



REPORT ON SAMPLE OF SOIL

FILE NO : **EXAMPLE**

DATE ISSUED : 18/07/2012

CLIENT NAME
ADDRESS
ADDRESS

CLIENT ID :
PHONE :
FAX :

E-mail:

SAMPLE ID : Paddock NO.1
DEPTH OF SAMPLE (cm): 0 to 10
LAND USE : PASTURE

REFERENCE :
REFERENCE PHONE :
DATE RECEIVED : 16/07/2012
ANALYSIS REQUIRED : Full (ST-1)

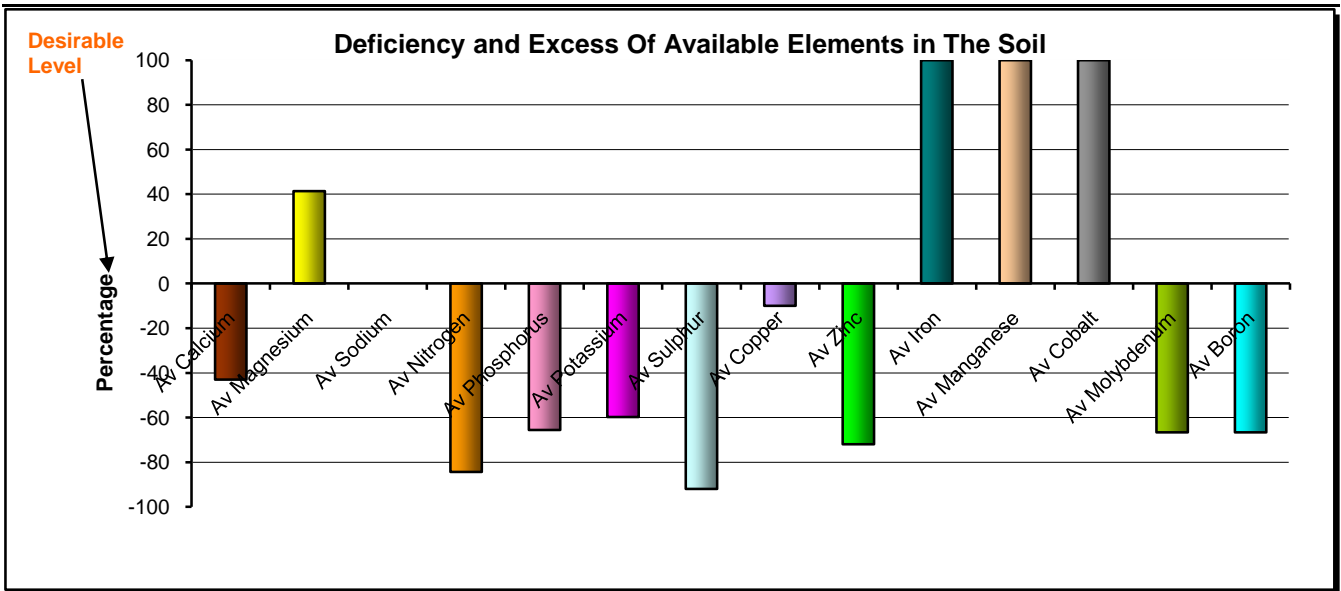
ITEMS			RESULTS	DESIRABLE LEVEL
pH(1:5 Water)			5.9	5.5-7.5
pH(1:5 0.01M CaCl ₂)			5.3	
Electrical Conductivity	EC	µS/cm	84	< 300
TOTAL SOLUBLE SALT	TSS	ppm	277.2	< 990
AVAILABLE CALCIUM	Ca	ppm	1138	1998
AVAILABLE MAGNESIUM	Mg	ppm	373.2	264
AVAILABLE SODIUM	Na	ppm	66.7	< 169
AVAILABLE NITROGEN	N	ppm	3.9	25
AVAILABLE PHOSPHORUS	P	ppm	8.6	25
AVAILABLE POTASSIUM	K	ppm	78	194
AVAILABLE SULPHUR	S	ppm	0.4	5 - 7
AVAILABLE COPPER	Cu	ppm	1.8	2
AVAILABLE ZINC	Zn	ppm	1.4	5 - 7
AVAILABLE IRON	Fe	ppm	227	> 30
AVAILABLE MANGANESE	Mn	ppm	74	> 20
AVAILABLE COBALT	Co	ppm	15.2	0.7-0.8
AVAILABLE MOLYBDENUM	Mo	ppm	0.1	0.3-0.4
AVAILABLE BORON	B	ppm	0.2	0.6-0.7
TOTAL ORGANIC MATTER	OM	%	4.8	4 - 6
TOTAL ORGANIC CARBON	OC	%	2.4	2 - 3
TOTAL PHOSPHORUS	TP	ppm	not required	
EXTRACTABLE ALUMINIUM	Al	ppm	not required	
TOTAL NITROGEN	N	%	not required	
TOTAL CALCIUM	Ca	ppm	not required	
TOTAL MAGNESIUM	Mg	ppm	not required	
TOTAL CHLORIDE	Cl	ppm	not required	
AVAILABLE SILICA	Si	ppm	not required	

ITEMS			RESULTS	DESIRABLE LEVEL
EXCHANGEABLE CALCIUM	Ca	meq/100g of soil	5.38	9.22
EXCHANGEABLE MAGNESIUM	Mg	meq/100g of soil	2.94	2.13
EXCHANGEABLE SODIUM	Na	meq/100g of soil	0.27	< 0.71
EXCHANGEABLE POTASSIUM	K	meq/100g of soil	0.19	0.71
EXCHANGEABLE HYDROGEN	H	meq/100g of soil	7.8	
ADJ. EXCHANG. HYDROGEN	H	meq/100g of soil	5.4	< 2.13
CATION EXCHANGE CAPACITY	CEC		16.58	
ADJUSTED CEC	Adj.CEC		14.18	
EXCH. SODIUM PERCENTAGE	ESP		1.63	< 5
CALCIUM / MAGNESIUM RATIO	Ca/Mg		1.83	2 - 4
BASE SATURATION PERCENTAGE	BSP		54	

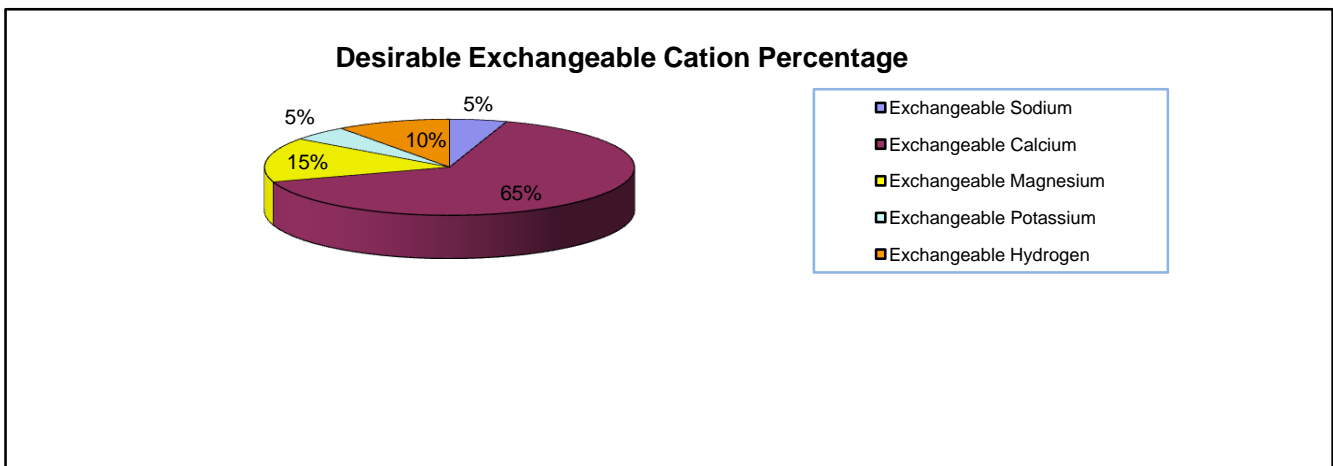
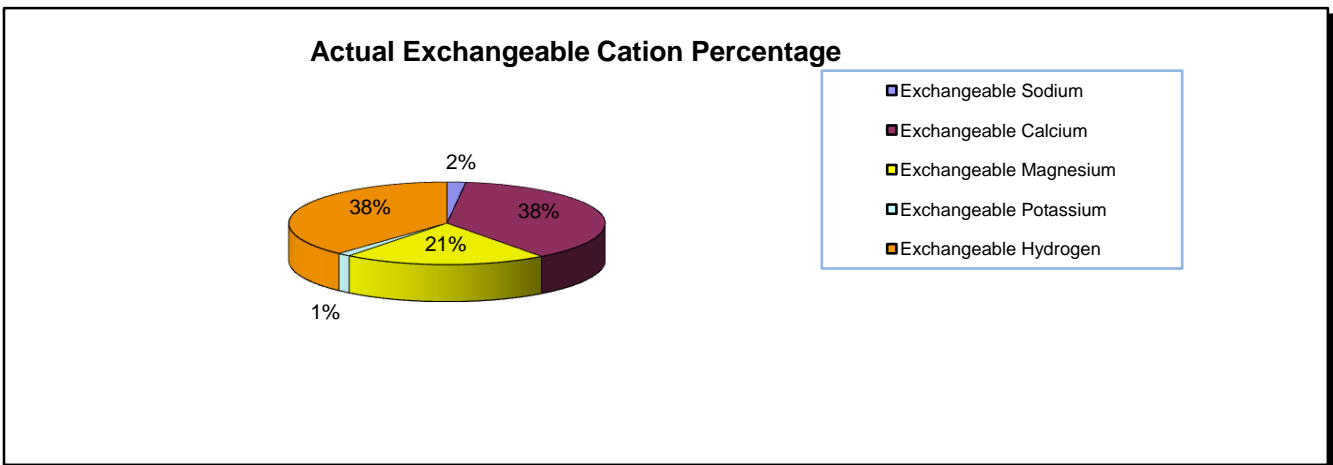
ITEMS		PERCENTAGE OF ADJUSTED CEC	DESIRABLE LEVEL
EXCHANGEABLE CALCIUM	Ca	37.9	65-70%
EXCHANGEABLE MAGNESIUM	Mg	20.7	12-15%
EXCHANGEABLE SODIUM	Na	1.9	0.5-5%
EXCHANGEABLE POTASSIUM	K	1.3	3-5%
EXCHANGEABLE HYDROGEN	H	38.1	<20%

PREVIOUS APPLICATIONS (IF APPLICABLE)		DATE OF APPLICATION
GYPSUM APPLIED	t/ha	
LIME APPLIED	t/ha	
DOLOMITE APPLIED	t/ha	
Magnesium Sulphate	kg/ha	

CEC = Cation Exchange Capacity



- Phosphorus fixation effects if Iron is more than 300 ppm
- Manganese will be at toxicity level if it reaches 500 ppm



RECOMMENDATION

769 kg of Calcium is needed to raise the Available Calcium to 68% and/or Exchangeable Calcium to 65%

GYPSUM REQUIREMENT	1.3 t/ha				
LIME REQUIREMENT	1.2 t/ha				
DOLOMITE REQUIREMENT	0 t/ha				
MAGNESIUM SULPHATE	0 kg/ha	or	MAGNESIUM OXIDE	0 kg/ha	

TOTAL FERTILIZER REQUIREMENT (kg/ha)	N	P	K	S
	21	21	80	0

WITH	COPPER	1.5 kg/ha
	ZINC	3.75 kg/ha
	COBALT	0 kg/ha
	MOLYBDENUM	0.025 kg/ha
	IRON	0 kg/ha
	MANGANESE	0 kg/ha
	BORON	0.75 kg/ha

IT IS IMPORTANT TO READ THE NOTES BELOW AND ON PAGE 5 AS THEY FORM PART OF THESE RECOMMENDATION

*NOTES :

- Gypsum Requirement is to increase the Calcium and Sulphur and decrease the Exchangeable Sodium and or the Exchangeable Magnesium in the soil. For best results, use only 'A-grade' Gypsum.
- Lime Requirement is to increase the Calcium and decrease the hydrogen in the soil
- Lime Requirement is based on Lime containing 40% Calcium.
- We advise that Lime should be applied first in Autumn then followed by Fertiliser in Spring.

We recommend that 25 kg/ha of Potassium should be applied after cutting of Hay.

Desirable levels for Exchangeable Cations (Ca, Mg, Na, K and H) is directly related to the constant desirable level percentages (see pie graph page 3) and the soil's Adjusted CEC. The other elements vary in relation to the soil's CEC, landuse, leaching requirement and yield.

If soil pH (water) is below 5.7, trace elements should not be applied until Lime and/or Dolomite applications have had time to raise the pH to this level. For soils with pH (water) of 8.0 or more, apply trace elements as foliar spray only.

The recommendations for Gypsum/Lime/Dolomite/MgSO₄ on page 4 are essential to the process of achieving optimum soil balance. All other recommendations in this report (NPKS & trace elements) have been formulated on the assumption that the Gypsum/Lime/Dolomite/MgSO₄ have been applied and given sufficient time for their effects to develop. In most cases, six months will be required between application of cation balance correction and fertilisers, however, more time may be required in lower rainfall zones or dry seasons. In areas with shallow saline watertables and NO subsurface drainage, no Gypsum should be applied (even if recommended here) until adequate drainage can be provided. It should also be noted that the amounts recommended depend, in part, on the stated sample depth.

For all required materials - Gypsum/Lime/Dolomite/Magnesium Sulphate/Magnesium Oxide (where surface application is necessary and irrigation is not available), the total application should be limited to roughly 2.5 t/ha per year. This limitation does not apply where materials can be cultivated or irrigated into the soil.

Important note: For all reports that have landuse as "Pasture". If molybdenum is needed to be applied, then copper needs to be applied as well even if available copper is high. Copper and molybdenum are antagonistic to each other so if molybdenum is applied without copper, molybdenum will deplete copper leading to copper deficiency in animals. The main problem occurs when animals graze treated pasture soon after application. For this reason, if you are worried about applying copper when there is enough in your soil, you can apply molybdenum alone BUT you MUST keep animals off the pasture for at least 6 weeks (longer if there has been little or no rain).

SWEP does not recommend or promote specific products, so all recommendations are given in kg/ha of actual nutrient. These must be converted into applications of fertiliser. For assistance in doing this, consult your local supplier.

ANALYTICAL METHODS

Items	Methods
pH (1:5 Water)	4A1
pH (1:5 CaCl ₂)	4B1
Electrical conductivity (1:5 Water)	3A1
Total Soluble Salts	Calculation from Electrical conductivity
Exchangeable Calcium, Magnesium, Sodium, Potassium	15D3 or 15A1
Exchangeable Hydrogen	Barium Chloride-Triethanolamine method*
Available Nitrogen	Calcium Chloride-Brucine method (colorimetric)
Available Phosphorus	Olsen extractable, 9C1
Available Sulphur	Ammonium Acetate extraction
Available Copper, Zinc, & Cobalt	EDTA, 12B1
Available Molybdenum	Ammonium Oxalate-Oxalic acid-di-iso propyl ether
Available Iron & Manganese	method of E.H. Mikhail (1981)
Available Boron	12C2
Total Organic Matter	modified Walkley & Black, 6A1
Total Phosphorus, Calcium, Magnesium	Acid digestion
Extractable Aluminium	15G1
Total Nitrogen	Dumas method, 7A5
Chloride	5A1
Available Silica	Dithionite-Citrate method**

NB. For available Iron and Manganese, SWEP uses the method developed by E.H. Mikhail (1980) due to the tendency for the standard EDTA method to produce erroneously high results.

For numbered test methods:

Rayment, G.E. & Lyons, D.J. (2011). Soil Chemical Methods - Australasia. CSIRO Publishing, 150 Oxford Street, Collingwood Vic 3066, Australia.

*Peech, M., Cowan, R.L. & Baker, J.H. (1962). Soil Science Society American Procedures, A critical study of the Barium chloride-Triethanolamine and ammonium acetate methods for determining exchangeable Hydrogen of soils.