Overseer AGRICULTURE

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DATE:	25.7.20	**LAND USE:**	Pasture
CLIENT:	Campbell Wolfenden	**BLOCK:**	Top Paddock
ADDRESS:	**The Elm**	**SAMPLE REC:**	J6439/1
		CONTACT INFO:	

SOIL ANALYSIS

ALBRECHT	CURRENT	TARGET	AVAILABLE NUTRIENT STATUS LOW	OK	HIGH
CEC	15.33				
TEC	19.41				
Paramagnetism	2510	200 +			
pH-level (1:5 water)	5.80	6.3			
Organic Matter (IR Gas Anal.	7.37 %	4 - 10 %			
Labile Carbon	0.99 %	0.8 - 1.2 %			
Conductivity (1:2 water)	0.05232 mS/cm	0.2 - 0.6 mS/cm			
Ca / Mg Ratio	2.03 :1	5.67 :1			
Nitrate-N (Morgan)	9.4 ppm	10 - 20 ppm			
Ammonium-N (Morgan)	3.0 ppm	10 - 20 ppm			
Phosphorus (Mehlich III)	24.2 ppm	50 - 70 ppm			
Calcium (Mehlich III)	1902.8 ppm	2639 ppm			
Magnesium (Mehlich III)	561.3 ppm	280 ppm			
Potassium (Mehlich III)	382.5 ppm	227 - 378 ppm			
Sodium (Mehlich III)	11.8 ppm	22 - 67 ppm			
Sulphur (Morgan)	6.7 ppm	30 - 50 ppm			
Chloride	0.0 ppm	32 - 46 ppm			
Aluminium (Mehlich III)	9.77 ppm	< 9 ppm			
Silicon ($CaCl_2$)	63.05 ppm	40 > 100 ppm			
Boron (Hot $CaCl_2$)	0.43 ppm	1 - 3 ppm			
Iron (DPTA)	206.07 ppm	40 - 200 ppm			
Manganese (DPTA)	89.08 ppm	30 - 100 ppm			
Copper (DPTA)	3.71 ppm	2 - 7 ppm			
Zinc (DPTA)	6.30 ppm	5 - 10 ppm			
Molybdenum (Aqua Regia	2.24 ppm	0.5 - 2 ppm			
Cobalt (Aqua Regia)	118.21 ppm	2 - 40 ppm			
Selenium (Aqua Regia)	1.08 ppm	0.6 - 2 ppm			
Texture:	Loam				
Colour:	Brownish				
BASE SATURATION					
(Levels are not really relevant in soils with a TEC below 5)					
Calcium	49.02 %	68.00 %			
Magnesium	24.10 %	12.00 %			
Potassium	5.05 %	3.00 - 5.00 %			
Sodium	0.26 %	0.50 - 1.50 %			
Aluminium	0.56 %	0.50 %			
Hydrogen	21.00 %	10.00 %			

TOTAL NUTRIENT STATUS

	CURRENT		TARGET
N	3570.0 ppm		4210
C	42100.0 ppm		
P	2877.2 ppm		1053
Ca	2775.0 ppm		2639
Mg	2886.6 ppm		280
K	1167.1 ppm		378
Na	#VALUE! ppm		67
S	445.2 ppm		702
Cl	0.0		50
Si	680.0 ppm		1000
B	<2 ppm		8
Fe	159312.5 ppm		1200
Mn	3541.4 ppm		600
Cu	65.3 ppm		20
Zn	169.1 ppm		40
Mo	2.2 ppm		2
Co	118.2 ppm		4
Se	1.1 ppm		2
RATIOS			
Nitrogen : Sulphur	8.02		6
Nitrogen : Phosphorus	1.24		4
Nitrogen : Potassium	3.06		3
Carbon : Nitrogen	11.79		10
Crude Protein	0.00		2

LEAF ANALYSIS

ELEMENT	CURRENT ANALYSIS	TARGET	ELEMENT STATUS LOW	OK	HIGH
Nitrogen - N	0.0 %	2.5 - 3.5 %			
Phosphorus - P	0.00 %	0.35 - 0.50 %			
Potassium - K	0.00 %	1.8 - 2.5 %			
Sulfur - S	0.00 %	0.25 - 0.35 %			
Calcium - Ca	0.00 %	0.5 - 1.40 %			
Magnesium - Mg	0.00 %	0.2 - 0.35 %			
Sodium - Na	0.00 %	0.15 - 0.30 %			
Copper - Cu	0.0 ppm	10 - 20 ppm			
Zinc - Zn	0.0 ppm	35 - 50 ppm			
Manganese - Mn	0.0 ppm	40 - 150 ppm			
Iron - Fe	0.0 ppm	50 - 350 ppm			
Boron - B	0.0 ppm	21 - 224 ppm			
Molybdenum - Mo	0.0 ppm	0.4 - 0.9 ppm			
Cobalt - Co	0.0 ppm	N/A ppm			
Silicon - Si	0.0 ppm	700 - 2000 ppm			
Chloride - Cl	0.0	0.2 1 %			
Nitrogen : Sulphur	0.0	15 units			
Nitrogen : Phos	0.0	20 units			
Nitrogen : Potass	0.0	2 units			
Carbon : Nitrogen	0.0	15 units			
Crude Protein	0.0	30 %			
Chloride	NG	1 %			
Nitrate	0.0	10 - 20 ppm			
Ammonia	0.0	70 - 90 ppm			

NOTES

The **Albrecht**, or **Soluble Test** uses a blend of mild acids and is the common sort of soil test that tells us what may be readily available via water uptake in the top 15 cm of soil. However, it does not tell us what is locked up in the mineral structure of the soil--or what may be available at greater depth.

The **Total Test** is analysed with a mix of very strong acids called ***aqua regia***, and it reveals what is locked up in the soil's mineral structure as though it were an ore sample. Much of this may become available if robust and diverse microbial activity is encouraged.

Since we test and amend soils in order to yield optimum nutrition for plants, the **Tissue Test** is the bottom line that shows how well we used the other two tests. This test also uses *aqua regia*, and it shows what was taken up by the plant--which may or may not be what shows in the Albrecht and/or Total tests.

All too often soluble tests, taken alone, are misleading. Ideally we only want small amounts of nutrients soluble at any one time, as we want most of our nutrients to be insoluble but available. This implies maintaining robust and diverse microbial activity. A complex balance between fungi, actinomycetes, yeasts, bacteria, protozoa, etc. is extremely important, as the essence of control is to use the exact amount of force necessary--no more and no less. Excesses can be as harmful as deficiencies.

For example, magnesium and potassium may both be high in the soluble test, but this can lead to excessive potassium in tissues while magnesium is deficient if the salt levels are high enough to impair the crop's fine feeder root activity, since potassium easily enters plants via water uptake while magnesium is less mobile, depending more on feeder roots to enter the plant. Such situations tend to favour certain weeds, such as tall, lush, potassium loving types. Or, phosphorous may be low in the soluble test, high in the total test and high in the leaf, indicating healthy microbial P release. But high soluble P can lead to low P in tissues, as this condition can shut down further microbial P release because it poisons the fine feeder root environment and impairs its development while at the same time traveling poorly via water uptake roots.

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