

ROUTINE AGRICULTURAL SOIL ANALYSIS REPORT

Job No:	E1865
No of Samples:	1
Date Supplied:	18th May 2015
Supplied by:	Dolph Cooke

Sample ID:

Sample 1

May 10 2015

Heavy Soil

e.g Clay

Medium Soil

e.g Clay Loam

Light Soil

e.g Loam

Sandy Soil

e.g Loamy Sand

Crop:

Biochar

Client:

D. Cooke

Method	Nutrient	Units	E1865/1	Indicative guidelines only- refer Note 6				
Morgan 1	Calcium	Ca	3886	1150	750	375	175	
	Magnesium	Mg	1191	160	105	60	25	
	Potassium	K	1827	113	75	60	50	
	Phosphorus	P	37.3	15	12	10	5.0	
Bray1 Colwell Bray2	Phosphorus	P	44.8	45 ^{note 8}	30 ^{note 8}	24 ^{note 8}	20 ^{note 8}	
			129	80	50	45	35	
			249	90 ^{note 8}	60 ^{note 8}	48 ^{note 8}	40 ^{note 8}	
KCl	Nitrate Nitrogen	N	1.0	15	13	10	10	
	Ammonium Nitrogen		<0.1	20	18	15	12	
	Sulfur	S	16.0	10.0	8.0	8.0	7.0	
1:5 Water	pH	units	9.88	6.5	6.5	6.3	6.3	
	Conductivity	dS/m	1.189	0.200	0.150	0.120	0.100	
Calculation	Organic Matter	% OM	133.1	>5.5	>4.5	>3.5	>2.5	
Ammonium Acetate + Calculations	Calcium	Ca	16.84					
			kg/ha	7559				
			mg/kg	3374	3125	2150	1000	375
	Magnesium	Mg	8.26					
			kg/ha	2248				
	Potassium	K	1004	290	200	145	75	
			mg/kg	5.13				
	Sodium	Na	4491					
mg/kg			2005	235	190	150	100	
KCl	Aluminium	Al	2.49					
			kg/ha	1283				
Acidity Titration	Hydrogen	H ⁺	573	69	60	51	25	
			mg/kg	0.01				
Acidity Titration	Hydrogen	H ⁺	3					
			mg/kg	1	54	45	41	14
Acidity Titration	Hydrogen	H ⁺	0.00					
			kg/ha	0				
Acidity Titration	Hydrogen	H ⁺	0	6	5	5	2	
			mg/kg	0				
Calculation	Effective Cation Exchange Capacity (ECEC)	cmol ⁺ /Kg	32.73	20	14	7	4	
Base Saturation Calculations	Calcium	Ca	51.4	77	76	69	60	
	Magnesium	Mg	25.2	12	12	16	20	
	Potassium	K	15.7	3	4	5	8	
	Sodium - ESP	Na	7.6	2	2	3	3	
	Aluminium	Al	0.0	7	7	7	9	
	Hydrogen	H ⁺	0.0					
Calculation	Calcium/ Magnesium Ratio	ratio	2.0	6.4	6.3	4.3	3.0	
DTPA	Zinc	Zn	10.5	6.0	5.0	4.0	3.0	
	Manganese	Mn	81	25	22	18	15	
	Iron	Fe	32	25	22	18	15	
	Copper	Cu	1.9	2.4	2.0	1.6	1.2	
CaCl ₂	Boron	B	0.97	2.0	1.7	1.4	1.0	
	Silicon	Si	41	50	45	40	35	
LECO IR Analyser	Total Carbon	C	76.05	>3.1	>2.6	>2.0	>1.4	
	Total Nitrogen	N	0.16	>0.30	>0.25	>0.20	>0.15	
Calculation	Carbon/ Nitrogen Ratio	ratio	487.6	10-12	10-12	10-12	10-12	
Calculation	Basic Texture		Biochar	
	Basic Colour		Black	
Calculation	Chloride Estimate	equiv. ppm	761	



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Sandy
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Method	Nutrient	Units	E1865/1	Indicative guidelines only- refer Note 6
Total Acid Extractable	Calcium	Ca	4,763	1,000 - 10,000 Ca
	Magnesium	Mg	1,225	500 - 5,000 Mg
	Potassium	K	1,959	200 - 2,000 K
	Sodium	Na	760	100 - 500 Na
	Sulfur	S	<50	100 - 1,000 S
Total Acid Extractable	Phosphorus	P	312	400 - 1,500 P
Total Acid Extractable	Zinc	Zn	20	20 - 50 Zn
	Manganese	Mn	215	200 - 2,000 Mn
	Iron	Fe	7,076	1,000 - 50,000 Fe
	Copper	Cu	5.3	20 - 50 Cu
	Boron	B	8	2 - 50 B
	Silicon	Si	617	1,000 - 3,000 Si
	Aluminium	Al	3,144	2,000 - 50,000 Al
Total Acid Extractable	Molybdenum	Mo	<0.2	0.5 - 3 Mo
	Cobalt	Co	1	5 - 50 Co
	Selenium	Se	<0.5	0.1 - 2.0 Se
Total Acid Extractable	Cadmium	Cd	<0.5	< 5 Cd
	Lead	Pb	<1	< 75 Pb
	Arsenic	As	<2	< 25 As
	Chromium	Cr	<2	<25 Cr
	Nickel	Ni	1	<150 Ni
	Mercury	Hg	<0.1	< 3.75 Hg
	Silver	Ag	<1	.. Ag
	Ash Content	%	4.5	

EAL Soil Testing Notes

- All results as dry weight - 40°C oven dried soil crushed to <2mm
- Methods from Rayment and Lyons, 2011. *Soil Chemical Methods*
- Soluble Salts included in Exchangeable Cations - NO PRE-WASH
- 'Morgan 1 Extract' adapted from 'Science in Agriculture', 'Non-Toxic Farming' and Lamonte Soil Handbook.
- Guidelines for phosphorus have been reduced for Australian soils
- Indicative guidelines are based on 'Albrecht' and 'Reams' concepts
- Total Acid Extractable Nutrients indicate a store of nutrients
- Contaminant Guides based on 'Residential with gardens and accessible soil including childrens daycare centres, preschools, primary schools, town houses or villas' (NSW EPA 1998).
- Information relating to testing colour codes is available on Sheet 2 - "Understanding you soil results"

Calculations

- For conductivity 1 dS/m = 1 mS/cm = 1000 µS/cm
- 1 cmol⁺/Kg = 1 meq/100g; 1 Lb/Acre = 2 ppm (parts per million); kg/ha = 2.24 x ppm; mg/kg = ppm
- Conversions for 1 cmol⁺/Kg = 230 Kg/Hectare Sodium, 780 Kg/Ha Potassium, 240 Kg/Ha Magnesium, 400 Kg/Ha Calcium
- Organic Matter = %C x 1.75
- Chloride Estimate = EC x 640 (most likely over-estimate)
- ECEC = sum of the exchangeable cations cmol⁺/Kg
- Base saturation calculations = (cation cmol⁺/Kg) /ECEC x 100
- Ca/Mg ratio from the exchangeable cmol⁺/Kg results

