



SWEP ANALYTICAL LABORATORIES

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REPORT ON SAMPLE OF SOIL

FILE NO : **EXAMPLE STANDARD SOIL REPORT**

DATE ISSUED : 24/02/2009

CLIENT NAME
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CLIENT ID : SWE001
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SAMPLE ID : Paddock 1
DEPTH OF SAMPLE (cm): 0 to 10
LAND USE : PASTURE

REFERENCE : AGENT NAME
REFERENCE PHONE : 03 9701 6007
DATE RECEIVED : 20/02/2009
ANALYSIS REQUIRED : (ST-1) Standard Analysis

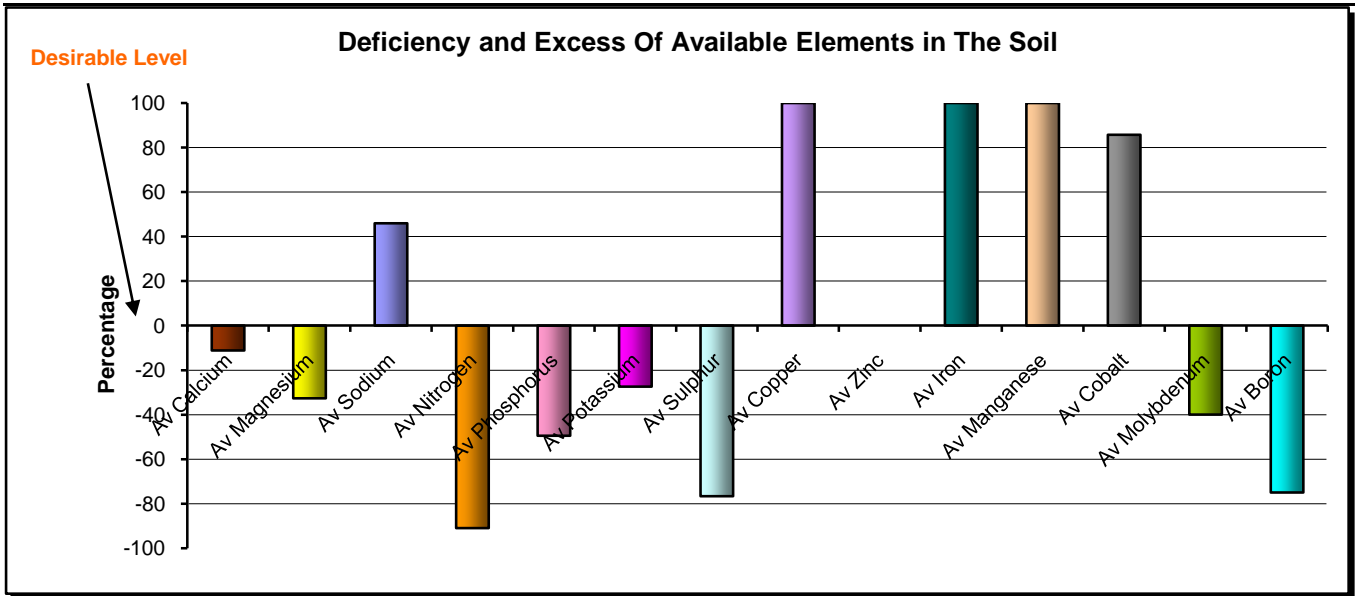
ITEMS	RESULTS	DESIRABLE LEVEL
pH(1:5 Water)	5.9	5.5-7.5
pH(1:5 0.01M CaCl ₂)	5.4	
Electrical Conductivity	EC μS/cm	< 300
TOTAL SOLUBLE SALT	TSS ppm	< 990
AVAILABLE CALCIUM	Ca ppm	617
AVAILABLE MAGNESIUM	Mg ppm	82
AVAILABLE SODIUM	Na ppm	< 52
AVAILABLE NITROGEN	N ppm	20
AVAILABLE PHOSPHORUS	P ppm	20
AVAILABLE POTASSIUM	K ppm	86
AVAILABLE SULPHUR	S ppm	3 - 5
AVAILABLE COPPER	Cu ppm	2
AVAILABLE ZINC	Zn ppm	3 - 5
AVAILABLE IRON	Fe ppm	> 20
AVAILABLE MANGANESE	Mn ppm	> 20
AVAILABLE COBALT	Co ppm	0.5-0.7
AVAILABLE MOLYBDENUM	Mo ppm	0.5-0.7
AVAILABLE BORON	B ppm	0.4-0.6
TOTAL ORGANIC MATTER	OM %	3 - 4
TOTAL ORGANIC CARBON	OC %	1.5 - 2
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	2.47	2.72
EXCHANGEABLE MAGNESIUM	Mg	meq/100g of soil	0.42	0.63
EXCHANGEABLE SODIUM	Na	meq/100g of soil	0.3	< 0.21
EXCHANGEABLE POTASSIUM	K	meq/100g of soil	0.14	0.21
EXCHANGEABLE HYDROGEN	H	meq/100g of soil	2.2	
ADJ. EXCHANG. HYDROGEN	H	meq/100g of soil	0.85	< 0.63
CATION EXCHANGE CAPACITY	CEC		5.53	
ADJUSTED CEC	Adj.CEC		4.18	
EXCH. SODIUM PERCENTAGE	ESP		5.42	< 5
CALCIUM / MAGNESIUM RATIO	Ca/Mg		5.96	2 - 4
BASE SATURATION PERCENTAGE	BSP		63	

ITEMS		PERCENTAGE OF ADJUSTED CEC
EXCHANGEABLE CALCIUM	Ca	59.1
EXCHANGEABLE MAGNESIUM	Mg	10
EXCHANGEABLE SODIUM	Na	7.2
EXCHANGEABLE POTASSIUM	K	3.3
EXCHANGEABLE HYDROGEN	H	20.3

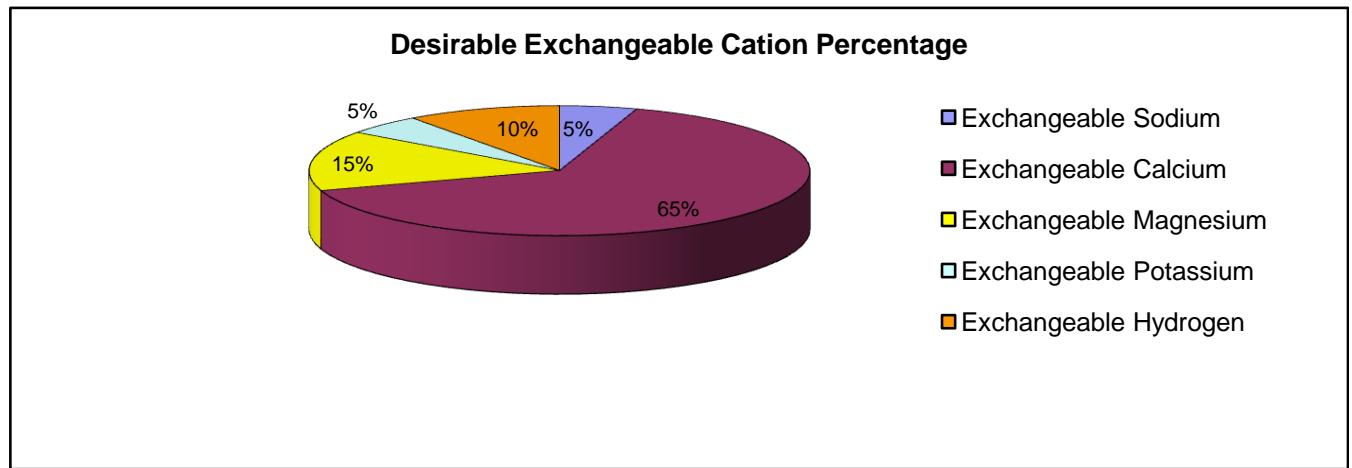
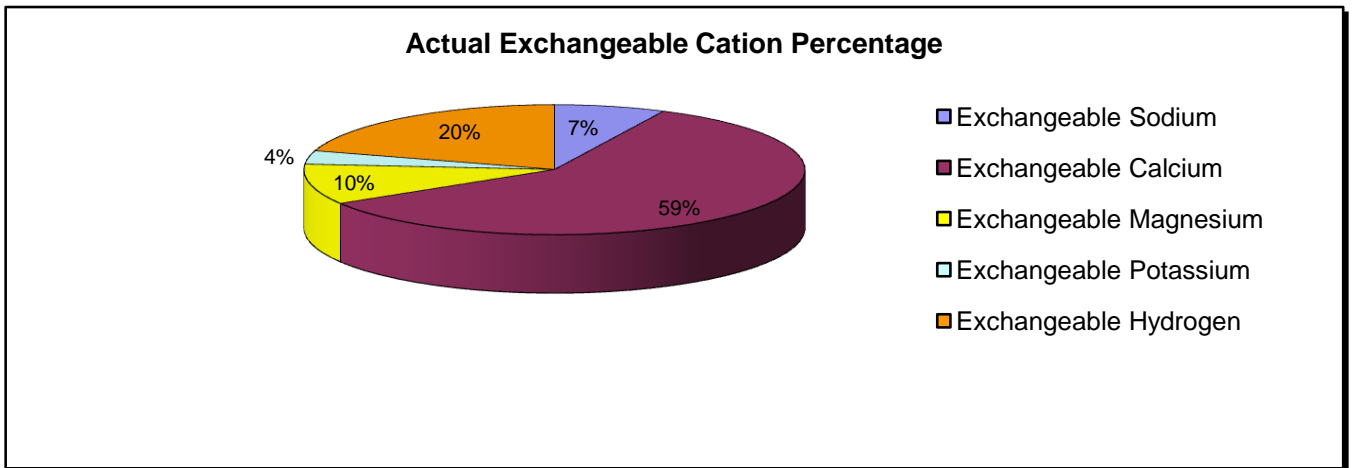
PREVIOUS APPLICATIONS (IF APPLICABLE)		DATE OF APPLICATION
GYPSUM APPLIED	t/ha	
LIME APPLIED	t/ha	
DOLOMITE APPLIED	t/ha	
Magnesium Sulphate	kg/ha	

CEC = Cation Exchange Capacity



Notes:

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



RECOMMENDATION

69 Kg of Calcium is needed to raise the Available Calcium to 68% and/or Exchangeable Calcium to 65%
 25 Kg of Magnesium is needed to raise the Available Magnesium and Exchangeable Magnesium to 15%

GYPSUM REQUIREMENT	0.1 t/ha				
LIME REQUIREMENT	0 t/ha				
DOLOMITE REQUIREMENT	0.2 t/ha				
MAGNESIUM SULPHATE	0 kg/ha	or	MAGNESIUM OXIDE		0 kg/ha

TOTAL FERTILIZER REQUIREMENT (kg/ha)	N	P	K	S
	18	10	24	0

WITH	COPPER	0.5 kg/ha
	ZINC	0 kg/ha
	COBALT	0 kg/ha
	MOLYBDENUM	0.03 kg/ha
	IRON	0 kg/ha
	MANGANESE	0 kg/ha
	BORON	0.2 kg/ha

*NOTES :

- Gypsum Requirement is to increase the Calcium and Sulphur and decrease the Exchangeable Sodium and/or the Exchangeable Magnesium in the soil.

- Dolomite Requirement is to increase the Magnesium and Calcium and decrease the Hydrogen in the soil.
- Dolomite Requirement based on Dolomite containing 11% Magnesium and 25% Calcium.
- We advise that Dolomite 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.

- Important note: For all reports that have landuse as "Pasture".

If molybdenum is needed to be applied to the soil, then copper needs to be applied even if the available copper is high. Copper and molybdenum are antagonistic to each other, so if molybdenum is applied without copper, molybdenum will deplete copper in the soil 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).

- 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.

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	15D3 or 15C1
Exchangeable Magnesium	15D3 or 15C1
Exchangeable Sodium	15D3 or 15C1
Exchangeable Potassium	15D3 or 15C1
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	EDTA, 12B1
Available Zinc	EDTA, 12B1
Available Iron	method of E.H. Mikhail (1981)
Available Manganese	method of E.H. Mikhail (1981)
Available Cobalt	EDTA, 12B1
Available Molybdenum	Ammonium Oxalate-Oxalic acid-di-iso propyl ether
Available Boron	12C2
Total Organic Matter	modified Walkley & Black, 6A1
Total Phosphorus	Acid digestion
Extractable Aluminium	15G1
Total Nitrogen	Dumas method, LECO
Total Calcium	Acid digestion
Total Magnesium	Acid digestion
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. & Higginson, F.R. (1992). Australian Laboratory Handbook for Soil and Water Chemical Methods. Inkata Press, Port Melbourne, 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.

** Ross, G.J. & Wang, C. (1993). Soil Sampling and Methods of Analysis, CRC Press, Boca Raton, Florida, USA.