Food and Agriculture Organization of the United Nations

7th Asian Soil Partnership MEETING

9-10 March 2022

Report from the Asian Soil Laboratory Network (SEALNET)

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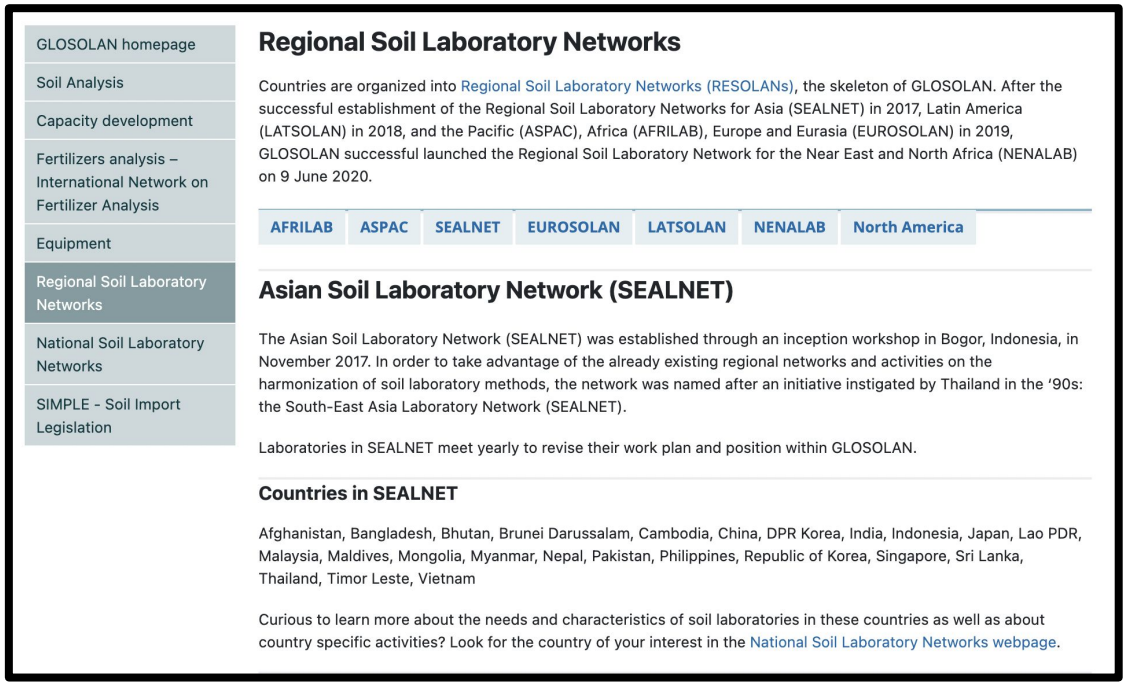
Bureau of Soils and Water Management - Philippines

ASIAN SOIL PARTNERSHIP

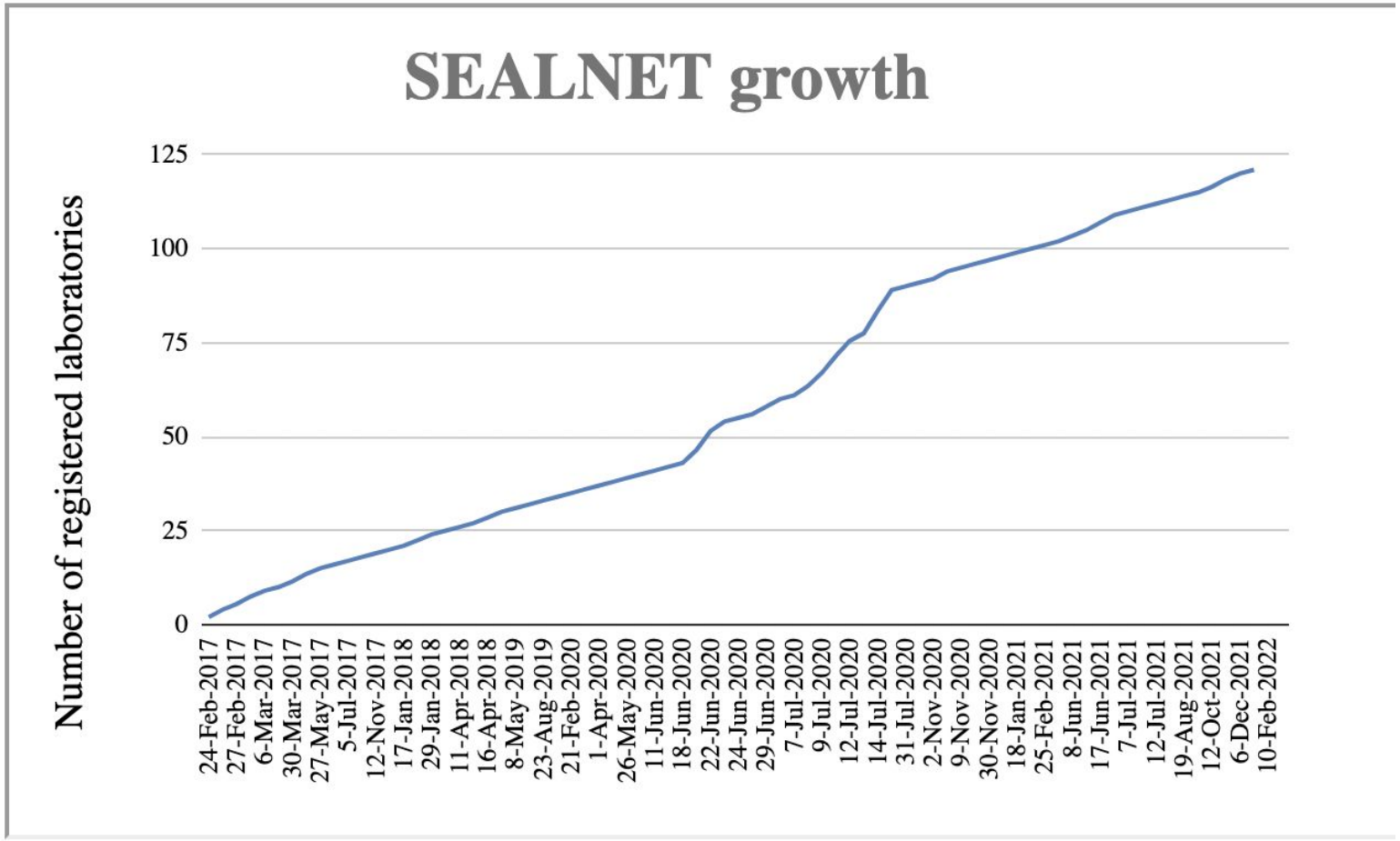
Countries in SEALNET

24 Asian Countries

Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, DPR Korea, India, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Timor Leste and Vietnam



Growth of SEALNET (2017 – 2022)



As of January 13, 2022, there are **121** laboratories already a member of the SEALNET. This is about **16%** of the total lab members of the GLOSOLAN.

SEALNET Governance (2021-2023)

Chair: Dr. Gina P. Nilo (Philippines)
Vice-chair: Dr. Muhammad Abbas Aziz (Pakistan)

Steering Committee: Chilamkurthi Sreenivas (India)
Nopmanee Suvannang (Thailand)
Renuka Silva (Sri Lanka)
Jamyang (Bhutan)
Husnain (Indonesia)

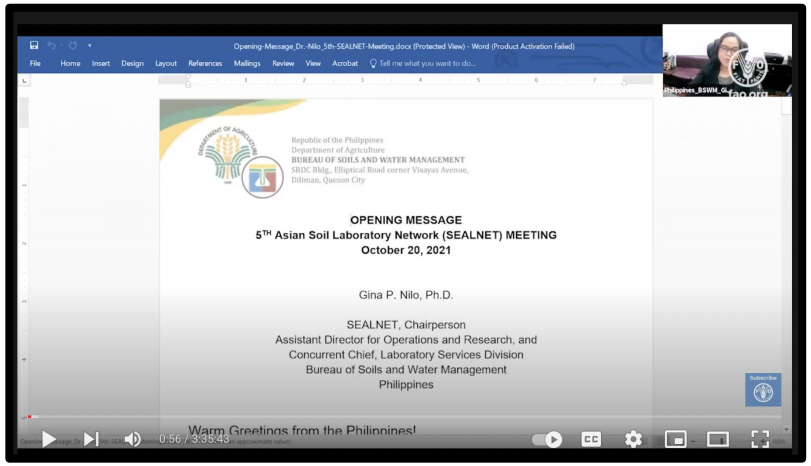
Accomplishments of SEALNET in 2021

a. Conduct of the 5th SEALNET Meeting

- October 20, 2021 - Online (Zoom Platform)
- 153 participants from 18 countries

b. Laboratory Membership to GLOSOLAN

- 57 new laboratories from 12 Asian countries registered to GLOSOLAN



Accomplishments of SEALNET in 2021

c. Establishment of National Soil Laboratory Networks

Established National Soil Laboratory Networks	Year of Establishment	Number of Members
Mongolia Mongolian Soil Laboratory Network (MonSOLAN)	2018	11
Vietnam Vietnamese Soil Laboratory Network (VietSOLAN)	2018	5
Philippines Philippines National Soil Laboratory Network (Phil NASOLAN)	2019	43
Thailand Thai Soil Laboratory Network (TSLAN)	2020	38

Why NASOLANs are Needed?

- Improve the efficacy and outcomes of GLOSOLAN activities
- Develop ad-hoc programs to better face global and local challenges
- Reach a large number of laboratories

Please encourage your National Reference Laboratories/Focal Points to start the establishment of a National Soil Laboratory Network in your country.

Accomplishments of SEALNET in 2021

d. Conduct of the Survey on the Identification of Main Needs of SEALNET

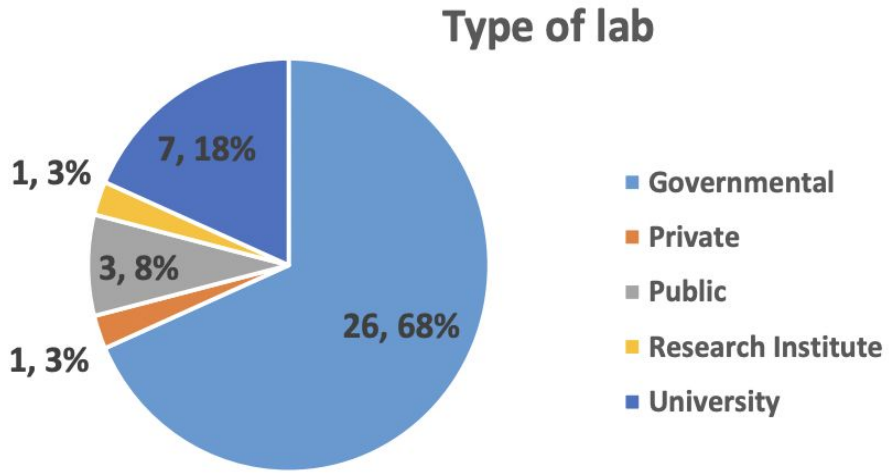
38 respondents from: Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Japan, Lao PDR, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka and Thailand

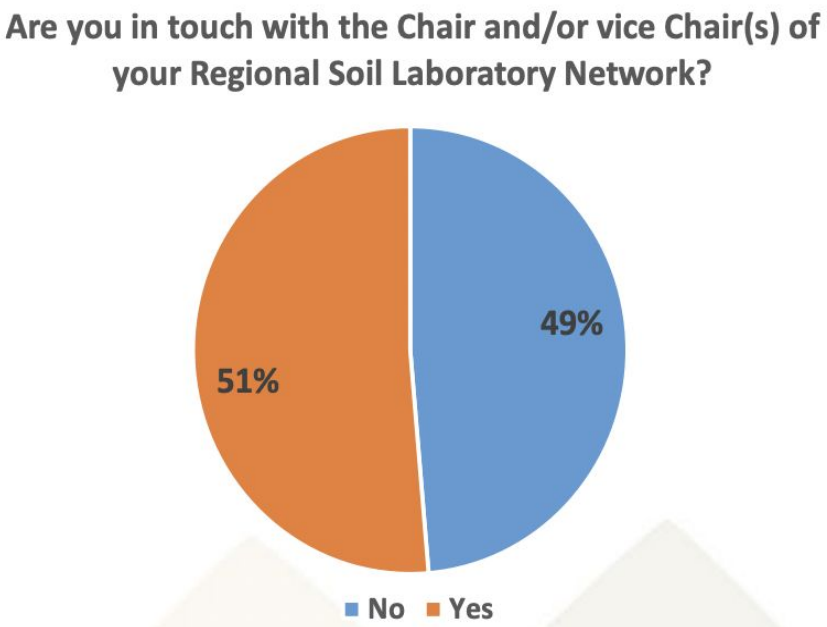
Why conduct the survey?

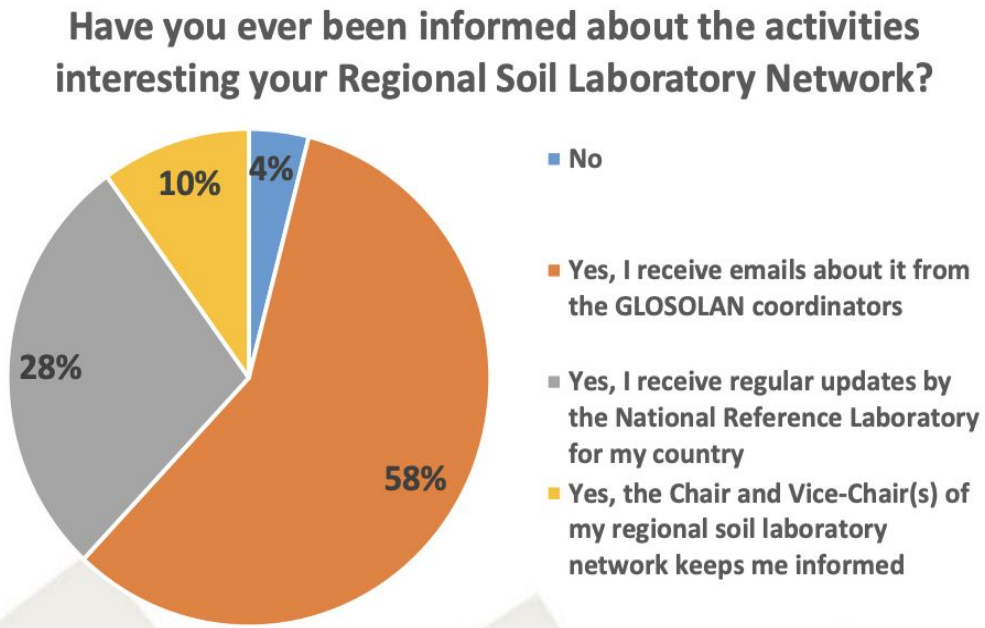
- Have a better overview of the regional needs
- Easy way to get the information
- Facilitate the discussion and optimize the use of the limited time available during the online meeting

Regional context

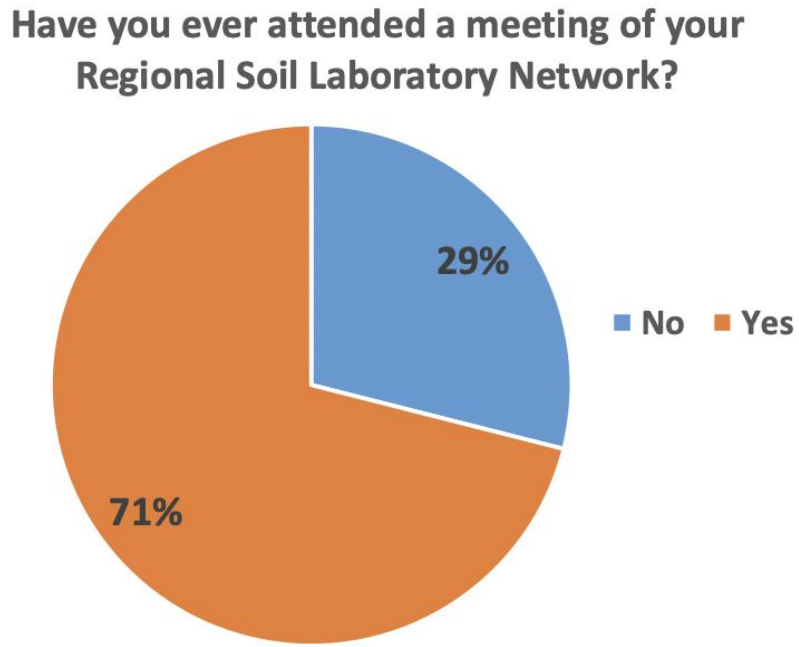
- Type of laboratory
- Awareness on regional activities
- Connection with the regional Governance





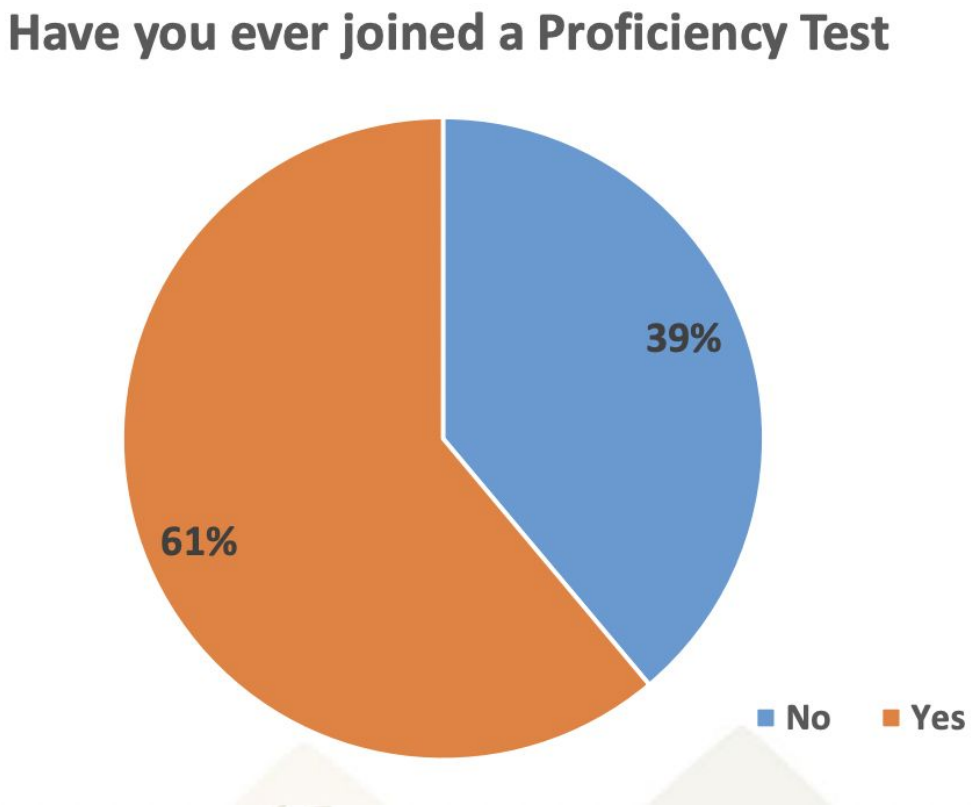


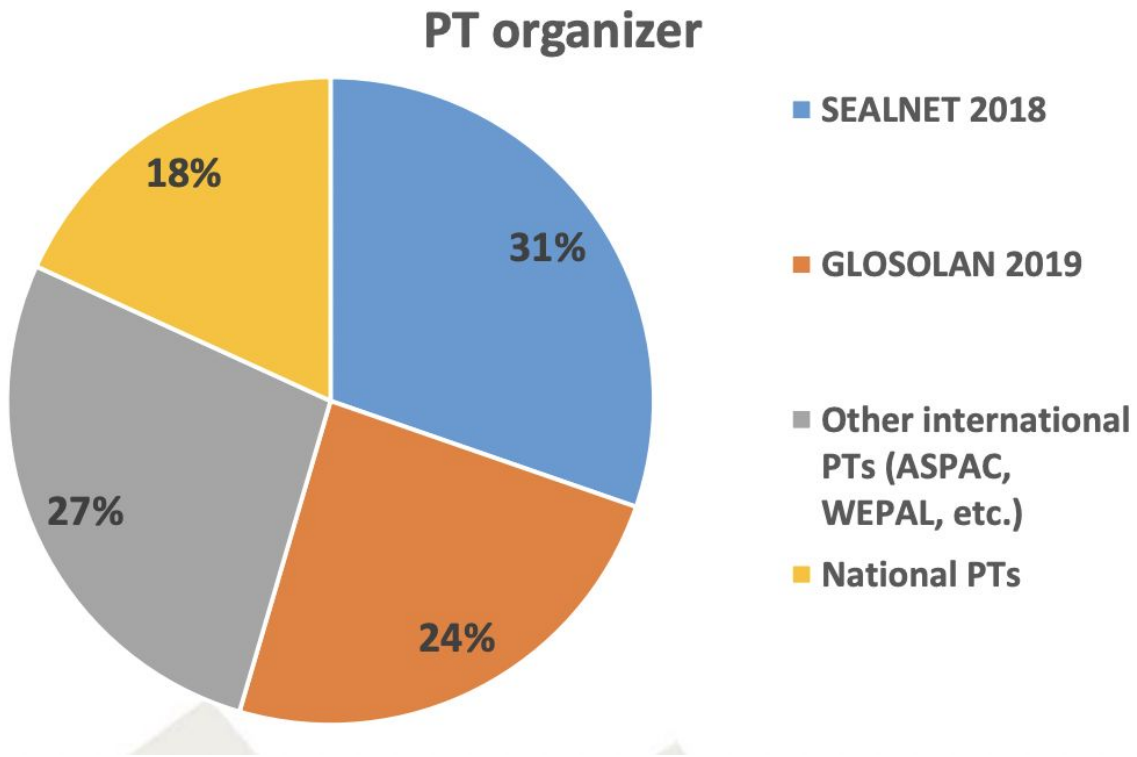
Participation in SEALNET meetings



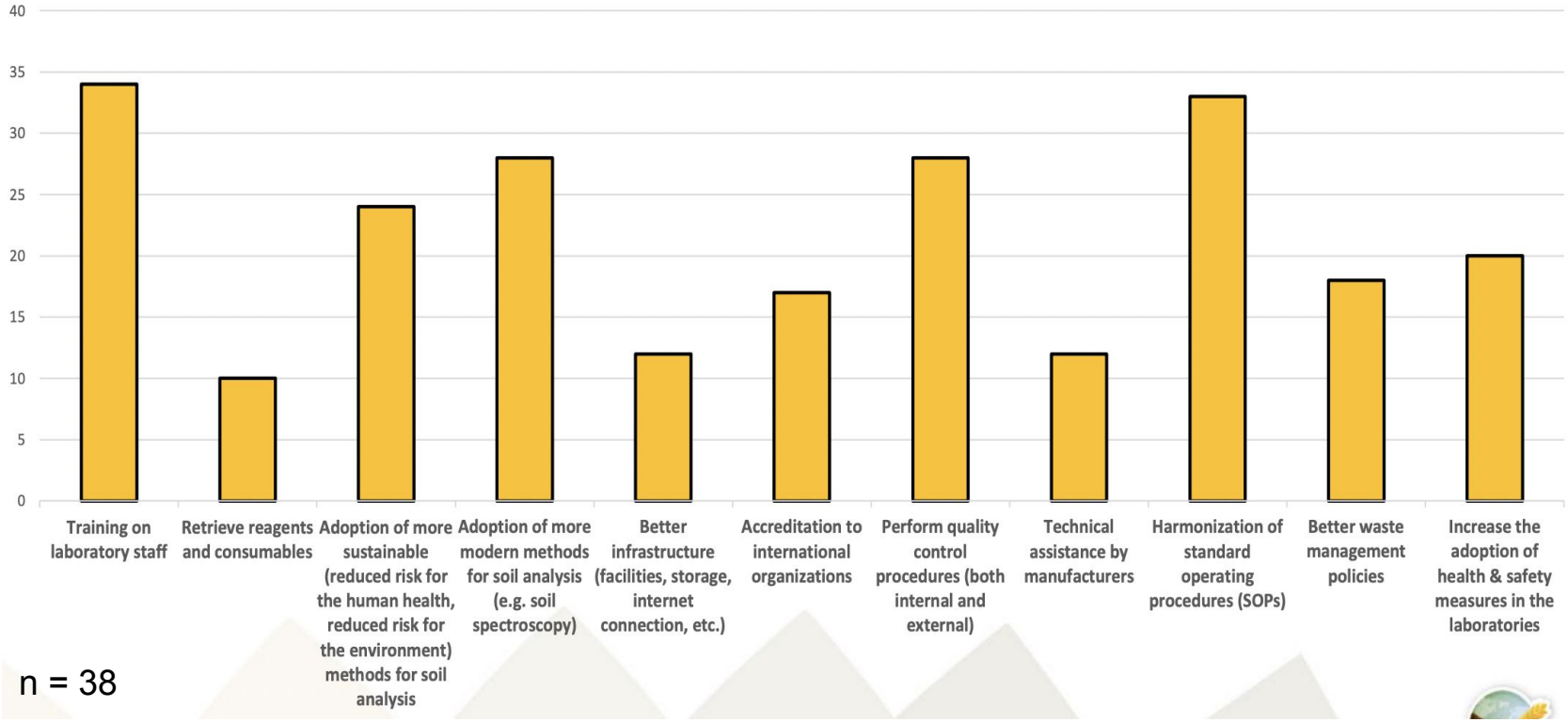
- Participation in previous SEALNET meeting
- Was it an useful experience? → **YES**
- Why?
  - Share knowledge
  - Training opportunity
  - Good way to implement GLOSOLAN activities in the region
  - Powerful tool for dissemination of information

Participation in Proficiency Tests (PT)





SEALNET main needs

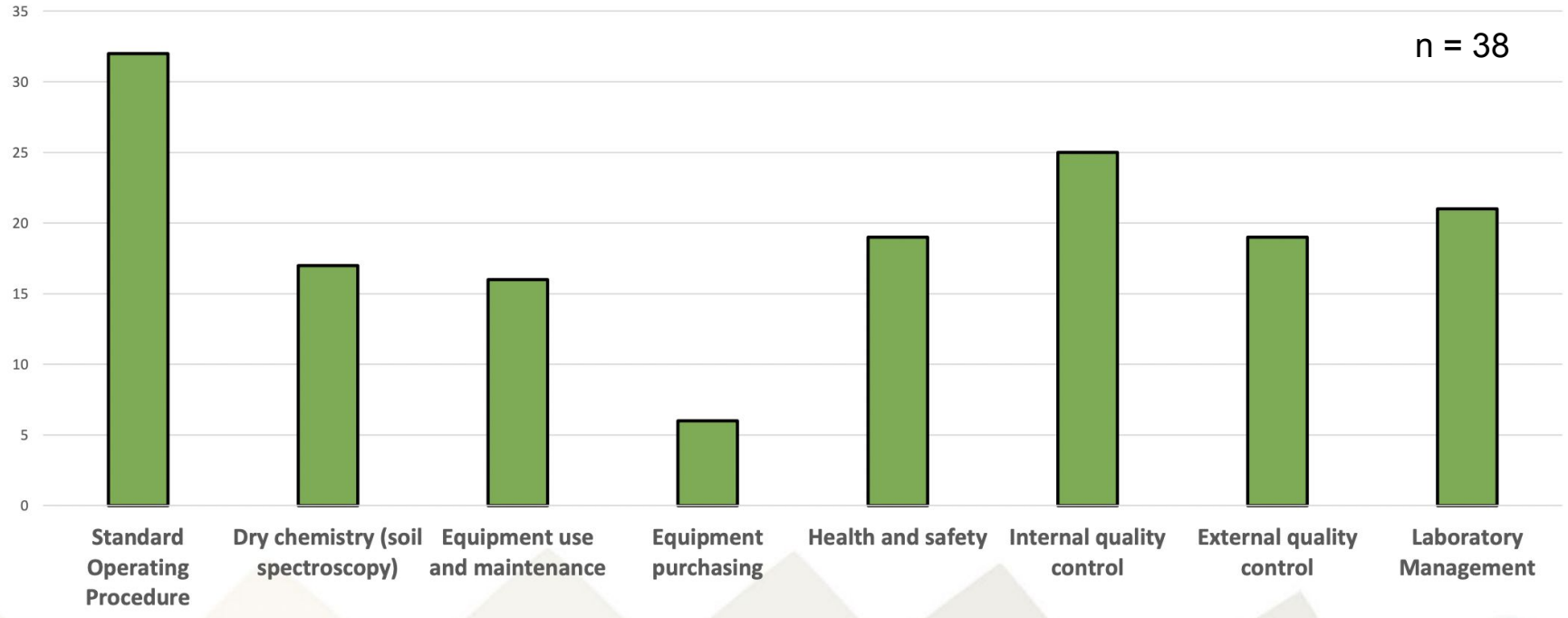


n = 38

Top 5 Needs of the Network

1. Training of laboratory staff
2. Harmonization of SOPs
3. Adoption of more modern methods for soil analysis
4. Perform quality control procedures
5. Adoption of more sustainable methods for soil analysis

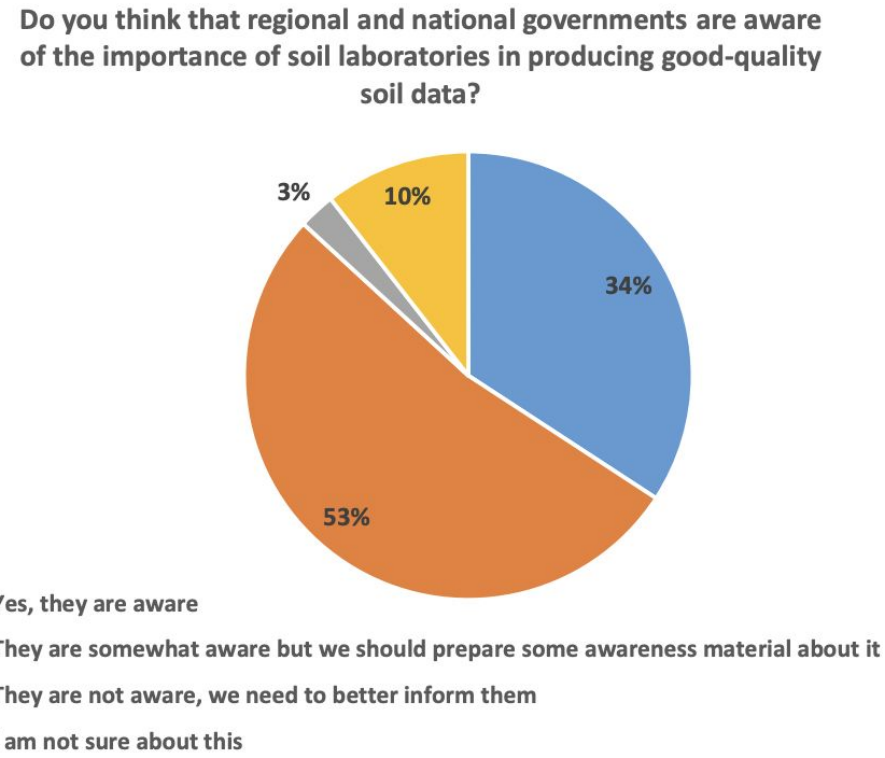
Training topics – most needed ones

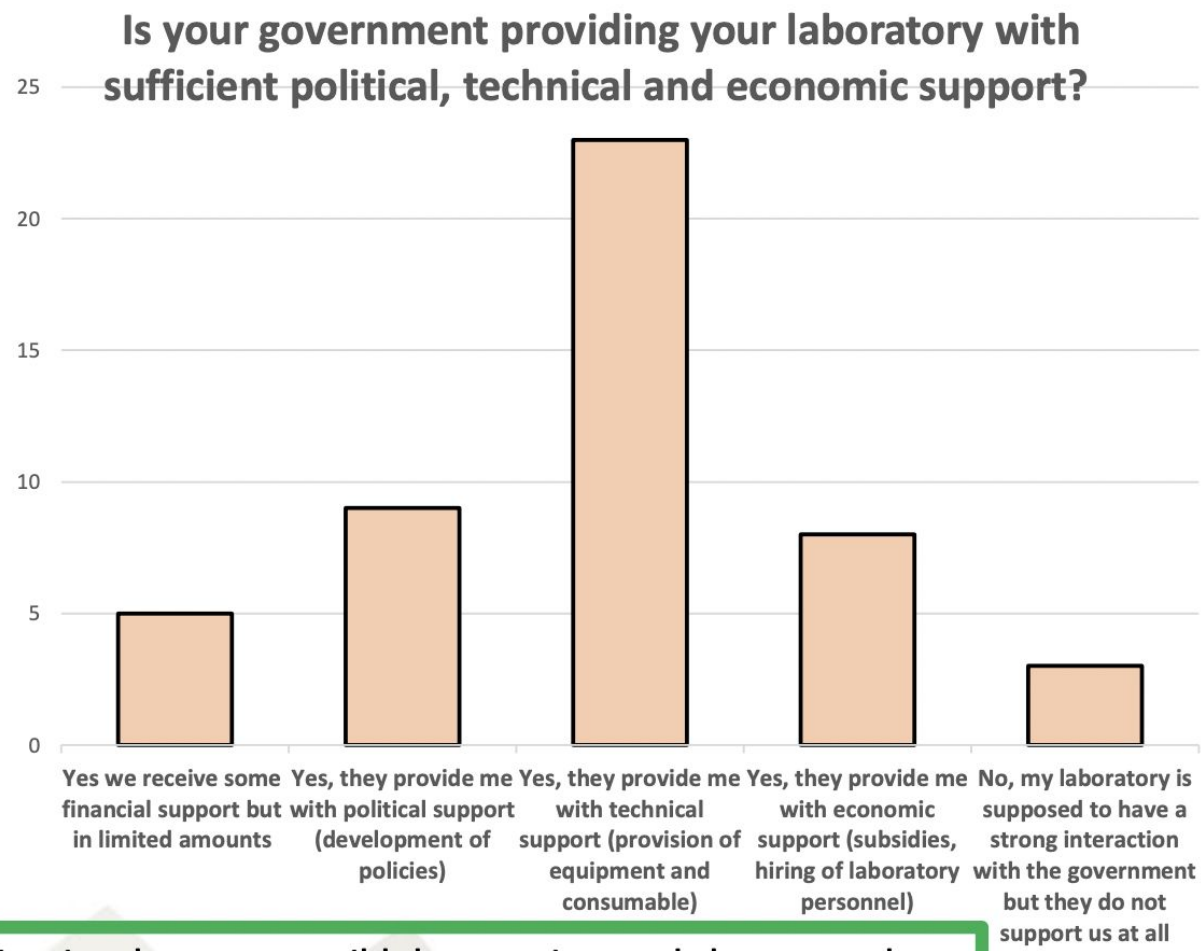


Top 5 Training Topics

1. Standard Operating Procedure
2. Internal Quality Control
3. Laboratory Management
4. External Quality Control
5. Health and Safety

Awareness and support from the national and regional governments





Do you think that SEALNET should facilitate the communication between soil laboratories and the central government? → **72% said YES, 25% said MAYBE**

Accomplishments of SEALNET in 2021

e. Led the Webinar on the Implementation of GLOSOLAN SOPs

SOP Code	Title	Date of Webinar
GLOSOLAN-SOP-02	Soil Organic Carbon by Walkley and Black – Titration and Colorimetric Method	November 17, 2021
GLOSOLAN-SOP-10	Soil Available Phosphorus – Olsen Method	December 1, 2021
GLOSOLAN-SOP-07	Soil Electrical Conductivity (soil/water, 1:5)	December 14, 2021

Reference: https://www.fao.org/global-soil-partnership/glosolan/soil-analysis/standard-operating-procedures/en/

SESSION 3: Webinar on the implementation of the standard operating procedure for soil organic carbon (Walkley and Black: titration and colorimetric methods)

17 November 2021 | 10:00 am CET

Guest speaker: Gina P. Nilo, Bergil Bernaldo, Bergil Bernaldo (Bureau of Soils and Water Management)

Biography: **Dr Gina P. Nilo** is the current Assistant Director of the Bureau of Soils and Water Management (BSWM) and the former Chief of the Laboratory Services Division (LSD) of the Bureau of Soils and Water Management (BSWM) with 40 years of experience in the field of soil science. She is the main author of the GLOSOLAN SOP for Soil Organic Carbon (Walkley-Black) for Titrimetric and Colorimetric Method. Additionally, she is the current Chair of the Asian Soil Laboratory Network (SEALNET) for the second term (2021-2023). Aside from this, she serves as the Quality Manager of the LSD and an authorized signatory of the Philippine Accreditation Bureau (PAB) for all of the parameters of the LSD for the following scope: 1) Soil; 2) Fertilizer; and 3) Irrigation Stock.

Biography: **Mr Bergil Bernaldo** is a Registered Chemist in the Philippines with six years of experience in the field of soil analysis for agricultural purposes. He is serving now as the Technical Manager of the Laboratory Services Division (LSD) of the Bureau of Soils and Water Management (BSWM) accredited with ISO/IEC 17025:2017 standard (2016-2026). Additionally, he is an authorized signatory of the Philippine Accreditation Bureau (PAB) for all of the parameters of the LSD for the following scope: 1) Soil; 2) Fertilizer; and 3) Irrigation Stock. He's also one of the contributing authors of the GLOSOLAN SOP for Soil Organic Carbon (Walkley-Black) for Titrimetric and Colorimetric Method.

Biography: **Ms Joerdette Jimenez** is a Registered Chemist from the Soil Chemistry Section of the Laboratory Services Division (LSD) of the Bureau of Soils and Water Management (BSWM) in the Philippines. She is a seasoned Chemist on the determination of Soil Organic Carbon (Walkley-Black) for Titrimetric and Colorimetric Method, and Total Nitrogen parameters. Ms. Jimenez, is also an authorized signatory of the Philippine Accreditation Bureau (PAB) for the analysis of Soil Organic Carbon.

Abstract: This webinar presents the standard operating procedure for saturated soil paste extract published by GLOSOLAN in 2021. The lecturers will provide an insight of the procedure, describing each step of the measurement, from sample preparation to quality assurance and control. Participants will have the chance to raise questions and directly interact with the speakers in a Q&A session at the end

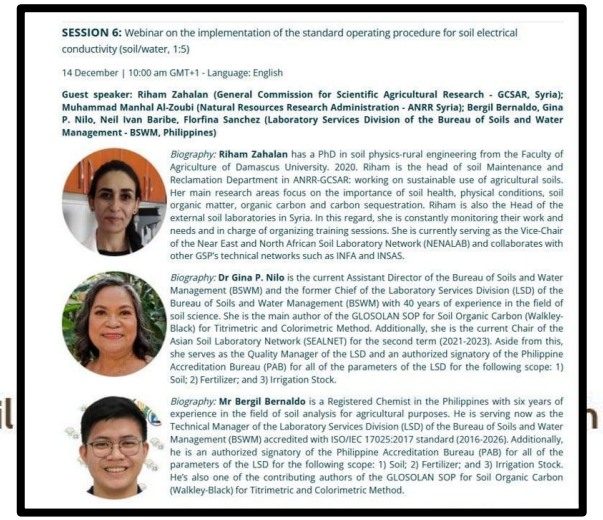
SESSION 4: Webinar on the determination of soil phosphorous by Olsen method

1 December | 10:00 am GMT+1 - Language: English

Guest speaker: Lyra Espectacion, Florfina Sanchez, Bergil Bernaldo, Gina P. Nilo (Laboratory Services Division of the Bureau of Soils and Water Management - BSWM, Philippines)

Biography: **Ms Lyra Espectacion** is a Registered Chemist from the Soil Chemistry Section of the Laboratory Services Division (LSD) of the Bureau of Soils and Water Management (BSWM) in the Philippines. She is a skilled Chemist equipped with a solid chemistry background and four years laboratory experience. Additionally, she is an authorized signatory of the Philippine Accreditation Bureau (PAB) on the determination of Soil Available P for Olsen and Bray I Method, pH, EC, and Total Nitrogen parameters.

Biography: **Ms Florfina Sanchez** is the current Soil Chemistry Chief and a Registered Chemist from the Laboratory Services Division (LSD) of the Bureau of Soils and Water Management (BSWM) in the Philippines. She has 20 years of experience in soil chemical analysis, including performance checks of laboratory equipment used in the analysis, supervising the implementation of quality assurance system and the requisition of chemicals and supplies, conduct of soil chemistry analysis, and the evaluation for the upgrading of laboratory equipment. Ms. Sanchez is also an authorized signatory of the Philippine Accreditation Bureau (PAB) for all the soil analysis of LSD, specifically pH, Electrical Conductivity, Total Nitrogen, Phosphorus Olsen Method, Phosphorus Bray 1 method, Organic Carbon/Organic Matter, Potassium, Magnesium, Sodium, Calcium, Zinc, Iron, Manganese, and Copper.



SESSION 6: Webinar on the implementation of the standard operating procedure for soil electrical conductivity (soil/water, 1:5)

14 December | 10:00 am GMT+1 - Language: English

Guest speaker: Riham Zahalan (General Commission for Scientific Agricultural Research - GCSAR, Syria); Muhammad Manhal Al-Zoubi (Natural Resources Research Administration - ANRR Syria); Bergil Bernaldo, Gina P. Nilo, Neil Ivan Baribe, Florfina Sanchez (Laboratory Services Division of the Bureau of Soils and Water Management - BSWM, Philippines)

Biography: **Riham Zahalan** has a PhD in soil physics-rural engineering from the Faculty of Agriculture of Damascus University, 2020. Riham is the head of soil Maintenance and Reclamation Department in ANRR-GCSAR; working on sustainable use of agricultural soils. Her main research areas focus on the importance of soil health, physical conditions, soil organic matter, organic carbon and carbon sequestration. Riham is also the Head of the external soil laboratories in Syria. In this regard, she is constantly monitoring their work and needs and in charge of organizing training sessions. She is currently serving as the Vice-Chair of the Near East and North African Soil Laboratory Network (NENALAB) and collaborates with other GSP's technical networks such as INFA and INSAS.

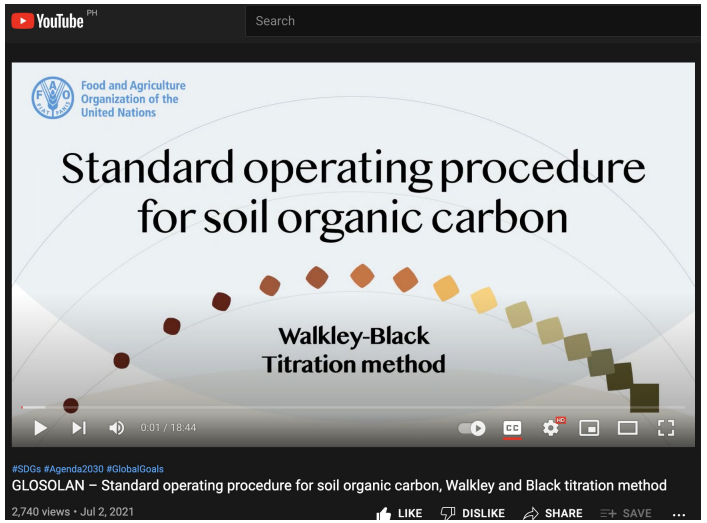
Biography: **Dr Gina P. Nilo** is the current Assistant Director of the Bureau of Soils and Water Management (BSWM) and the former Chief of the Laboratory Services Division (LSD) of the Bureau of Soils and Water Management (BSWM) with 40 years of experience in the field of soil science. She is the main author of the GLOSOLAN SOP for Soil Organic Carbon (Walkley-Black) for Titrimetric and Colorimetric Method. Additionally, she is the current Chair of the Asian Soil Laboratory Network (SEALNET) for the second term (2021-2023). Aside from this, she serves as the Quality Manager of the LSD and an authorized signatory of the Philippine Accreditation Bureau (PAB) for all of the parameters of the LSD for the following scope: 1) Soil; 2) Fertilizer; and 3) Irrigation Stock.

Biography: **Mr Bergil Bernaldo** is a Registered Chemist in the Philippines with six years of experience in the field of soil analysis for agricultural purposes. He is serving now as the Technical Manager of the Laboratory Services Division (LSD) of the Bureau of Soils and Water Management (BSWM) accredited with ISO/IEC 17025:2017 standard (2016-2026). Additionally, he is an authorized signatory of the Philippine Accreditation Bureau (PAB) for all of the parameters of the LSD for the following scope: 1) Soil; 2) Fertilizer; and 3) Irrigation Stock. He's also one of the contributing authors of the GLOSOLAN SOP for Soil Organic Carbon (Walkley-Black) for Titrimetric and Colorimetric Method.

Accomplishments of SEALNET in 2021

f. Led the creation of training videos on the conduct of GLOSOLAN SOPs

SOP Code	Title	Contributor
GLOSOLAN-SOP-02	Soil Organic Carbon by Walkley and Black – **Titration Method** **Video link:** https://www.youtube.com/watch?v=yVZh6o5O4TM	LDD, Thailand
GLOSOLAN-SOP-02	Soil Organic Carbon by Walkley and Black – **Colorimetric Method** **Video link:** https://www.youtube.com/watch?v=N8pY5fb8T1U&t=74s	BSWM, Philippines



Accomplishments of SEALNET in 2021

g. Participation to GLOSOLAN SOP harmonization

1. Dr. Nilo serves as the Global Leader for the development of GLOSOLAN SOP for Bulk Density
   - draft SOP – ongoing review by the review panel
2. Several SEALNET countries serve as TWG members for the development of the following GLOSOLAN SOPs:
   - Soil Respiration
     - draft SOP – ongoing review by the review panel
   - Microbial Enzymatic Activity
     - ongoing harmonization of the draft SOP
   - Cation Exchange Capacity
     - ongoing harmonization of the draft SOP

Accomplishments of SEALNET in 2021

h. Participation to 2021 GLOSOLAN Proficiency Testing

- **48** soil laboratories from the SEALNET are participating in the 2021 GLOSOLAN PT (samples were delivered in February – March of 2022)

SOPs to harmonize in 2021-2022

Soil Chemical Parameters	
Parameters	**Regional Leaders**
Exchangeable Acidity by KCl	Chilamkurthi Shreenivas Angrau (India)
Exchangeable Acidity by $BaCl_2$	Dr. Gina P. Nilo (Philippines)
Exchangeable Ammonium and Nitrate by KCl	Sanjay Srivastava and Abhay Shirale (India)
Total Carbon by Loss of Ignition	Renuka Silva (Sri Lanka) and Rabindra Adhikari (Nepal)

SOPs to harmonize in 2021-2022

Soil Physical Parameters	
Parameter	**Regional Leaders**
Water Retention (pF)	Linca Anggria (Indonesia)

Soil Microbiology Parameters	
Parameter	**Regional Leaders**
Microbial Population Identification	Dr. Gina P. Nilo (Philippines)

Call for Action

1. Identification of Center of Excellence for Soil Regional Laboratories (CESLAB)

- Provide leadership for the harmonization of methods, measurements and indicator for the sustainable management and protection of soil resources.
- Support GLOSOLAN and the Regional Networks in the conduct of capacity building activities and training facilities

2. Active participation to SEALNET surveys

- This will help in identifying the concrete status of the network and provide targeted intervention to help the national reference laboratories and member soil laboratories.

3. Country to provide support as SEALNET PT provider

- Provide support to SEALNET, other regional networks and GLOSOLAN in increasing the pool of countries that provide PT samples.

4. Encourage laboratories from **Brunei Darussalam, Democratic People's Republic of Korea, Maldives, Singapore and Timor-Leste** to register in SEALNET and GLOSOLAN.

5. Identify and/or nominate National Reference Laboratory in **Afghanistan.**

Food and Agriculture Organization of the United Nations

Thank you for listening!

ASIAN SOIL PARTNERSHIP