OVERNIGHT CATION EXCHANGE CAPACITY (CEC), BASES LEACHING OPERATING SYSTEM AND SOIL ANALYTICAL DATA INTERPRETATION

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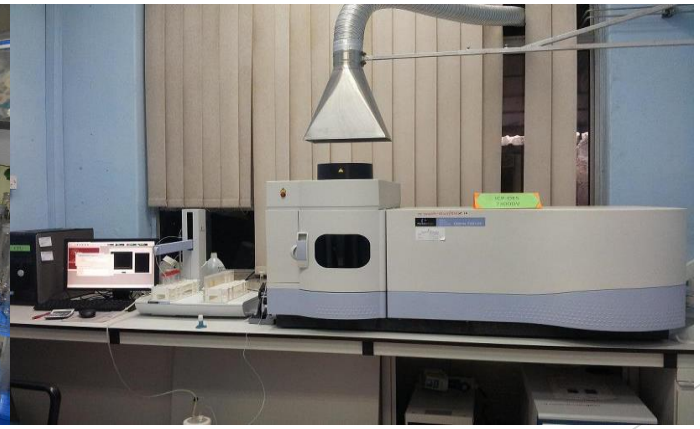
1.0 PRINCIPLE

- The process of leaching for Cation Exchange Capacity(CEC) and bases have been prolong to overnight. This system can produce two batches of a leaching process per week compared to the before which is just one batch.
- This paper also introduce a simple formula to interpret the soil analytical data.

2.0 Statement of Problem

2.1 Previously, Soil Laboratory Kuala Lumpur, just managed to analyzed around 80 units to 120 units samples per month. This is due to a long (three days) of CEC and bases leaching process. That means just one batch of leaching process per week.

2.2 The other problem is that some of our clients are, no idea how to interpret the soil laboratory analytical data.



3.0 Objective

3.1 To introduce the Overnight CEC And Bases Leaching System, and

3.2 To inform our regular clients how to interpret of Soil Laboratory Analytical Data

4.0 Methodology of Research

4.1 The process of leaching for Cation Exchange Capacity (CEC) and bases has been prolong to overnight. The volume of leaching tube also has been changed from 50 ml to 100 ml.

4.2 The operation system has been adjusted, where the leaching bases and CEC have been done during the day and the washing process with ethanol has been done at night.

5.0 Overnight Leaching System Competency Testing Activities

5.1 Testing with Agriculture Laboratory Association of Malaysia (AglAM) Proficiency Testing Program (PT) Sample. The results of analysing in the table A as below:

Table A

TESTING WITH AGLAM PT SAMPLE
DATE: 25/6/2018

SAMPLING CODE	MINIMUM of CEC cmol /kg soil	RESULT of test method cmol/kg soil	MAXIMUM of CEC Cmol/kg soil
S01	9.41	14.4	20.7
S04	6.35	11.9	12.72
S010	5.14	9.9	10.47
S011	7.30	11.2	13.98

5.2 Comparision Testing With Existing Mathod Done by Mr Ambigapathy (Senior LAs) and Overnight Mathod Done by Mr Muhamad Firdaus and Mr Mohd Khairul (Junior LAs) .The results of analyzing in the table B as bellow:

Table B

COMPARISION TESTING WITH EXISTING METOHD DONE BY MR AMBIGAPATHY AND OVERNIGHT METHOD DONE BY NEW LA DATE : 18/7/2018		
SAMPLING CODE	EXISTING METHOD/MR AMBI	2 BATCH METHOD/NEW LA
226A	10.90	11.30
230	9.30	9.80
241	11.90	11.20
242	10.90	11.00
244	14.60	15.20

6.0 Simple Soil Analytical Data Interpretation

6.1.0 The simple interpretation of soil laboratory data was introduced by the commitee of Soil Profiling Program. This is very useful to identify the general of characteristics of soil via the soil laboratory data immediately

6.1.1 Interpretation of Soil pH data and recomendation rate for liming activity

Soil pH	Liming Rate GML(tan/ha)
≥ 5.00	Not need
4.50 - 4.99	1.0
3.51 - 4.49	3.0
≤ 3.50	5.0

6.1.2 Interpretation of Nitrogen(N), Posphorus (P), Potassium (K) data and Classification of Soil Fertility

Class of Soil Fertility	N (%)	P (ppm)	K (cmol(+)/kgsoil)
High (1)	> 0.25	> 17	> 1.0
Moderate (2)	0.1– 0.25	10 -17	0.3 – 1.0
Low (3)	< 0.1	< 10	< 0.3

6.1.3 Interpretation of Soil Cation Exchange Capacity (CEC) data and Classification of CEC

Classification of CEC	Range of CEC (cmol(+)/kg Soil)
High	≥ 20
Moderate	11 -19
Low	≤ 10

Conclusion

The methodology and the operating system in any laboratory should be improved from time to time to ensure the competency of that laboratory is up to date. Review, research, and development are the main activities to improve the methodology and the operating system in any laboratory.

THANK YOU