



Food and Agriculture
Organization of the
United Nations

6th Eurasian Soil Partnership plenary meeting

EUROSOLAN report

23-24 May 2023
Tashkent
Uzbekistan

Elena Shamrikova
EUROSOLAN Vice-chair
Institute of Biology Komi SC RAS, Russia
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Global Soil Partnership (2012)

The aggravation of global problems required the consolidation of the efforts of soil scientists of the entire world scientific community

food security *climate warming* *acidification* *salinization* *degradation* *aridization* *pollution* *erosion*

Technical networks

GLOSOLAN
Global Soil Laboratory Network



INBS
International Network of Black Soils



INFA
International Network on Fertilizer Analysis



INSAS
International Network of Salt-Affected Soils



INSII
International Network of Soil Information Institutions



NETSOB
International Network on Soil Biodiversity



INSOP
International Network On Soil Pollution





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Soils: if you cannot measure it, you cannot manage it



GSP

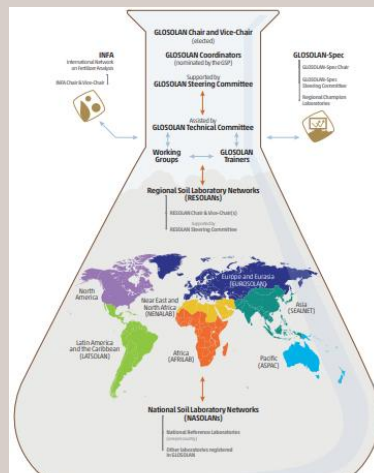
GLOSOLAN
GLOBAL SOIL LABORATORY NETWORK

2011

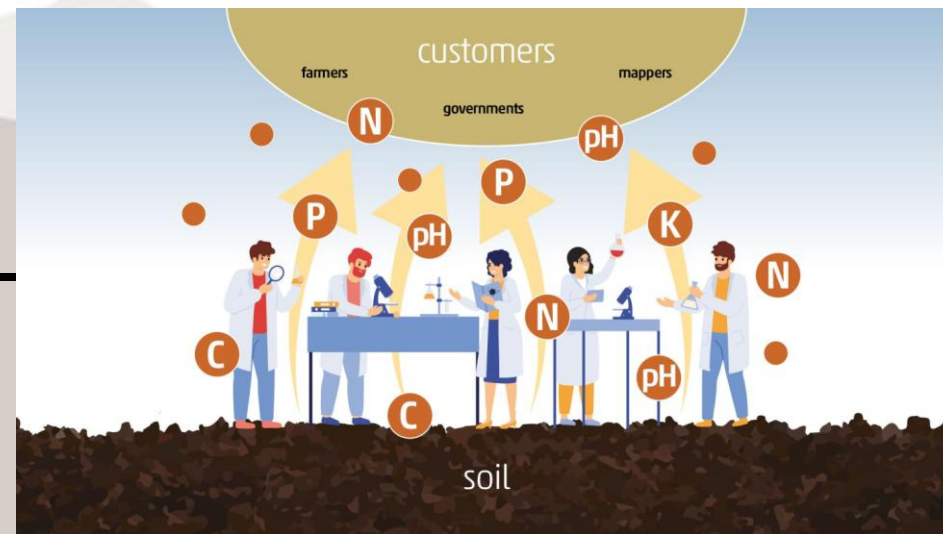
2013

2015

2017



960 laboratories in the world



<https://www.fao.org/global-soil-partnership/glosolan/en>

- harmonization soil analytical data;
- building and strengthen the analytical capacity of laboratories worldwide

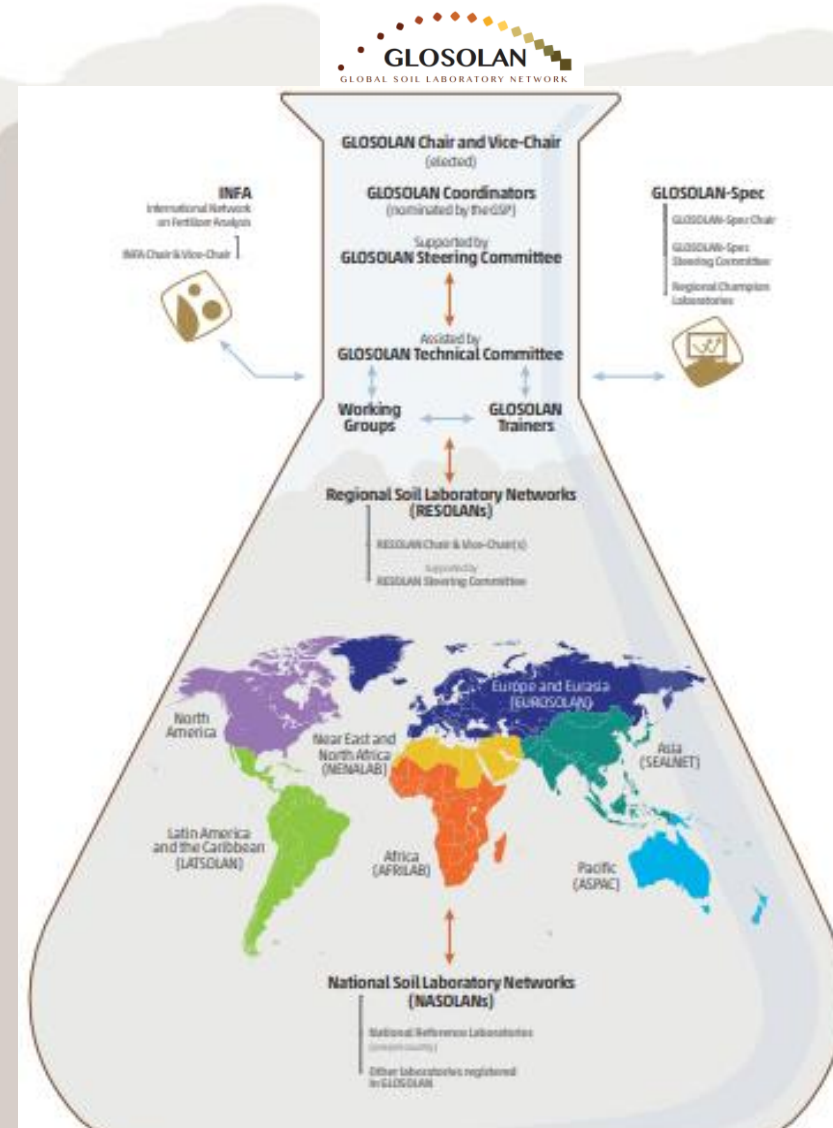
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New approach:

- inclusive;
- harmonization – bottom

GLOSOLAN SOP for OC by WB:
67 lab from 52 countries (different continents)



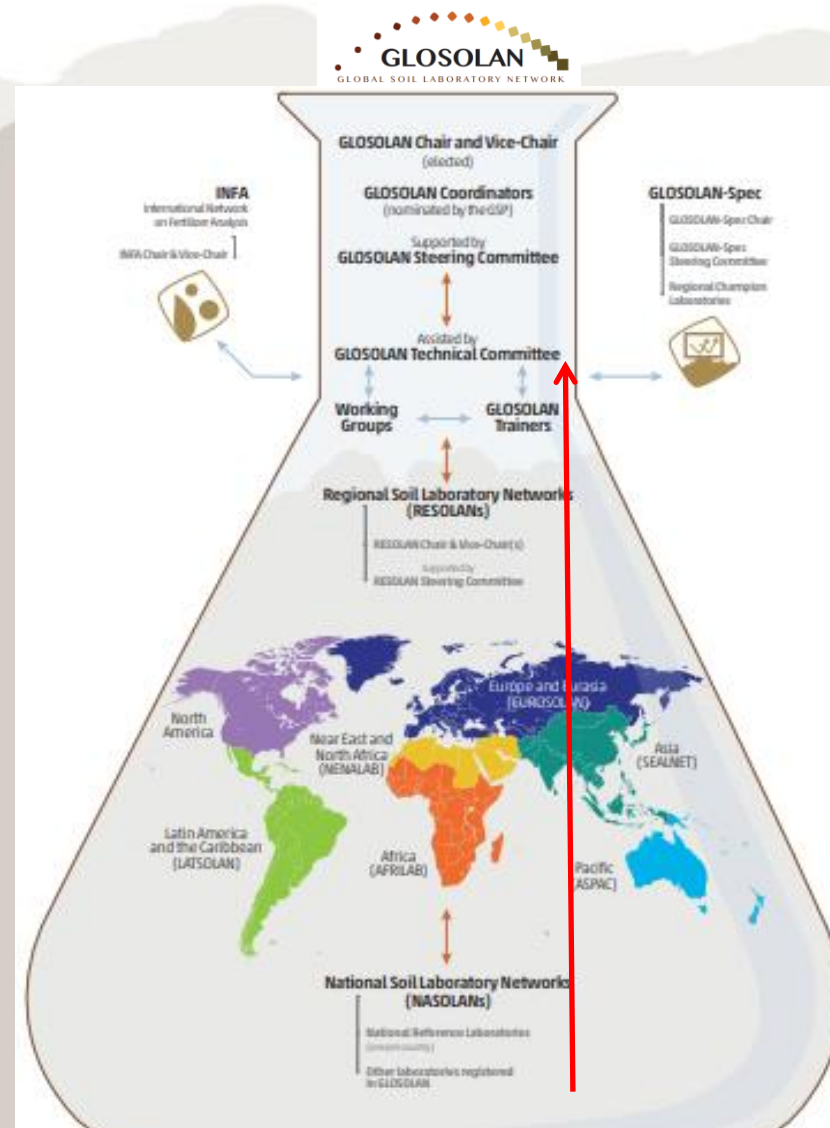
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Governance



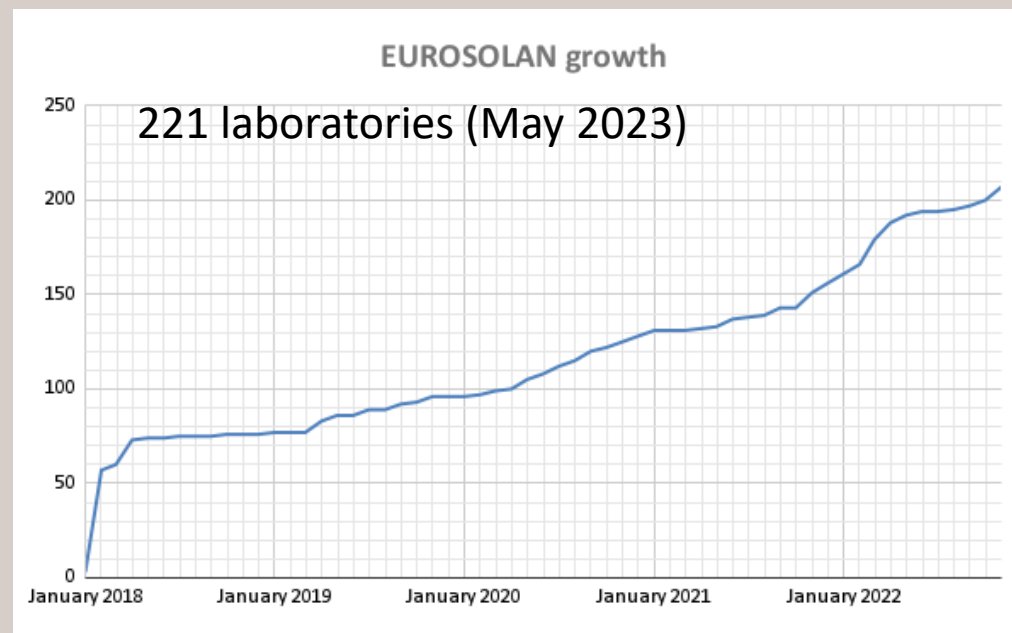
EUROSOLAN Chair: Marija Romić (Croatia)

Vice-Chair for European countries: Oguz Can Turgay (Turkey)

Vice-Chair for Eurasian countries: Elena Shamrikova (Russian Federation)

EUROSOLAN Steering Committee:

- Ágnes Nagy (Hungary)
- Christian Hartmann (France)
- Špela Velikonja Bolta (Slovenia)
- Aldis Butlers (Latvia)
- Giorgi Ghambashidze (Georgia)



Launch of the Regional Soil Laboratory Network for Europe and Eurasia

Chişinău, Moldova | 2– 5 October 2019

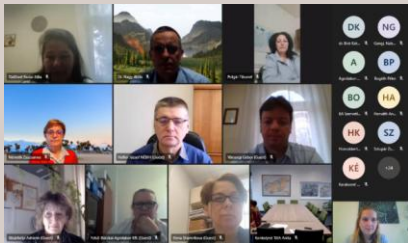


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National Soil Laboratory Networks in focus

A regional network of **221 soil laboratories** from **43 countries**



Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, The Republic of Moldova, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan, Vatican City

Four EUROSOLAN meetings have been implemented so far...

Aim:

- Revise the network work plan, according to the needs of the laboratories in the region;
- Make proposals to be submitted to GLOSOLAN;
- Monitor the status of the laboratories and the NASOLANs in the region

Recent EUROSOLAN meetings



Fourth EUROSOLAN meeting

Zoom platform, 5-6 October 2022 - Time: 10:00-12:00 Rome time

The network aims to connect partners and networks already operating within Europe and Eurasia...

[Learn More](#)



Third EUROSOLAN meeting

Zoom platform, 27 October 2021 - Time: 10:00-13:00 Rome time

The network aims to connect partners and networks already operating within Europe and Eurasia...

[Learn More](#)



Second EUROSOLAN meeting

Zoom platform, 30 September - 2 October 2020

The network aims to connect partners and networks already operating within Europe and Eurasia...

[Learn More](#)



First EUROSOLAN meeting

Chişinău, Moldova, 2 - 5 October 2019

EUROSOLAN facilitates the exchange of experiences among national reference soil laboratories. This network aims to strengthen laboratory performance...

[Learn More](#)

Material available for each meeting:

- Agenda
- Presentations
- Meeting report
- Video recordings (for those implemented virtually)
- Photo gallery

<https://www.fao.org/global-soil-partnership/glosolan/regional-soil-laboratory-networks/eurosolan/en/>

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SOPs harmonized so far...

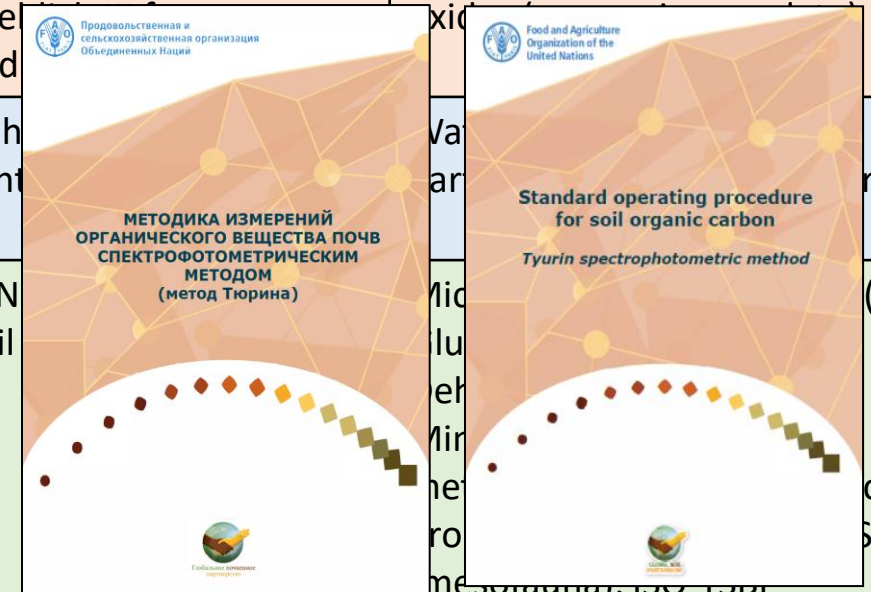
	2019	2020	2021	2022
Chemical	OC Walkley and Black, TC Dumas, Calcium carbonate eq. (titrimetric and volumetric calcimeter methods)	Phosphorus (Bray I, Bray II, Olsen, Mehlich I), pH, electrical conductivity (in water and in saturated paste), nitrogen (Dumas, Kjeldah), carbon (Tyurin)	Particulate organic carbon (physical fractionation), Quasi-total elements (digestion using aqua regia and EPA), Exchangeable bases and CEC (ammonium acetate), available micronutrients (extraction using DTPA), Boron (hot water extraction), Mehlich III for macro and micronutrients (including S and B)	Organic matter (loss of ignition), Available phosphorus (KCl), Exchangeable acidity + Exchangeable Al (KCl), Soil buffer capacity (KOH), Fe and Al oxides (ammonium oxalate)
Physical			Particle size-distribution (hydrometer, pipette), bulk density, moisture content (gravimetric method)	Water retention (pF) curve, Particle density (pycnometer)
Biological			Microbial biomass C and N by chloroform fumigation-extraction, soil respiration	Microbial Enzyme Activities (B-Glucosidase, Arylsulfatase, Dehydrogenase), N Mineralization (incubation method), Nematodes trophic groups (wet extraction), QBSar (mesofauna), ISO-TSBF (megafauna)

Already published:

- 1 on sample pre-treatment;
- 17 on soil chemical parameters (7 more ongoing);
- 1 on soil physical parameter (5 more ongoing);
- 1 on soil biological parameter (6 more ongoing)

SOPs harmonized so far...

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Physical			Particle size-distribution (h bulk density, moisture cont method)	
Biological			Microbial biomass C and N fumigation-extraction, soil	

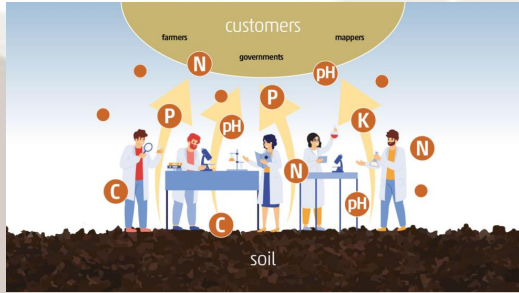


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GSP



GLOSOLAN



2011

2013

2015

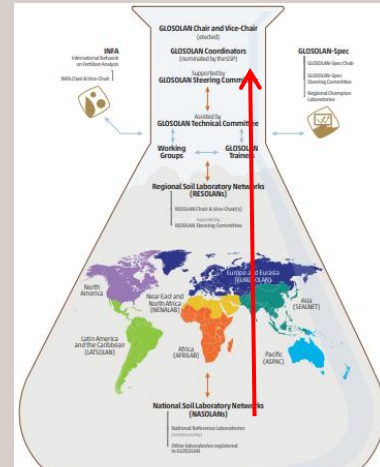
2017

2019

2021

2023

If laboratories continue their current level of engagement in the development of harmonized GLOSOLAN SOPs, GLOSOLAN will be in a unique position to affirm its set of SOPs as the new standard to harmonize soil data globally

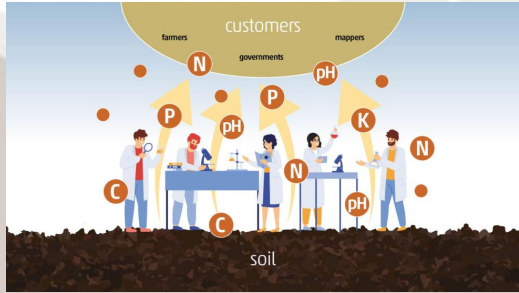


960 laboratories in the world

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GSP

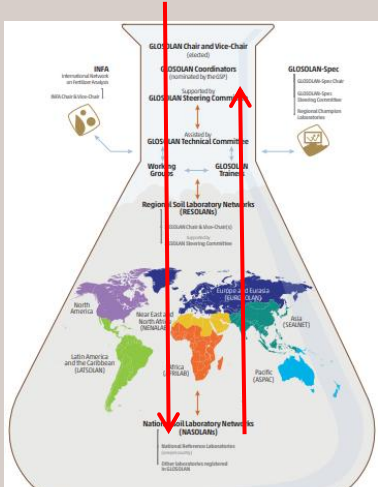


GLOSOLAN



2011 2013 2015 2017 2019 2021 2023

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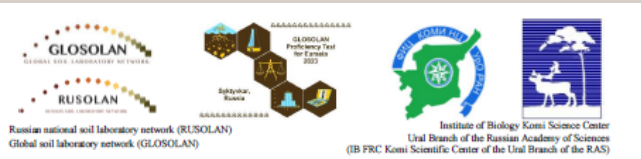


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GLOSOLAN PT for Eurasia 2023



FIRST INFORMATION LETTER on GLOSOLAN Proficiency test for Eurasia 2023

Dear Colleagues,

We invite your laboratory to take part in GLOSOLAN Proficiency test (PT) for Eurasia 2023 on the measurement of soil organic carbon (SOC) organized by the Institute of Biology of the Komi Science Center of the Ural Branch of the Russian Academy of Sciences (IB) with the financial support of the partner PhosAgro.

Our experience in measuring SOC and the study of the most common and technically available methods allowed us to certify the method for measuring SOC and organic matter by the photometric method (Tyurin and Walkley-Black methods, No. 88-17641-001-2020, FR.1.31.2020.38218). A comparative study of standard and different soil types samples carried out by the IB staff has allowed establishing the interrelationship between SOC obtained by the use of the photometric method and the dry combustion method on the analyzer. The modification of the Tyurin method was approved by the GLOSOLAN commission, the description of the methods is available on the official website:
 - Walkley-Black method in English: <https://www.fao.org/3/ca7471en/ca7471en.pdf>
 - Walkley-Black method in Russian: <https://www.fao.org/3/ca7471ru/ca7471ru.pdf>
 - Tyurin method in English: <https://www.fao.org/3/cb4757en/cb4757en.pdf>
 - Tyurin method in Russian: <https://www.fao.org/3/cb4757ru/cb4757ru.pdf>
 - video on the Tyurin method in Russian: https://www.youtube.com/watch?v=C2H_IV4YA
 - video on the Walkley and Black in English: <https://www.youtube.com/watch?v=Y2b6o5O4TM> | <https://www.youtube.com/watch?v=N8pY5fb8T1U&t=74s>

The purpose of the organized PTs is to expand and promote common approaches for measuring SOC into the laboratories' practice.

In connection with the above, we prepared a selection of seven control non-calcareous soil samples based on real objects for measuring SOC. Samples will be sent to participants with following accompanying documentation:
 - user's manual;
 - certified method for measuring the carbon mass fraction of organic compounds and organic matter in soils, ground material, parent material, bottom sediments by the photometric method (Tyurin and Walkley-Black methods) No. 88-17641-001-2020 (FR.1.31.2020.38218);
 - the form of issuing measurement results.

In control samples, it will be necessary to determine the SOC by all the proposed methods (recommended) or to choose any of them if a limited technical capacity doesn't allow conducting studies using all methods.

GLOSOLAN Proficiency test for Eurasia 2023 are held free of charge. All PT participants will be provided with a final report in which test results from participating laboratories will be presented anonymously. Every participant will additionally receive an individual PT participation certificate.

PARTICIPANT REGISTRATION FORM
GLOSOLAN proficiency test for Eurasia 2023

Name of the laboratory		
Unique accreditation record number in the accredited persons registry (if available)		
Organization name		
Country		
Registered address		
Place (address) of activity		
Address for sending control samples		
Full name, position, phone number, e-mail of the person responsible for interaction within the PT		
The prior measuring method by which the laboratory will conducting studies (choose any number of research methods, depending on technical capacity, delete as appropriate)	Declared research method	Cho
	Tyurin method for measuring SOC by the photometric method according to the measurement procedure No. 88-17641-001-2020 (FR.1.31.2020.38218)	Yes
	Walkley-Black method for measuring SOC by the photometric method according to the measurement procedure No. 88-17641-001-2020 (FR.1.31.2020.38218)	Yes
	Dry combustion according to the methodology carried out in the daily laboratory activities of the participant	Yes/No
Loss-on-ignition (LOI) method (T = 550 °C)	Yes/No	
Your comments, suggestions and wishes, if any		

The completed form need to send on the organizer e-mail soiltest@ib.komisc.ru no later than April 20, 2023.



Each laboratory will be assigned a code. Participation in PT is anonymous. PT is held free of charge.



EUROSOLAN members participate

in *International conferences and workshops* to spread information about the global network:

- The international scientific conference on sustainable management of land resources and biodiversity SERBEMA-2022, **Tashkent , Uzbekistan** (12-13.04.2022);
- Workshop on the tools of the Global Soil Partnership in support to the Central Asia Countries Initiative for Land Management, **Ashghabat, Turkmenistan** (17.08.2022);
- 17th International Symposium on Soil and Plant Analysis, **Concepción-Chile** (21-24.03.2023);
- Open International Forum-Webinar on Soil Protection and Sustainable Land Use “Global Soil Conservation: international experience in soil fertility and health support”, **Moscow, Russian Federation** (27.04.2023)
- *and others...*



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Almost 9000 views in one year!



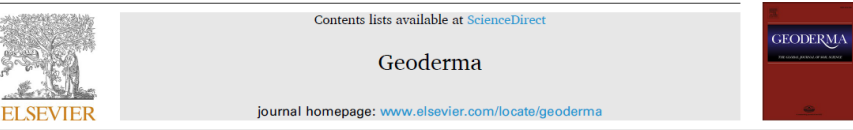
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EUROSOLAN , as a regional branch of the global network, sees great prospects in developing cooperation with ther RESOLANs (*not only in the preparation of agreed SOPs !!!!*).

For example, through joint *scientific research* aimed at harmonizing methods. With the subsequent publication of scientific results in the open press, such as

Joint efforts of EUROSOLAN and SEALNET and North America in the harmonization of methods for measuring soil organic carbon



Contents lists available at ScienceDirect

Geoderma

journal homepage: www.elsevier.com/locate/geoderma

Transferability between soil organic matter measurement methods for database harmonization

E.V. Shamrikova¹, B.M. Kondratenok², E.A. Tumanova³, E.V. Vanchikova³, E.M. Lapteva³, T. V. Zonova⁴, E.T. Lu-Lyan-Min⁵, A.P. Davydova³, Z. Libohova^{6,7}, N. Suvannang⁸


¹ Institute of Biology Komi SC Ural RAS, Kommunisticheskay 28, Syktyvkar, Russian Federation
² USDA-ARS Dale Bumpers Small Farms Research Center, 6883 S. Hwy 23, Booneville, AR 72927, United States
³ Land Development Department, 2003/61 Phaholyothin Road, Chatuchak, Bangkok 10240, Thailand

ARTICLE INFO

ABSTRACT

Handling Editor: Ingrid Kögel-Knabner

Soil organic matter (SOM) is one of the most important soil-forming factors and complex with a chemical



ISSPA

17th International Symposium on Soil and Plant Analysis - ISSPA

Analytics for a sustainable agriculture under climatic change

The Standard Operating Procedures of the Global Soil Laboratory Network (GLOSOLAN): a trigger to face emerging challenges on sustainable soil management worldwide

Suvannang N.¹, Hartmann C.², Shamrikova E.³, Suárez M.C.⁴, Abbas Aziz M.⁵, Benedetti F.⁶, Bertsch F.⁷, Caon L.⁸, Cheik S.⁹, Dehayri R.⁹, Ferguson R.¹⁰, Khairallah Y.¹¹, Mooketsi-Selepe L.¹², Nilo G.¹³, Ostinelli M.¹⁴, Romić M.¹⁵, Tendayi T.¹⁶, Turgay O.C.¹⁷, Zahalan R.¹⁸, Zouhri A.¹⁹

¹ Land Development Department, Ministry of Agriculture and Cooperatives, Thailand
² Institut de Recherche pour le Développement, UMR 242 IEES (Institute of Ecology and Environmental Sciences of Paris), F-93140 Bondy, France
³ Ecobioanalytical laboratory of the Institute of Biology of Komi Scientific Center of the Ural Branch of the Russian Academy of Sciences, Russian Federation
⁴ Laboratorio de suelos (LABOSUELOS), Universidad Autónoma de Santo Domingo, Dominican Republic
⁵ Fajal Fertilizer Company Limited, Pakistan
⁶ Global Soil Partnership, Food and Agriculture Organization of the United Nations, Italy
⁷ Laboratorio de Suelos y Foliars de la Universidad de Costa Rica, CIA/UCR and Asociación Costarricense de la Ciencia del Suelo, ACCS, Costa Rica
⁸ Laboratoire Agronomie et Ecologie, Centre d'Etudes et de Recherche de Djibouti (CERD), Djibouti
⁹ Australasian Soil and Plant Council, Australia
¹⁰ Kellogg Soil Survey Laboratory, National Soil Survey Center, Soil and Plant Science Division, Natural Resources Conservation Service, United States Department of Agriculture, United States of America
¹¹ Lebanese Agricultural Research Institute (LARI), Lebanon
¹² Former Director, Soil and Plant Analytical Laboratory, Ministry of Agriculture, Botswana
¹³ Bureau of Soils and Water Management, Department of Agriculture, Philippines
¹⁴ Laboratorio del Instituto de Suelos, Centro de Investigación de Recursos Naturales, Instituto Nacional de Tecnología Agropecuaria, Argentina
¹⁵ Analytical laboratory MELILAB, University of Zagreb Faculty of Agriculture, Croatia
¹⁶ Department of Soil Science and Environment, University of Zimbabwe, Zimbabwe
¹⁷ Department of Soil Science and Plant Nutrition, Faculty of Agriculture, Ankara University, Turkey
¹⁸ Damascus lab, General Commission for Scientific Agricultural Research, Syria
¹⁹ Lab. des analyses des sols, eaux et plantes, Centre Régionale de la Recherche Agronomique de Rabat, Morocco

Keywords: standard operating procedures, Global Soil Laboratory Network, soil analysis, soil properties, soil data harmonization, soil data comparability, decision-making



37th Philippine Chemistry Congress

SMX Convention Center, Bacolod City, Negros Occidental, Region VI
July 26-28, 2023

Chemistry for Agriculture 4.0 and Food Security

Chemistry has an important role in helping agriculture modernize and meet its

The challenges of agriculture with chemistry to meet the sustainable soil management

N. Suvannang¹, C Hartmann² and E. Shamrikova³

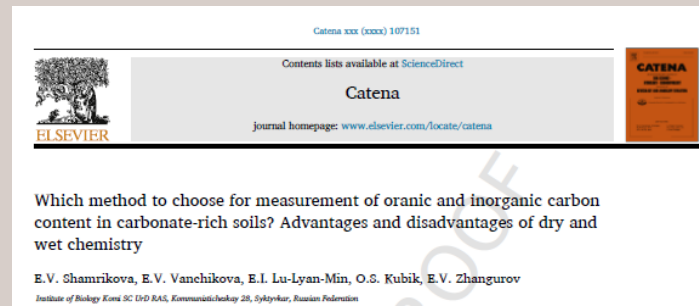
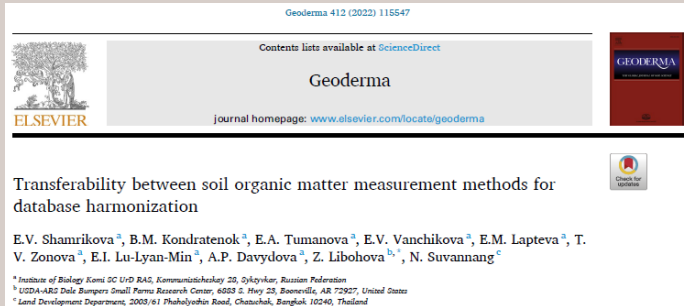
¹ Land Development Department, Ministry of Agriculture and Co operatives, Thailand.
² Institut de Recherche pour le Développement (IRD), Ministries of Higher Education and Research and Foreign Affairs, France.
³ Institute of Biology Komi Science Center Russian Academy of Sciences, Russia

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What is next action to make comparable data visibility in reality?

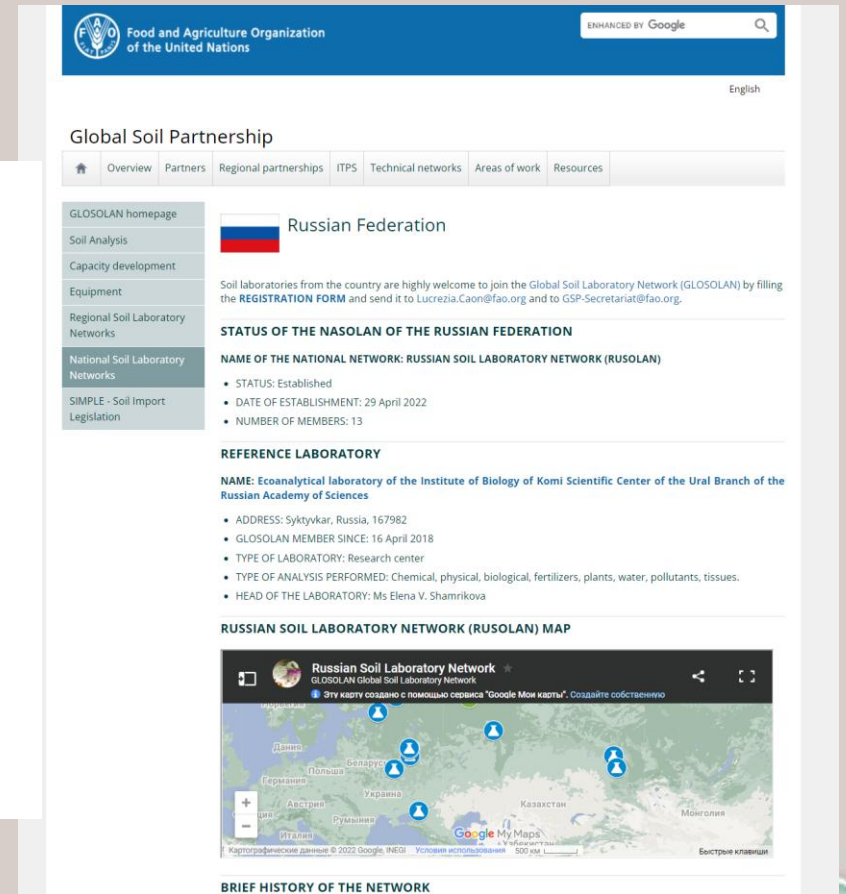
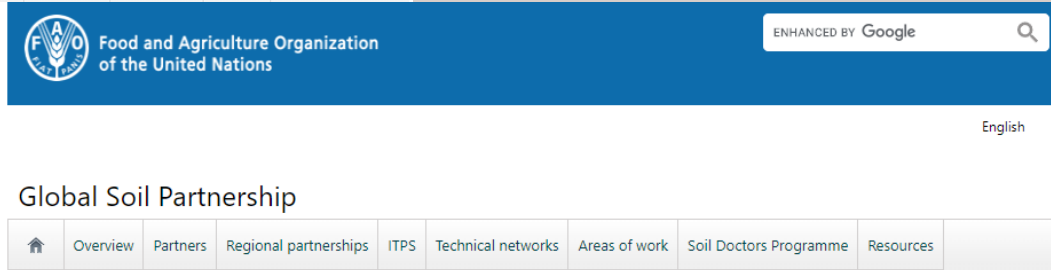
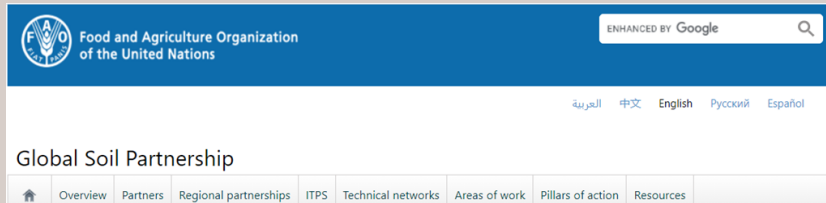
- Transfer functions:



- Connect with global specific networks:

- Awareness
- Encourage the use of GLOSOLAN SOPs
- Develop transfer functions

GLOSOLAN is doing its best to keep its webpage updated and available in the 6UN official languages: English, French, Spanish, Arabic, Russian and Chinese



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EUROSOLAN invites all interested laboratories to join the global network!



Filippo Benedetti – Coordinator of the Global Soil Laboratory Network (GLOSOLAN),
Filippo.Benedetti@fao.org

Dear Filippo,
Our laboratory would like to join the GLOSOLAN activity.

<https://www.fao.org/global-soil-partnership/glosolan/en>

Country	
Status (OFFICIAL/UNOFFICIAL)	
Laboratory official name	
Laboratory short name or acronym	
Laboratory full address	
Head of the Laboratory: NAME and SURNAME	
Head of the Laboratory: POSITION	
Head of the Laboratory: EMAIL	
Contact person: NAME and SURNAME	
Contact person: POSITION	
Contact person: EMAIL	

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shamrikovaelena@yandex.ru
ib.komisc.ru/rusolan

THANK YOU FOR YOUR ATTENTION !

