State Unitary Company	Kholdorov Shovkat
Thailand	Land Development Department	Nopmanee Suvannang
Italy	FAO-GSP	Rosa Cuevas
Italy	FAO-GSP	Ronald Vargas
Italy	FAO-GSP	Natalia Rodriguez
Russian	Lomonosov Moscow State University	Pavel Krasilnikov
Russian	Lomonosov Moscow State University	Maria Konyushkova
Moldova	IPAPS, scientific secretary,	Ciolacu Tatiana

Moldova	IPAPS*, Laboratory “Soil Amelioration”	Filipciuc Vladimir
Moldova	State University of Moldova, Head of Laboratory “Pedogenetic Processes”	Gherghe Jigău
Moldova	National Agency for Food Safety, standardization expert	Jitcu Teodor
Moldova	IPAPS, vice-director	Leah Tamara
Moldova	IPAPS, director, specialist in soil organic matter	Moșoi Iurie
Moldova	IPAPS, senior engineer in Laboratory “Soil Amelioration”	Șalaghina Natalia
Moldova	IPAPS, Head of Group “Soil Biology”	Senicovscaea Irina
Moldova	IPAPS*, consultant	Țiganoc Vladimir
Romania	Research Institute for Soil Science and Agrochemistry, Bucharest, Romania	Lăcătușu Radu
Ukraine	Institute of Agricultural Microbiology and Agro Industrial Production	Yevhenii Kopylov

EUROSOLAN members

Organizing committee

Assistants

ANNEX II. Agenda

2 October Venue: the State University of Moldova, Chişinău, Moldova		
8:30 – 9:30	Registration	
Session 1: Introduction to the workshop *Moderator: Ms. Rosa Cuevas, GSP Secretariat*		
9:30 – 10:00	Welcome and Opening Remarks	Moldova Agriculture representative Gulchekhra Khasankhanova, EASP Chair Hukmatullo Ahmadov, Pillar 5 Chair Ronald Vargas, GSP Secretariat
10:00 – 10:10	Endorsement of the agenda and objectives of the meeting	Rosa Cuevas, GSP Secretariat
10:10 – 10:30	Introduction to GLOSOLAN	Nopmanee Suvannang, GLOSOLAN Chair
10:30 – 11:00	Coffee break and group picture	
Session 2: National Reference Laboratories (10 minutes per country) *Moderator: Ms. Rosa Cuevas, GSP Secretariat*		
11:00 – 12:30	**Armenia:** Agrochemical Service	Milena Karapetyan
	Austria: AGES - Austrian Agency for Health and Food Safety	Andreas Baumgarten
	Azerbaijan: Absheron Regional Agrochemical Laboratory	Rashad Vahabzada
	Belgium: Flemish reference laboratory for environmental monitoring, VITO	Kristof Tirez
	Belgium: Laboratory of soil science, University of Liège	Gilles Colinet
	Croatia: Analytical Laboratory, University of Zagreb Faculty of Agriculture	Marija Romić
	Denmark: AGRO University laboratory	Maria Knadel
	Estonia: Estonian Environmental Research Centre	Ülis Sõukand
	Georgia: Laboratory of Soil Research named after Prof. Ivane Sarishvili, Soil Fertility Research Service, Scientific-Research Centre of Agriculture (SRCA)	Giorgi Ghambashidze
12:30 – 13:30	Lunch	
13:30 – 15:00	**Germany:** SYNLAB Analytics & Services Germany GmbH	Luca Fagiuoli
	Germany: Thünen-Agricultural-Soil-Inventory-Laboratory	Arne Heidkamp
	Kazakhstan: U.U.Uspanov Kazakh Research Institute of Soil Science and Agrochemistry	Galymzhan Saparovich
	Latvia: Agrochemical Laboratory	Sanita Vucane
	Moldova: Testing laboratory "Quality of soil, plants and fertilizers"	Ciobanu Tamara
	Moldova: Certification and Quality Control of Pesticides	Cincilei Angela
	Netherlands: Wageningen University Soil Labs	Winnie Van Vark
	Portugal: Laboratorio de Solos e Plantas da UTAD	João Coutinho
	Russian Federation: Ecoanalytical Laboratory and Department of Soil Science	Elena Shamrikova
15:00 – 15:30	Coffee break	
	Russian Federation: Testing Center of Soil Science Faculty	Olga Yakimenko

15:30 – 17:00	**Slovenia:** Agricultural Institute of Slovenia	Špela Velikonja Bolta
	Turkey: Soil Fertilizer and Water Resources, Central Research Institute	Aynur ÖZBAHCE Suat AKGÜL
	Ukraine: Laboratory of Instrumental Soil Research Methods of the National Scientific Center «Institute for Soil Science and Agrochemistry Research named after O.N. Sokolovsky»	Maksym Solokha
	Ukraine: Laboratory of Toxicology	Oleksandr Kravchuk
	Ukraine: Institute of Agricultural Microbiology and Agro Industrial Production	Yevhenii Kopylov
	Uzbekistan: Soil Test Laboratory, "SOIL COMPOSITION AND REPOSITORY, QUALITY ANALYSIS CENTER" State Unitary Company	Inna Kojenkova Odil Jabbarov Shovkat Kholdorov
	Uzbekistan: Uzdaverloikha Institute	Askarjon Ergashev

3 October 2019 Venue: the State University of Moldova, Chişinău, Moldova	
8:00 – 21:30	Field trip

4 October 2019 Venue: the State University of Moldova, Chişinău, Moldova		
Session 3: Standard Operating Procedures (SOPs) Moderator:		
8:30 – 9:00	Regional inputs on SOPs	*Rosa Cuevas*
9:00 – 10:30	Review of the GLOSOLAN SOPs 2019 • Sample pretreatment • Organic carbon (Nopmanee Suvannang) • Inorganic carbon (Olga Yakimenko) • Total carbon (Nopmanee Suvannang)	Presenters: EUROSOLAN members
10:30 – 11:00	Coffee break	
11:00 – 12:30	Continuation of session 3	Moderators: EUROSOLAN members
12:30 – 13:30	Lunch	
Session 4: Quality control, quality assurance (QC/QA) and Good Laboratory Practices (GLP) *Moderator and trainer expert: Christian Hartmann*		
13:30 – 14:00	Introduction to QC/QA and GLP	João Coutinho Laboratorio de Solos e Plantas da UTAD
14:00 – 15:00	*Group work on* QC/QA	João Coutinho
15:00 – 15:30	Coffee break	
Session 4: Proficiency testing (PT) *Moderator and trainer expert: Christian Hartmann*		
15:30 – 16:00	Short introduction to proficiency testing	Winnie van Vark, WEPAL, Wageningen University
16:00 – 18:00	Practical exercise: results analysis with different statistical robust methods.	*Train expert:* Winnie van Vark João Coutinho

18:00 – 18:30	GLOSOLAN PT 2019	Nopmanee Suvannang on behalf of Christian Hartman

5 October 2019 Venue: the State University of Moldova, Chişinău, Moldova		
Session 5: Governance, financial resource mobilization, planning and way forward *Moderator:* Rosa Cuevas		
8:30 – 10:30	- Launch of the Eurasian Soil Laboratory Network - Identification of networks and partners working on the topic to involve in EUROSOLAN and overall GLOSOLAN activities - Election of the president and vice president of EUROSOLAN. - Establishment of the EUROSOLAN working group. - Position of EUROSOLAN in GLOSOLAN. -Definition of the venue and date of the next EUROSOLAN meeting	Rosa Cuevas Nopmanee Suvannang
10:30 – 11:00	Coffee break	
11:00 – 12:00	Brainstorming around potential sponsors for EUROSOLAN Identification of priority activities for laboratories in EUROSOLAN	EUROSOLAN Chair
Session 6: Closing of the event *Moderator: EUROSOLAN Chair*		
12:00 – 12:30	*Closing of the event*	EUROSOLAN Chair Ronald Vargas, GSP Secretariat
12:30 – 13:30	Lunch	

ANNEX III. Terms of Reference for the position of Chair, Co-chair and the Working Group of EUROSOLAN

The Chairperson of the Regional Soil Laboratory Network for Eurasia and Europe (EUROSOLAN) will:

1. Ensure that the Pillar 5 Implementation Plan, Section "Soil Sampling and Analysis", is implemented and the EUROSOLAN is established under GLOSOLAN;
2. Ensure that the Eurasian and European Soil Partnership Implementation Plans for Pillar 5, Activity 5.3.3, is implemented;
3. Chair the EUROSOLAN meetings, and oversee the respective Eurasian and European Soil Partnership Implementation Plans and GLOSOLAN Roadmap, thus ensuring their work objectives and deliverables are met in time, and updated when necessary;
4. Maintain active communication between EUROSOLAN and GLOSOLAN, the GSP Secretariat and the Pillar 5 Working Group, in relation to the implementation of the EUROSOLAN activities as documented in the Roadmap agreed upon at the launch of the EUROSOLAN;
5. Participate in the Pillar 5 Working Group at global level (see ToR for the Pillar 5 WG in the Pillar 5 Implementation Plan);
6. Represent EUROSOLAN at official national and international meetings;
7. Report (jointly with the GSP Secretariat, the ITPS Chair and the GLOSOLAN Chair) to the GSP Plenary Assembly about the EUROSOLAN progress; advocate for the mobilization of resources to execute the EUROSOLAN activities, supported by the working group for EUROSOLAN.

The appointment of the Chair of the EUROSOLAN will take place during the annual meeting of EUROSOLAN. The term for the Chairperson is two years after election, extendable via EUROSOLAN decision to a second term. The Chair is, whenever possible, supported by a Co-Chair in all activities and tasks.

The Working Group of the Regional Soil Laboratory Network for Eurasia and Europe (EUROSOLAN) will:

1. Support the Chairperson of EUROSOLAN in advocating for the mobilization of resources to undertake the EUROSOLAN activities;
2. Write proposals for the mobilization of financial resources, supported by the GSP and ESP and EASP Secretariats;

3. Prepare Standard Operational Procedures (SOPs), PT programmes and other documents and material relevant to the activities of EUROSOLAN, to be endorsed by member countries in EUROSOLAN;
4. Assess the quality of laboratories in EUROSOLAN: data collection and analysis, formulation of conclusions and points of discussion to inform and review the roadmap of EUROSOLAN;
5. Offer support to countries in need, e.g. provision of laboratory-specific recommendations, training of guest researchers, visit of laboratory facilities, etc.
6. Develop the workplan of EUROSOLAN

The appointment of the members of the Working Group of the EUROSOLAN will take place during the annual meeting of EUROSOLAN. The Working Group is led by the Chair and Co-Chair of EUROSOLAN and is composed of five laboratory managers who meet the following criteria:

- Demonstrated hands-on approach to facilitating and implementing good laboratory practices (GLP) in their lab;
- Demonstrated ability to network and interact with other lab managers, encouraging others to implement changed lab procedures and processes to improve lab proficiency;
- Ability to write and communicate with others in English;
- Manage a well-equipped soil-testing lab that demonstrates GLP and proficiency in soil analyses.

The term for the members of the working group is two years after election, extendable via EUROSOLAN decision to a second term. The nomination of the members of the working group is by person and not by country.