Plot 33 Lumumba Avenue P. O Box 6638, Kampala Tel: +256392000374

SOIL SAMPLING AND ANALYSIS PROCEDURE

CLIENT: JIM

COMPILED BY RICHARD
(AGRONOMIST)

SOIL SAMPLING AND ANALYSIS PROCEDURE

1. The Goal

The purpose of soil testing is to identify the soil fertility that the plants or crop, in a given area will experience.

2. Prohibited areas

Soil samples were not picked from the following areas;

- Under the trees
- Near the path

3. Procedure

- Soil was taken from 80 different points using a zigzag method
- V-shaped holes were dug at a depth of 15cm-1ft.
- 3 thick soil samples were picked from both sides of each hole and put in a bucket.
- Four samples were picked from the average area of 1.5acres
- The four samples picked from 4 different points in 1.5 acres were thoroughly mixed together on plastic sheet, 4 equal parts of the mixed soil samples were divided and only 2 opposite parts were chosen to make one sample of 0.5kg that was taken to the laboratory for analysis.
- For soil profile, samples were picked from 7 horizons downwards with 20cm in between of each horizon at a depth of 1.5metres of each hole.

4. Tools- Soil samples were taken with a professional tools indicated below.

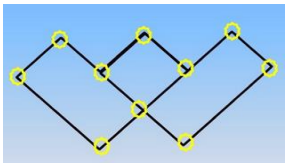
Shovel

Bucket

Hoe

Soil bag

5. Zig Zig method that was used to pick samples



Picking soil profile samples

6. **Laboratory Analysis**

The air-dried soil sample was pounded, sieved through 2 mm to remove any debris then subjected to physical and chemical analysis following standard methods described by Okalebo *et al.* (2002)'. Soil pH was measured in a soil water solution ratio of 1:2.5; Organic matter by potassium dichromate wet acid oxidation method; total N determined by Kjeldhal digestion; Extractable P by Bray P1 method; exchangeable bases from an ammonium acetate extract by flame photometry (K^+, Na^+) and atomic absorption spectrophotometer (Ca^{2+}, Mg^{2+}); and particle size distribution (texture) using the Bouyoucos (hydrometer) method

AKORION
COMPANY LTD
"ICT 4 Agriculture"

GENERAL ANALYSIS RESULTS

Sample	pH	OM	N	P	Ca	Mg	K
		%		ppm	'----------cmol(+)/kg soil----------		
Sample 1	4.8	5.2	0.24	101.75	0.01	1.34	0.77
Sample 2	5	3.6	0.19	1.71	0.08	0.70	1.15
Sample 3	4.8	3.0	0.18	0.74	trace	0.66	0.69
Sample 4	4.6	3.5	0.18	trace	trace	0.13	0.47
Sample 5	4.4	3.3	0.18	trace	trace	0.20	0.47
Sample 6	4.8	3.6	0.19	trace	trace	0.40	0.65
Sample 7	4.9	3.2	0.19	trace	trace	0.53	0.56
Sample 8	4.7	3.2	0.18	trace	trace	0.56	0.69
Sample 9	5.2	3.4	0.18	2.63	trace	1.13	1.57
Sample 10	4.8	3.5	0.19	trace	0.10	0.79	0.75
Sample 11	4.8	3.0	0.18	trace	0.07	0.74	0.77
Sample 12	5.9	3.8	0.20	74.13	6.04	2.32	2.51
Sample 13	5.7	3.9	0.21	113.13	5.07	2.36	2.20
Sample 14	5.9	4.0	0.20	123.18	3.14	3.52	3.25
Sample 15	5.7	3.9	0.20	134.63	4.01	1.90	1.75
Sample 16	6.8	3.0	0.18	68.76	3.31	4.45	3.36
Sample 17	5.8	3.0	0.18	0.05	6.00	2.20	1.52
Sample 18	6.4	3.2	0.17	565.75	7.16	3.08	1.50
Sample 19	5.4	3.0	0.18	193.87	trace	1.54	1.07
Sample 20	4.4	3.1	0.17	trace	trace	0.29	0.46

AKORION COMPANY LTD "ICT 4 Agriculture"

SOIL PROFILE ANALYSIS

			SOIL PROFILE				
	pH	OM	N	P	Ca	Mg	K
P1 H1		%		ppm	'----------cmol(+)/kg soil----------		
P1 H2	4.4	2.8	0.16	trace	trace	0.81	0.38
P1 H3	4.3	2.4	0.14	trace	trace	0.58	0.35
P1 H4	4.6	2.2	0.14	trace	trace	0.90	0.41
P1 H5	4.3	2.2	0.14	trace	trace	0.39	0.34
P1 H6	4.1	1.3	0.10	trace	trace	0.30	0.35
P1 H7	4.2	1.0	0.09	trace	trace	0.25	0.33
P2 H1	4.7	3.1	0.17	trace	trace	1.06	0.55
P2 H2	5	2.7	0.16	trace	trace	0.60	0.51
P2 H3	4.8	2.3	0.14	trace	trace	0.22	0.41
P2 H4	5.2	2.1	0.14	trace	trace	0.26	0.42
P2 H5	5.3	2.1	0.14	trace	trace	0.19	0.40
P2 H6	5.8	1.2	0.10	trace	trace	0.54	0.37
P2 H7	5.9	0.9	0.09	trace	trace	0.89	0.41
P3 H1	4.5	3.1	0.17	trace	trace	0.73	0.63
P3 H2	4.4	2.7	0.15	trace	trace	0.34	0.50
P3 H3	4.3	2.3	0.15	trace	trace	0.09	0.37
P3 H4	4.4	2.1	0.14	trace	trace	0.11	0.33
P3 H5	4.7	2.1	0.12	trace	trace	0.22	0.38
P3 H6	5	1.2	0.10	trace	trace	0.49	0.35
P3 H7	5.1	0.9	0.08	trace	trace	0.59	0.40
P4 H1	4.8	3.0	0.16	trace	0.02	2.38	0.74
P4 H2	5	2.6	0.16	trace	0.03	1.41	0.49
P4 H3	4.8	2.2	0.14	trace	0.07	1.64	0.47
P4 H4	4.9	2.0	0.13	trace	0.09	1.94	0.49
P4 H5	4.9	2.0	0.13	trace	0.07	1.71	0.37
P4 H6	5.3	1.1	0.09	trace	0.10	2.06	0.53
P4 H7	5.3	0.8	0.09	trace	0.09	2.20	0.51

Classification of extractable nutrients					
	P	K	Ca	Mg	
	ppm	----------cmol(+)/kg soil---------			
Very low	0 -12	0 - 0.2	0 - 2	0 - 0.3	
Low	12.5 - 22.5	0.2 - 0.3	2 - 5	0.3 - 1	
medium	23 - 35.5	0.3 - 0.7	5 -10	1 - 3	
High	36 - 68.5	0.7- 2.0	10 - 20	3 - 8	
Very high	> 69	> 2	>20	>8	

Ratings of soil pH		
Description	**pH**	
	< 4.5	Very Low
Strongly acid	4.6-5.5	Low
Moderately acid	5.6-6.0	Medium
Slightly acid	6.1-6.5	Medium
Neutral	6.6-7.2	High
Slightly alkaline	7.3-7.8	High
Moderately alkaline	7.9-8.4	Very high
Strongly alkaline	8.5-9.0	Very high
Very strongly alkaline	> 9.0	Very high

Holes that were dug

AIKORION
COMPANY LTD
"ICT 4 Agriculture"

AKORION
COMPANY LTD
"ICT 4 Agriculture"

AKORION
COMPANY LTD
"ICT 4 Agriculture"

AKORION
COMPANY LTD
"ICT 4 Agriculture"

In conclusion, as I earlier communicated 80% of land doesn't have rocks as you were interested to know but the 20% has stone particles starting at 1.5ft which may not pose a big threat to rooting system of coffee. On soil fertility, the pH is low which affects the availability and uptake of plant nutrients. Also major nutrients N, P, K, Ca, Mg are low. This means that there is a need to improve the nutrient content by use of organic manure and inorganic fertilizer. Use of agricultural lime can improve soil pH. Liming can be done at least 3 months before planting. However, coffee can thrive in the pH of 4.5.

KEY FOR SOIL PROFILE ANALYSIS

P represents Hole (meaning that holes are presented as P1-P4)

H represents Horizon (meaning that soil sample picked from different horizons are presented as H1-H7)