Food and Agriculture Organization of the United Nations

6th Meeting of the
Regional Soil Laboratory Network for Africa
(AFRILAB)

23 October 2024

THE YEAR 2024- AFRILAB

LESEGO MOOKETSI-SELEPE

AFRILAB CHAIR

AFRILAB
AFRICAN SOIL LABORATORY NETWORK

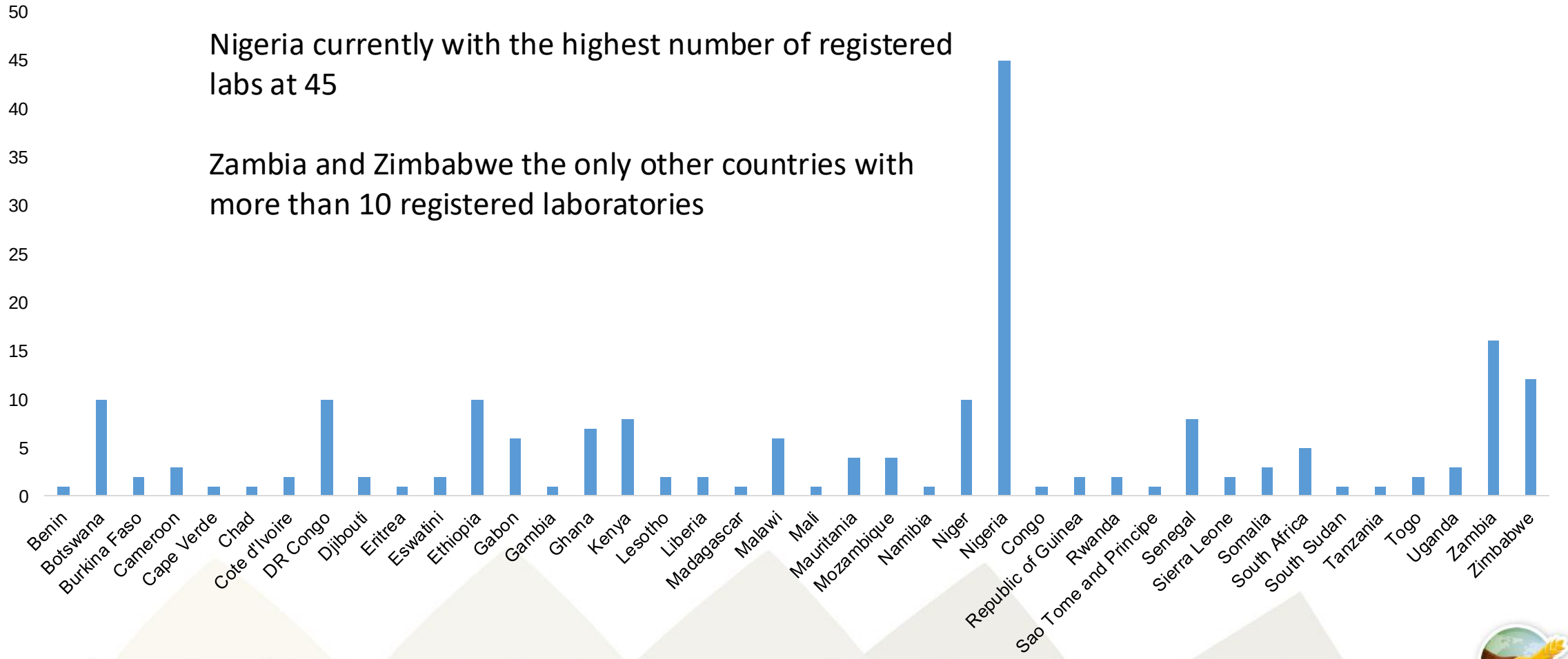
GLOBAL SOIL PARTNERSHIP

CURRENT STATUS

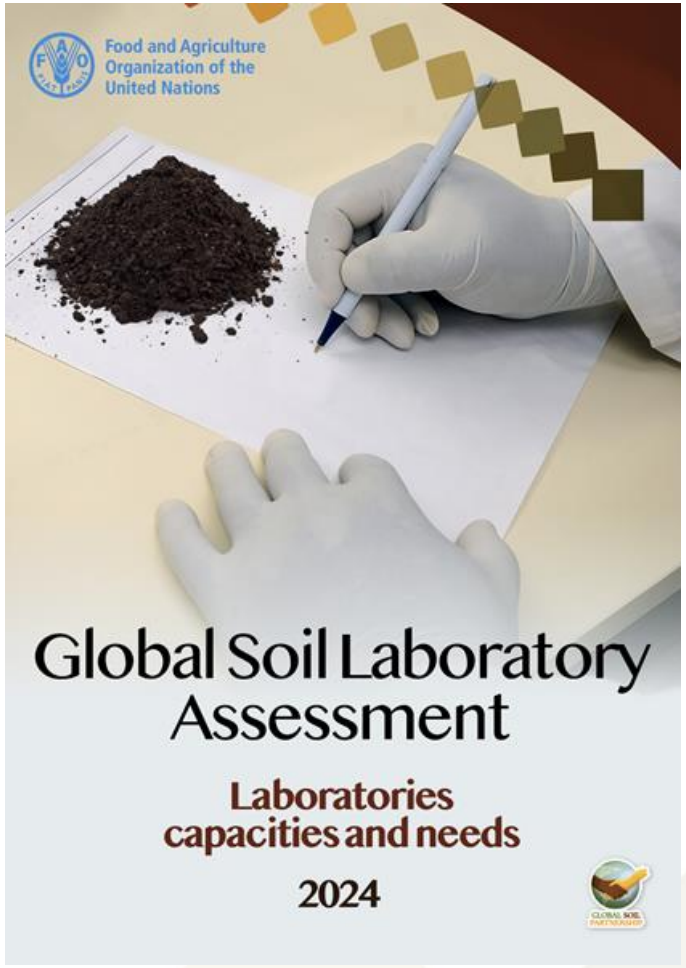
202 Laboratories (22 labs added in 2024)
40 different countries

Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Chad, Cote d'Ivoire, Democratic Republic of Congo, Djibouti, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of Congo, Republic of Guinea, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Africa, South Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Laboratories distribution by country

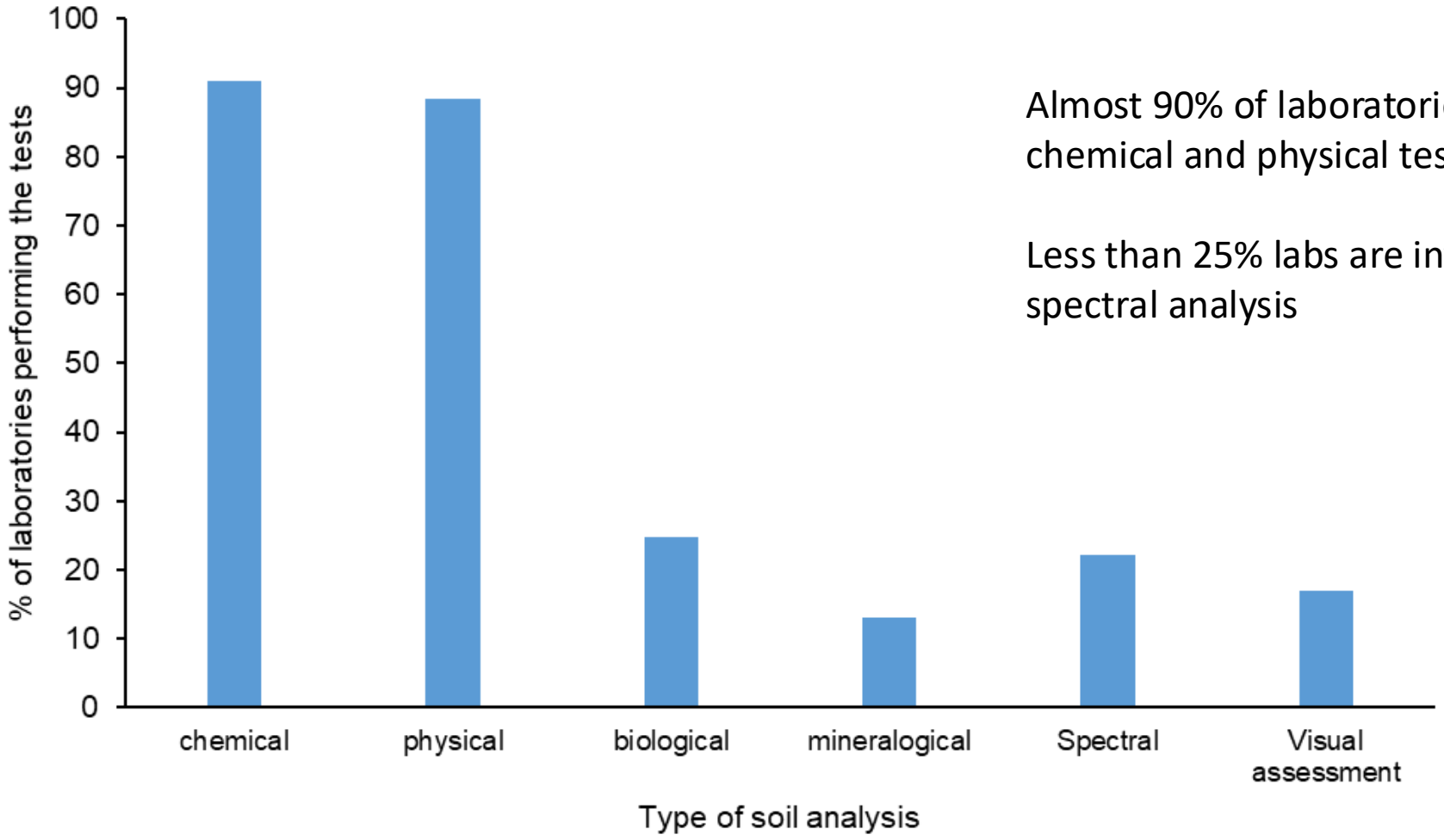


ASSESSMENT – SURVEY 2024



- Global survey launched in Q2 2024
- 77 out of the 202 AFRILAB Members have provided feedback
- Survey still open upto the end of the year – All outstanding laboratories are encouraged to respond

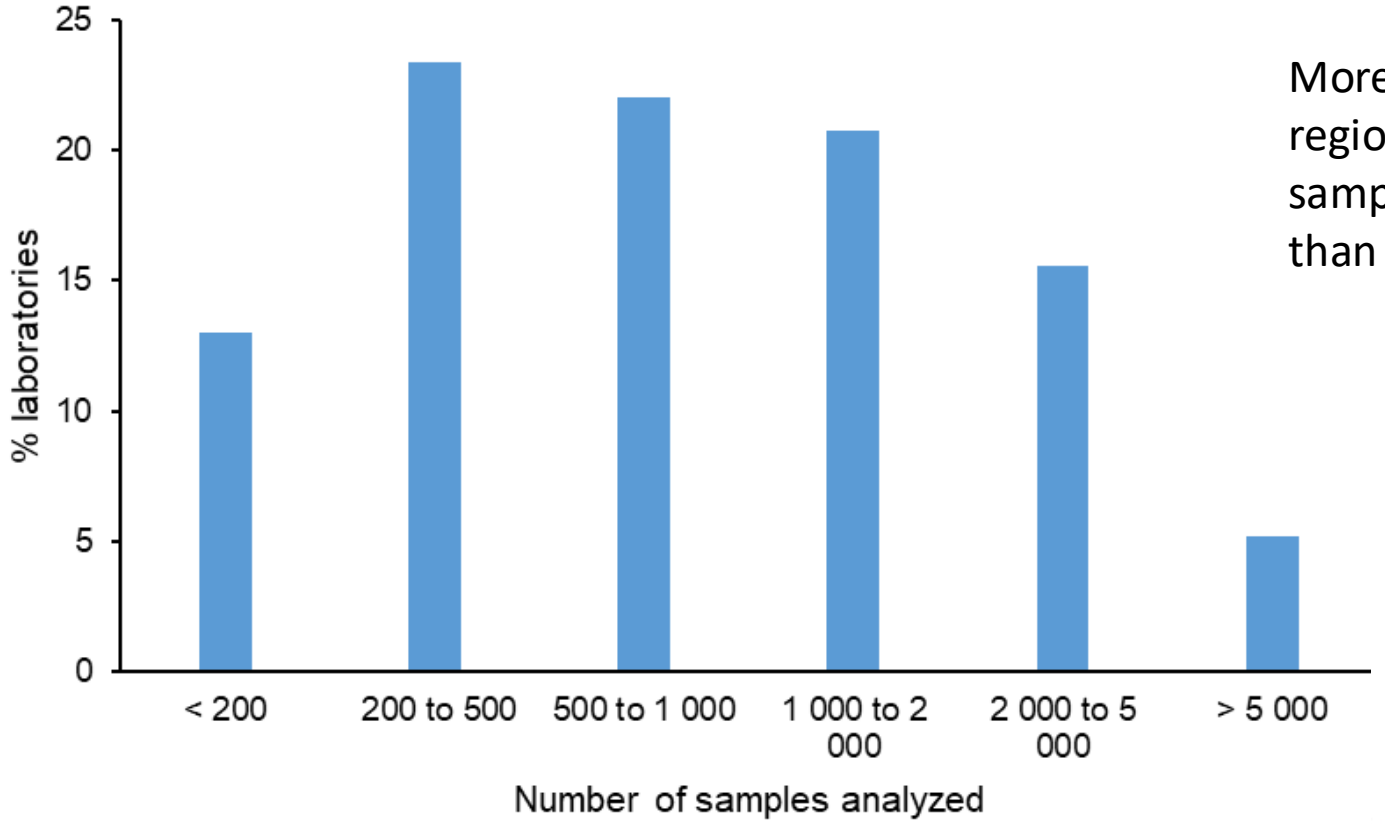
Type of soil analysis performed



Almost 90% of laboratories are performing chemical and physical tests

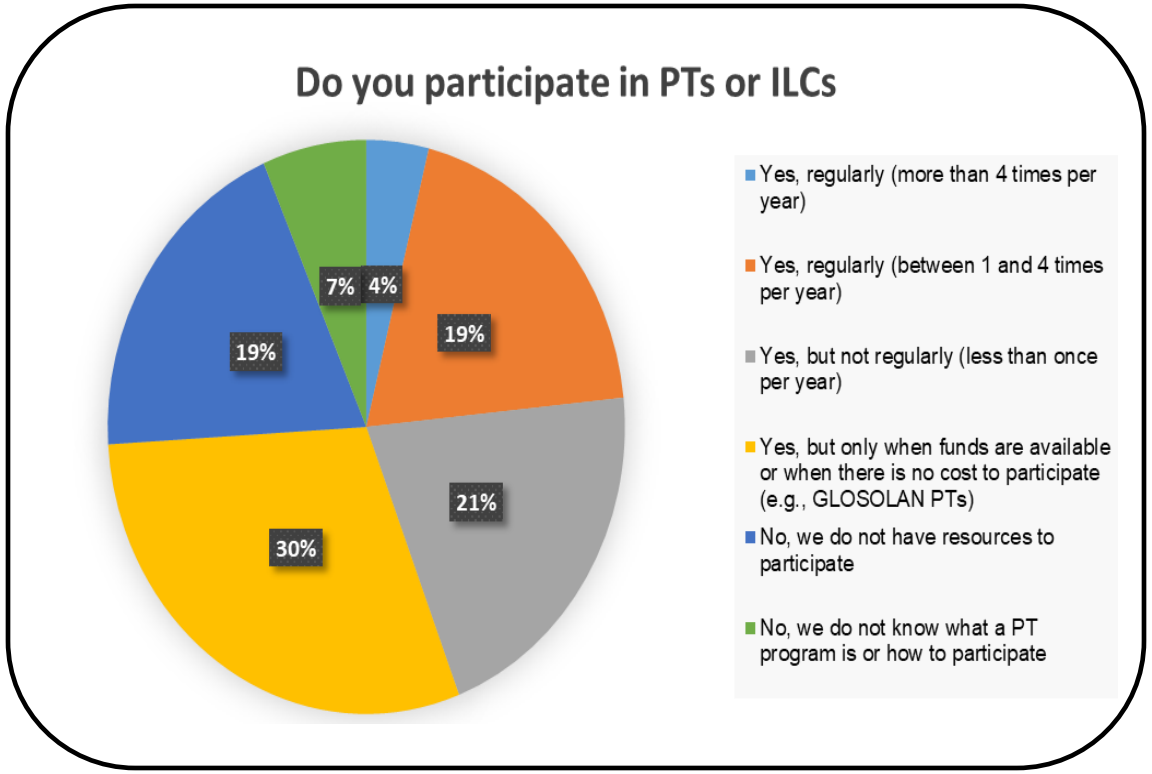
Less than 25% labs are involved in biological and spectral analysis

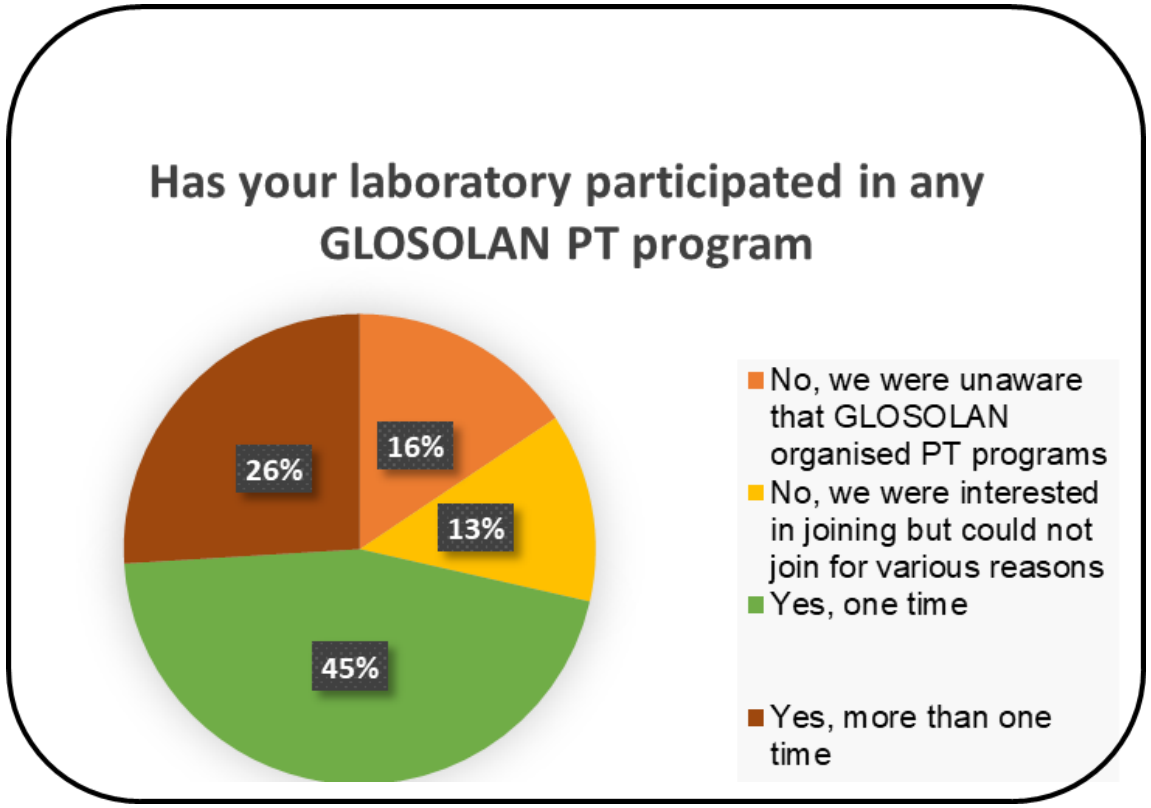
Number of samples processed per year



More than 75 % of laboratories in the region analyse between 200 and 5000 samples with only 5% analysing more than 5 000 samples a year.

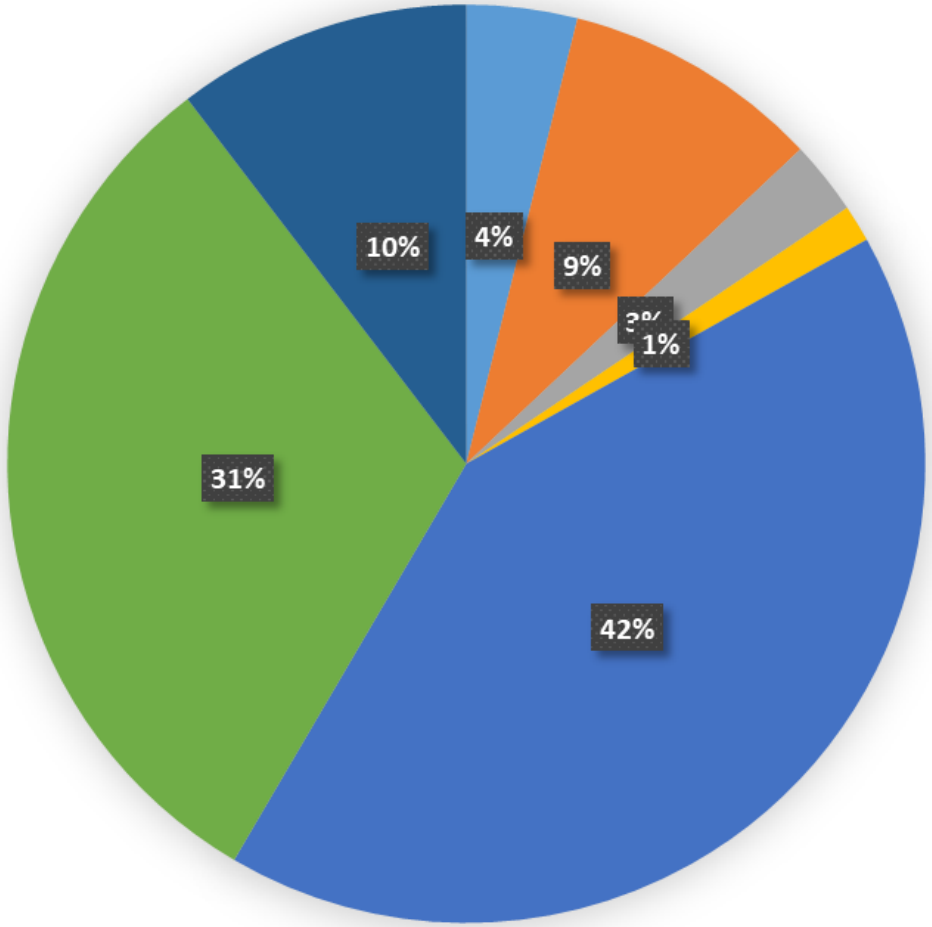
PTs and ILCs





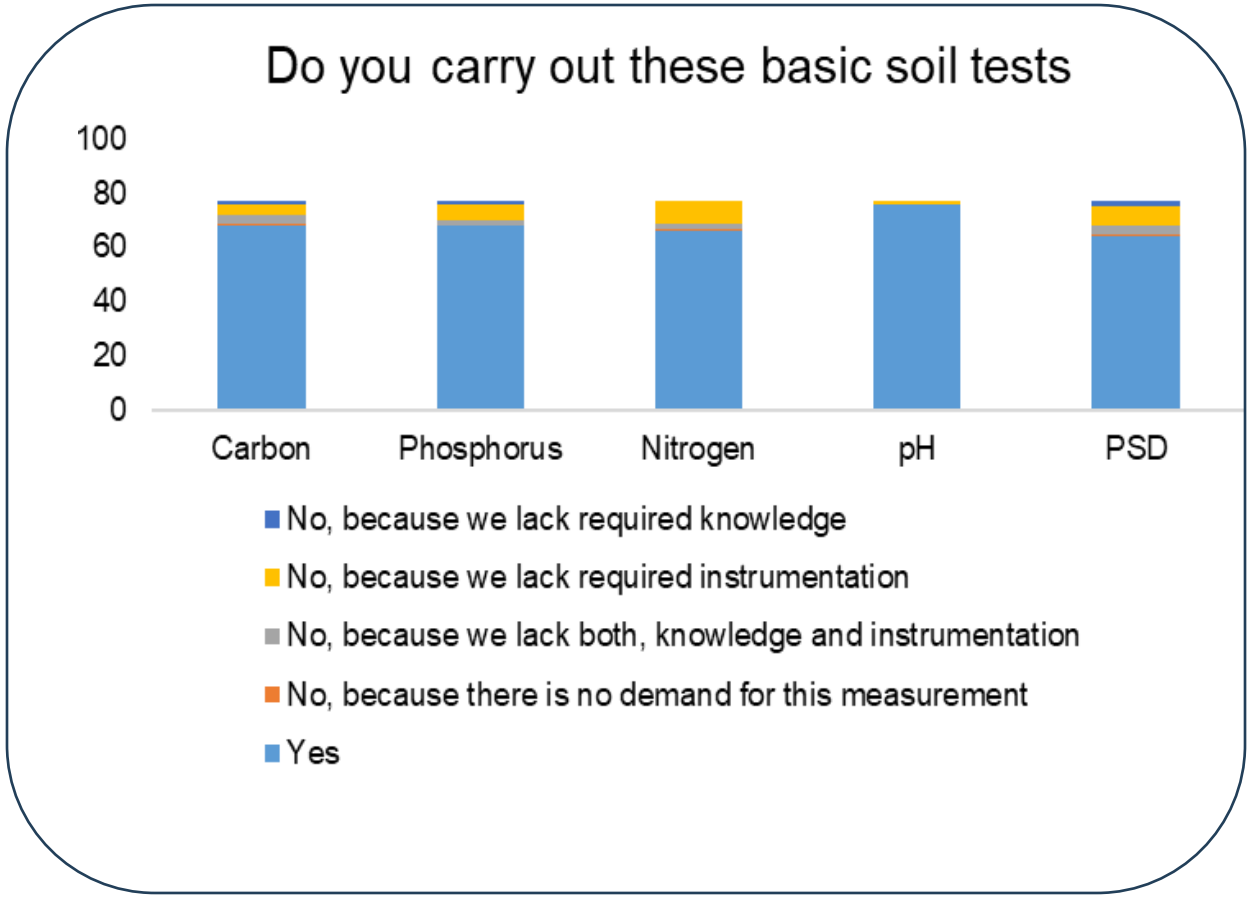
- The region still has about 25% of labs not participating in PTs
- More than 70% of respondents have participated in previous GLOSOLAN PT programs, with the majority mentioning that it was very useful for their laboratory
- Other PT Schemes available (WEPAL (12%), AGRILASA (4%) and others)

GLOSOLAN SOPs adoption



- GLOSOLAN SOPs being adopted across the region
- Mainly cited reasons for non-adoption include language, lack of capacity to implement the SOPs and lack of training on the GLOSOLAN SOPs

Analytical methods for some basic parameters across the region



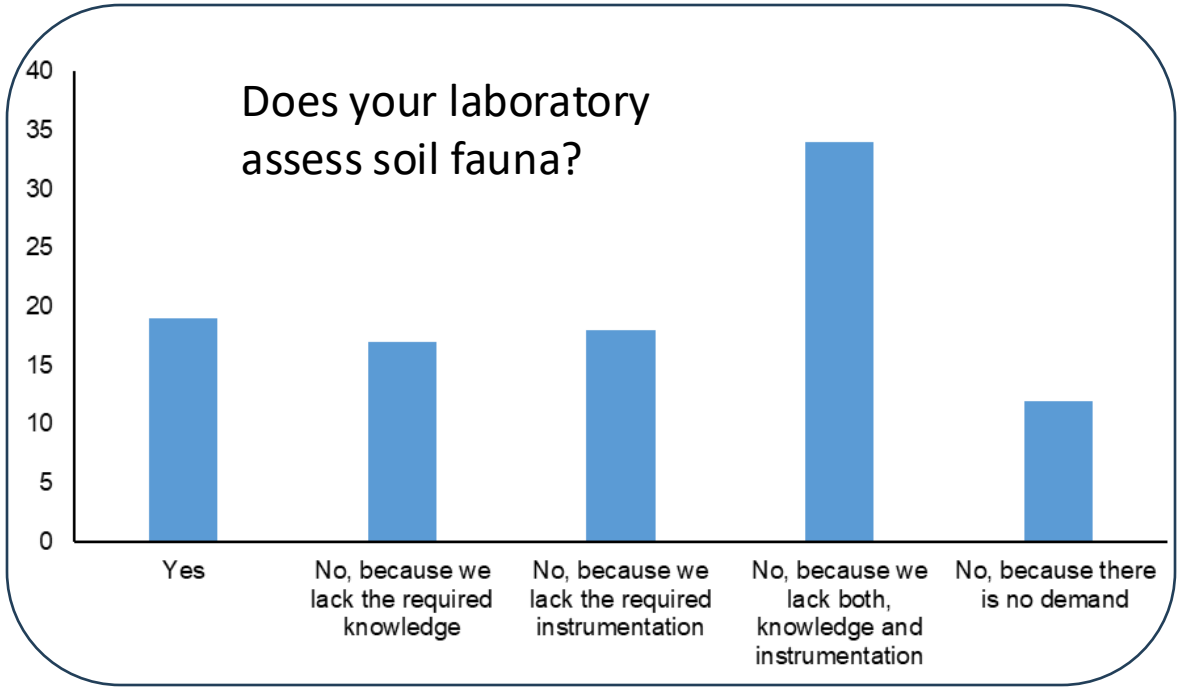
Carbon	% labs using the method	Phosphorus	% labs using the method	Nitrogen	% labs using the method
Walkley and Black	74	Bray I	41	Dumas	10
Dumas (dry combustion)	12	Bray II	35	Kjeldahl	56
Loss on ignition	21	Mehlich I	7	Other	8
Spectral method (MIR or VNIR)	3	Mehlich II	9		
		Mehlich III	12		
		Olsen	54		
		KCl	1		
		Water soluble	9		

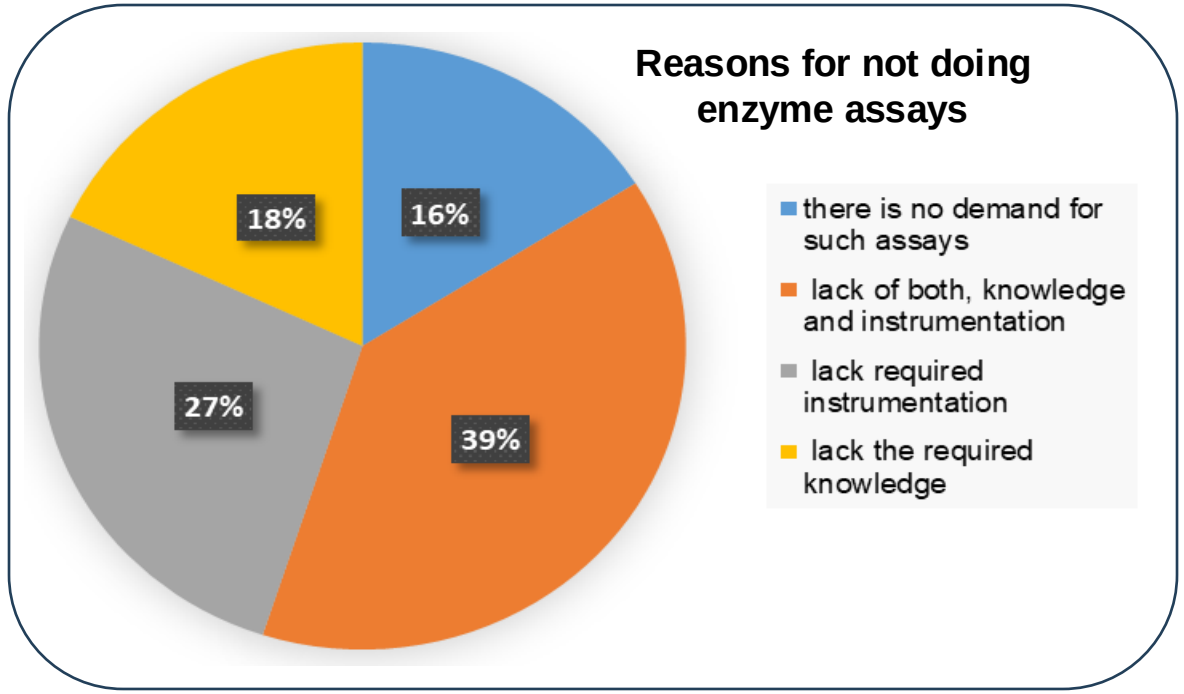
Analytical methods for some basic parameters across the region

PSD	% labs using the method	pH	% labs using the method
Hydrometer	64	Soil:water 1:1	16
pipette	23	Soil:water 1:2.5	58
Spectral	1	Soil:water 1:5	26
		Soil :KCl 1:2.5	35
		Soil:KCl 1:5	17
		Soil: CaCl2 1:2.5	14
		Soil: CaCl2 1:5	14
		pH in saturation extract	13

- Most laboratories in the region have the capacity to analyze the basic parameters.
- The few that are not analyzing mainly cited lack of instrumentation as the reason
- The most popular methods in the region are;
  - Walkley and Black for carbon
  - Olsen and Bray 1 for Phosphorus
  - Kjeldahl for Nitrogen
  - Hydrometer for PSD
  - Soil:Water (1:2.5) for pH

Capacity to carry out microbial analysis



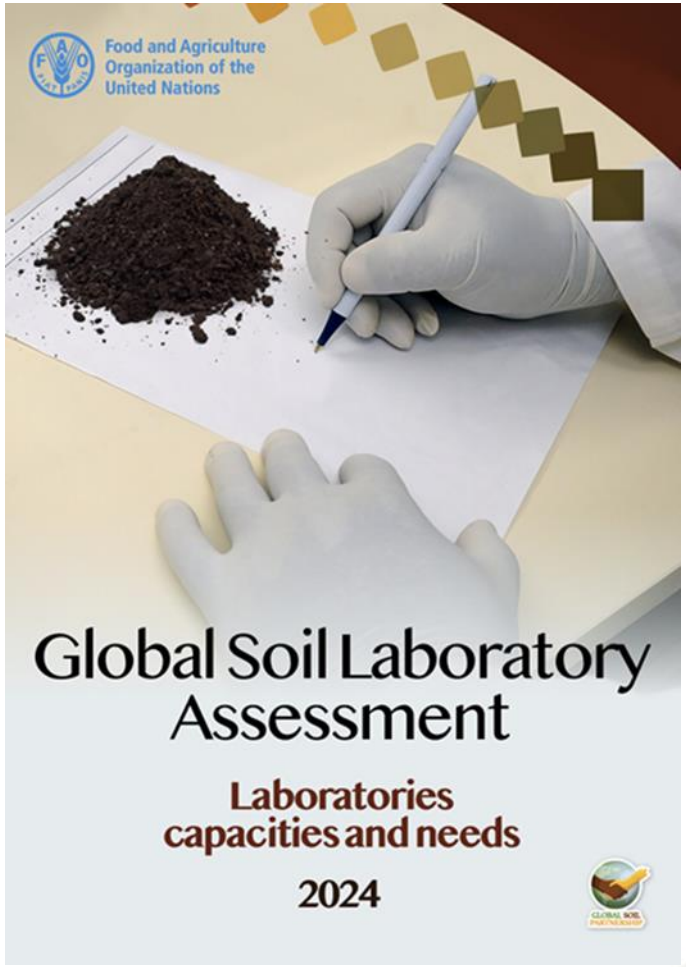


- Most laboratories in the region are not assessing microbial parameters due to lack of knowledge and instrumentation
- The labs analysing soil fauna are mainly assessing microbes
- No laboratory in the region indicated that they are doing enzyme assays and very few are analysing for soil respiration rate

Soil Spectroscopy in AFRILAB

- Only 11% of respondents are using soil spectroscopy (mainly VisNIR) to estimate some soil properties
- The following were cited as the main reasons for lack of adoption of soil spectroscopy;
  - Lack of instrumentation and procedures;
  - Lack of capacity for data analysis;
  - Lack of trained personnel and;
  - Lack of a suitable library/calibration dataset;
  - Lack of standards/reference material;

GLOBAL Survey still to be concluded

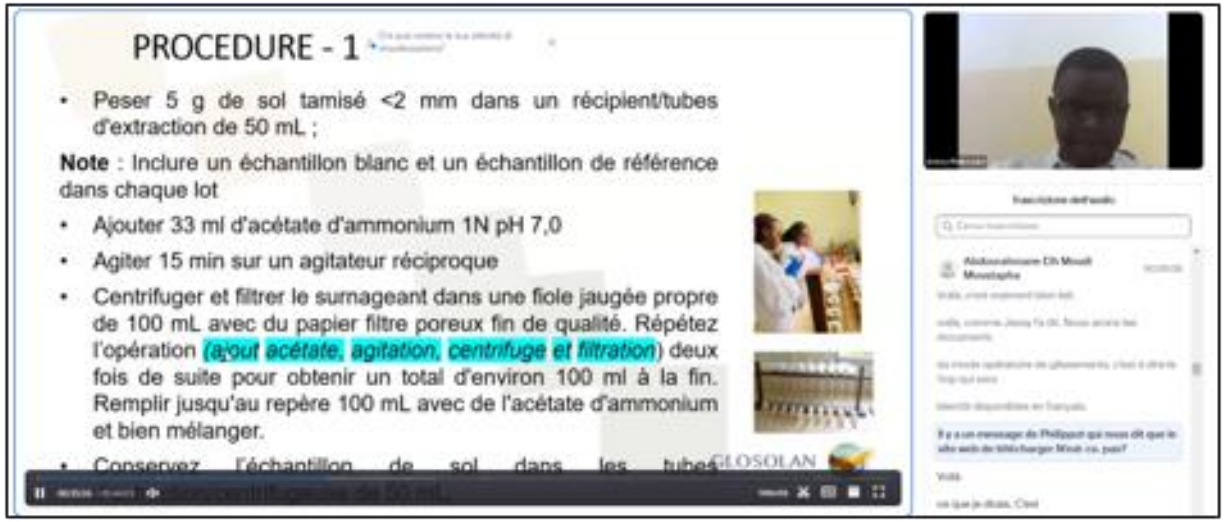


- About 40% of registered laboratories have responded. All laboratories are encouraged to complete the survey for a more informed lab status in the region.
- A detailed global report will be produced and shared once the survey is complete
- The survey will be used to direct future activities and priorities in the region

Capacity development activities in the past year

- Most laboratories in the region participated during Global webinars hosted by GLOSOLAN on different topics especially spectroscopy

- Two Webinars (one in English and one in French) were conducted within the region (AFRICA) on CEC and exchangeable bases analysis



- Looking forward to hosting two more webinars on Bulk Density before the end of the year.

Recommendations and way forward

- Improve communication between regional governance and reference laboratories
- Build NASOLANS and make regular updates of their profiles
- Participation surveys (77/202)
- Participation in PTs
- Continue attending trainings (webinars and in-person).
- Participate in SOPs translations
- Reference laboratories must prepare annual reports

REFLECTION

AFRILAB Roadmap 2023-2025

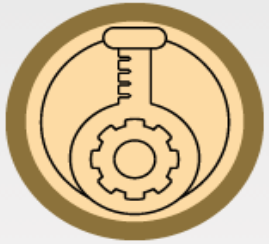
Priorities:

- Quality of soil analysis

- Harmonization of procedures

- Equipment

- Laboratory management



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Thank you

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