testneeds

ANALYSIS REPORT: SOIL AND PLANT NUTRITION TEST NEEDS AUSTRALIA

Document No: AR[redacted]	Client ID : [redacted]	Crop: Citrus/Orange	Depth 15cm	Date of test: 17/03/2020-07/04/2020
Clent Name : Good farmer	Sample ID:TN20[redacted]	Sample Name : B-Far end Border	Date of report issuesd:07/04/2020	Date of sample submission:17/03/2020
Phone:04[redacted]	Address: [redacted] Farm ,Grifith NSW	Email: [redacted]@bigpond.com	Test: Chemical and biological	Date Received :17/03/2020

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2.0 Nutrient results and desirable levels

		SOIL TEST			LEAF TEST		
Name		Result	Desirable level	Difference	Result	Desirable	Difference
Nitrozen mg/kg	N	17	15-20	-3	220	270	-50
Phosphorus (Colwell) mg/kg	P	160	30-50	100	22	14	8
Potassium %	K	10	2-6	5	1.50	1.5	0
Sulphur ppm	S	6	3 to 5	2	0.24	2	-2
Calcium%	Ca	69	>5	30	3.40	4	-0.6
Magnesium %	Mg	19	>2	10	0.36	0.4	-0.04
Sodium %(ESP)	Na	1.70	< 1	2	0.01	0.01	0
Zinc (DTPA) mg/kg	Zn	15	1 to 150	-10	11	45	-34
Copper (DTPA) mg/kg	Cu	13	2to 50	-5	3.7	8	-4.3
Boron(Hot Ca Cl2) mg/kg	Br	1.4	0.6 to 1	1	94	60	34
Manganese(DTPA)mg/kg	Mn	11	> 10	-2	8.3	40	-31
Iron (DTPA)mg/kg	Fe	43	>15	1	87	85	2
Mehlich Phosphorus Saturation Ratio (M3 PSR)	PS		0 0.06 to 0.23	1			0
Chloride mg/kg	Cl	19	0-50	1		30	
Molybdenum	Ml	0.01	1-2	-1.4	0.11	0.11	0

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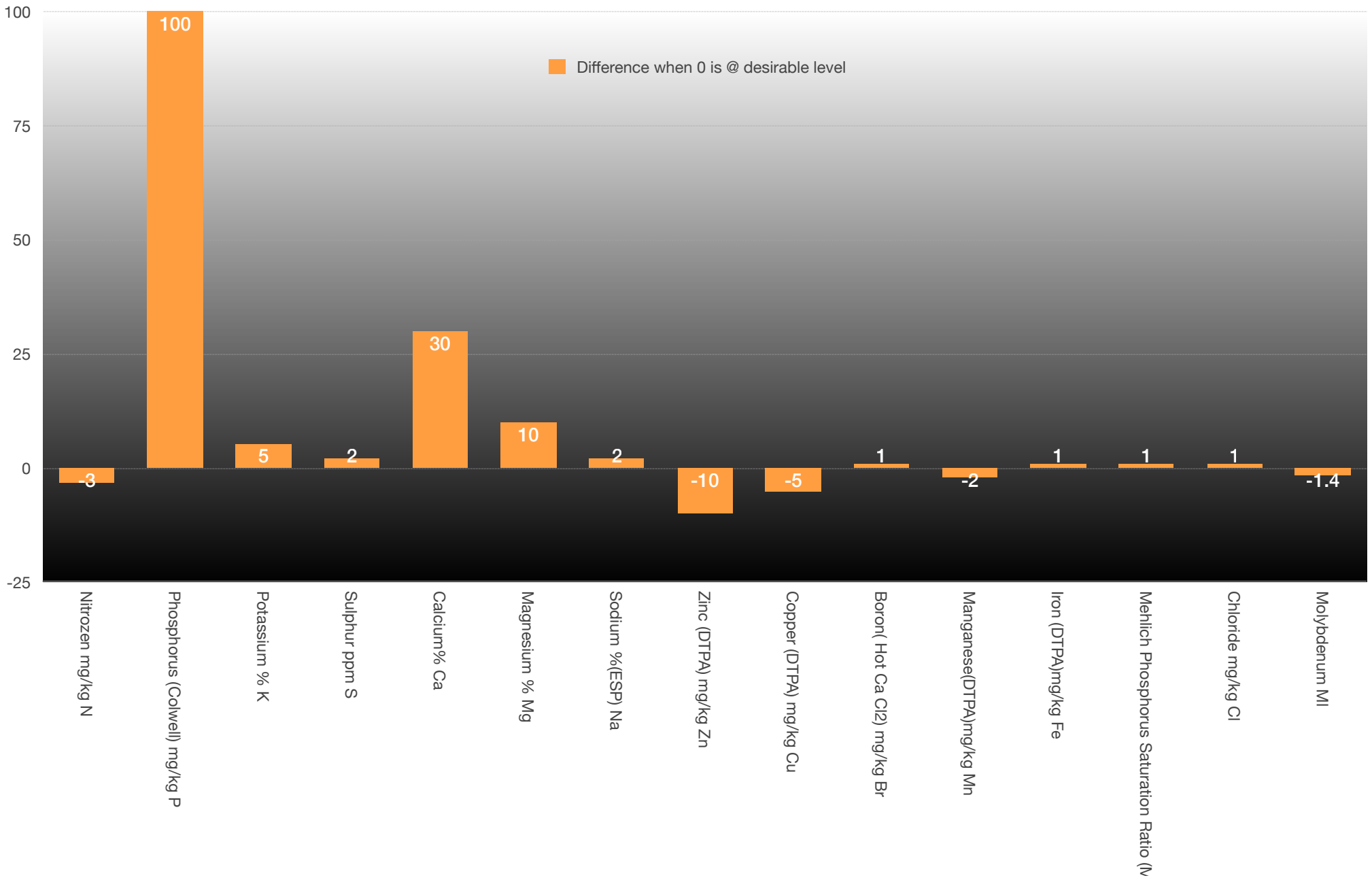
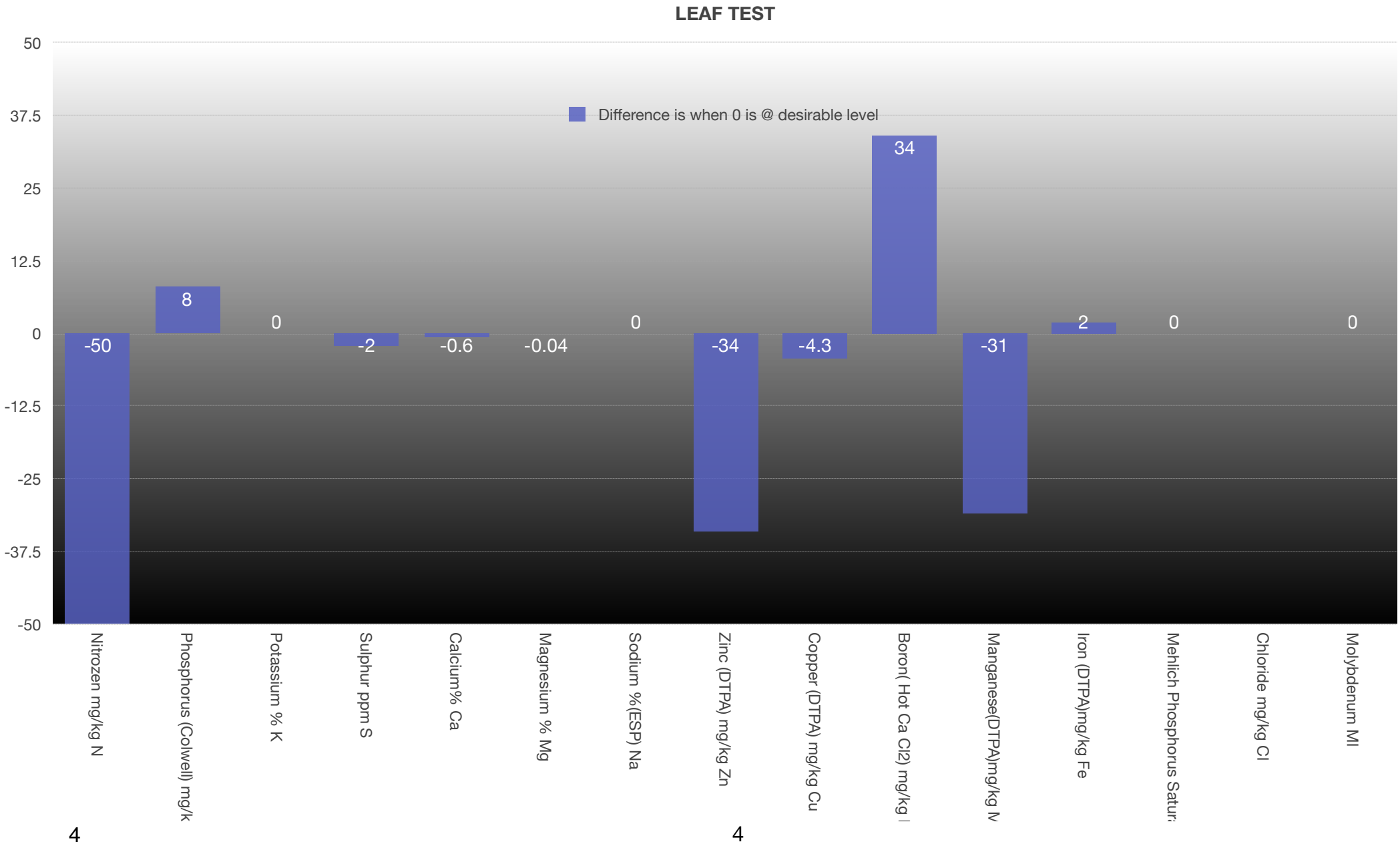
SOIL TEST


100
75
50
25
0
-25
Difference when 0 is @ desirable level
-3
100
5
2
30
10
2
-10
-5
1
-2
1
1
1
-1.4
Nitrozen mg/kg N
Phosphorus (Colwell) mg/kg P
Potassium % K
Sulphur ppm S
Calcium% Ca
Magnesium % Mg
Sodium %(ESP) Na
Zinc (DTPA) mg/kg Zn
Copper (DTPA) mg/kg Cu
Boron(Hot Ca Cl2) mg/kg Br
Manganese(DTPA)mg/kg Mn
Iron (DTPA)mg/kg Fe
Mehlich Phosphorus Saturation Ratio (lv
Chloride mg/kg Cl
Molybdenum Ml

13 PSR) PS


LEAF TEST
Difference is when 0 is @ desirable level
50
37.5
25
12.5
0
-12.5
-25
-37.5
-50
-50
8
0
-2
-0.6
-0.04
0
-34
-4.3
34
-31
2
0
0
Nitrozen mg/kg N
Phosphorus (Colwell) mg/k
Potassium % K
Sulphur ppm S
Calcium% Ca
Magnesium % Mg
Sodium %(ESP) Na
Zinc (DTPA) mg/kg Zn
Copper (DTPA) mg/kg Cu
Boron(Hot Ca Cl2) mg/kg I
Manganese(DTPA)mg/kg M
Iron (DTPA)mg/kg Fe
Mehlich Phosphorus Satur
Chloride mg/kg Cl
Molybdenum Ml

4

g P

Br

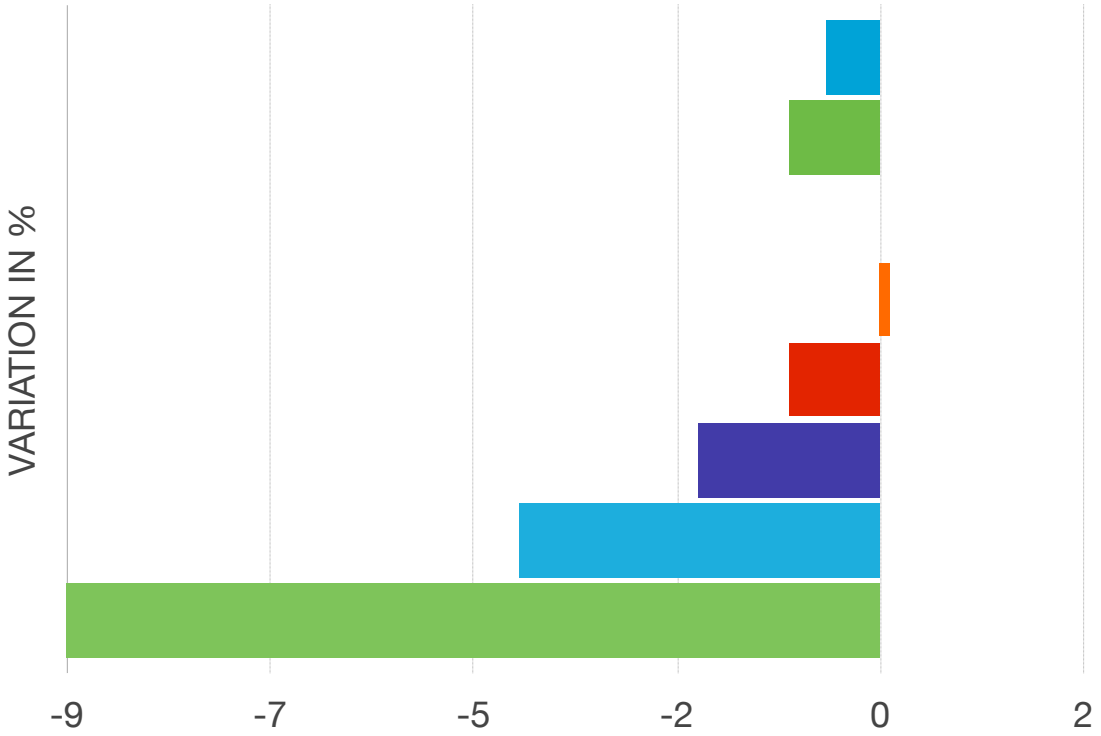
In

ation Ratio (M3 PSR) PS

3.0 Fundamental test results

FUNDAMENTAL TEST RESULTS

TEST NAME	Result	Desirable Level	VARIATION IN %
pH (1:5 water)	6.9	6.5 to 8	-1
pH (1:5 0.01 M $Cacl_2$)	6.2	6to7	-1
Electrical conductivity dS/m	0.10	< 0.5	0
Electrical conductivity dS/m	0.6	> 0.05	0
Total carbon %	1.2	1.5 to 2	-1
Organic matter %	2.06	4	-2
Total Nitrozen%	18	22	-4
Carbon :Nitrozen Ratio	15	24	-9



pH (1:5 water)
Electrical conductivity dS/m
Total carbon %
Total Nitrozen% 18 22
pH (1:5 0.01 M Cacl2)
Electrical conductivity dS/m
Organic matter %
Carbon :Nitrozen Ratio 15 24

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3.1 Note Soil Chemistry

Most of the parameters are in good range and the soil structures have good stability too. The salinity is not at risk , however it is advised to keep an eye on sodium level . pH is sitting at an ideal range,Organic carbon and so Organic matter need an attention as it is down at the moment . Carbon: Nitrogen ratio being slightly below average (meaning increased Nitrogen leaching) might ask for better attention on Nitrogen management, especially when the plants are meant for vegetative flushes all through the season. However, proposed attention on OM will results in better N management hence, would need to encourage the mineralisation of Nitrogen by adding well digested compost at adequate level.

3.2 Cation Balance

Exchangeable cation balance	Result CEC in %	Desirable CEC in %
Calcium %	66	30
Potassium %	11	6
Magnesium %	19	13
Sodium %	2	1
Calcium/Magnesium ratio	3.5	3
Potassium/ Magnesium ratio	0.6	0.5
NA	-2.1	46.5

Cation Results and Desirable Levels:		
Exchangeable cations	Result	Desirable level
Calcium meq/100 of soil	10	2.69
Potassium meq/100 of soil	1.6	0.21
Magnesium meq/100 of soil	2.8	0.62
Sodium meq/100 of soil	.25	< 0.21
Cation exchange capacity meq/100 of soil	15	
Base saturation percentage	87.1	80 to 87
Exchangeable Acidity meq/100 of soil	3.1 (12.9% of CEC)	13 to 20% of CEC
Aluminium saturation %	0.00	

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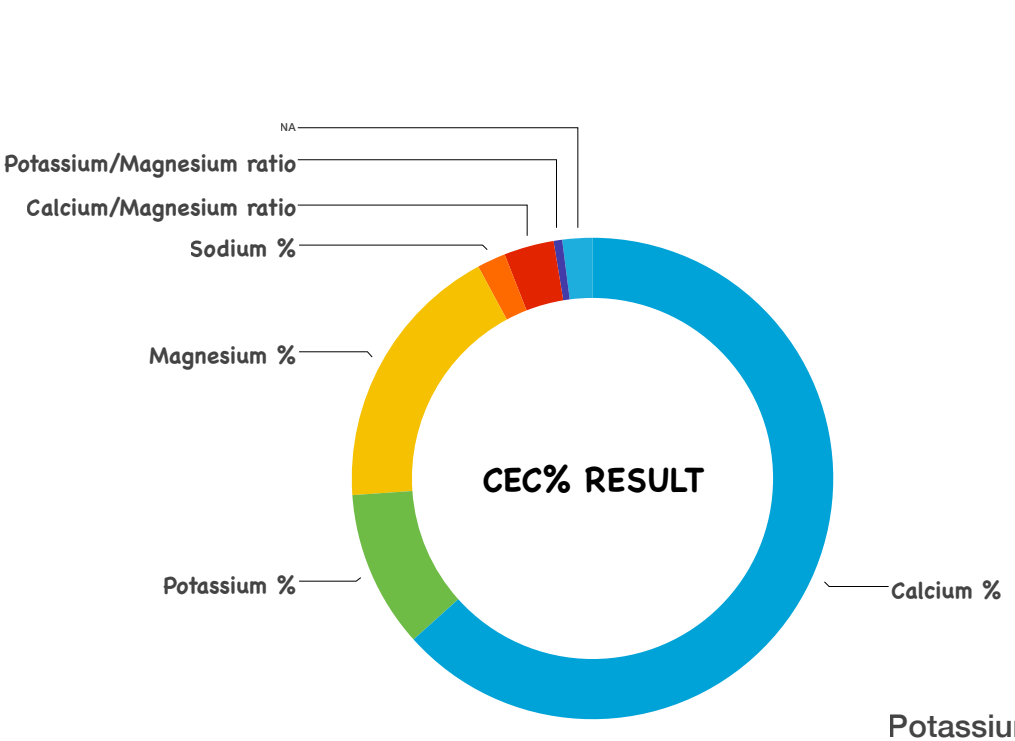
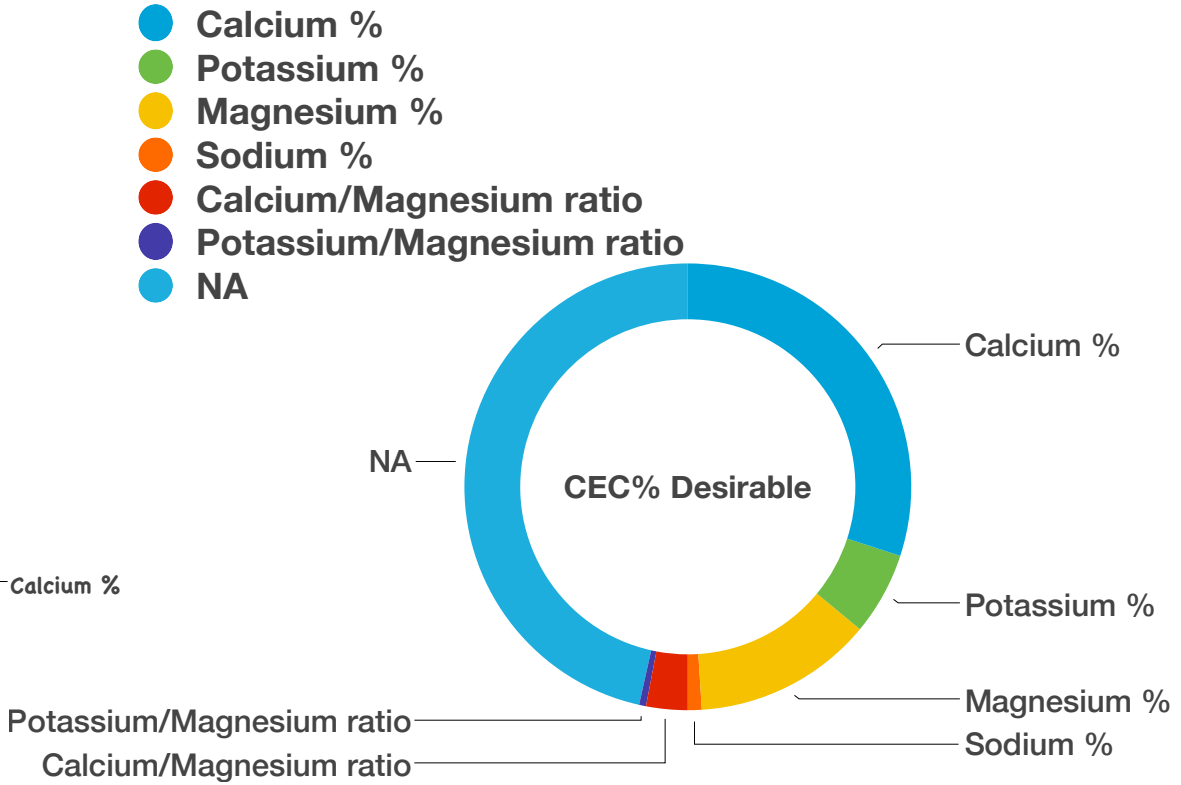
3.3 Cation results and desirable levels





4.0 Summary :

Higher CEC 15meq/100gm indicates heavy country with higher clay amount. Looking at the lower aerobic biological activity (refer to biological results) there seems to be room for proper aeration of the paddock. The difficulty with the compaction can be minimised by maintaining the water logging condition or by improving the soil texture., so loosening the inter row will be an option .

High content of Calcium calls for stopping Gypsum for one seasons.. Nitrogen losses have noticed , which can be reduced by split application of N fertiliser . or considering the application of compost /some N inhibitor /stabiliser . Although an adequate level of S in soil test , plants are unable to take S , might be due to recent water logged condition , which can be addressed by soil amendments like PLANC(Neem Cake).

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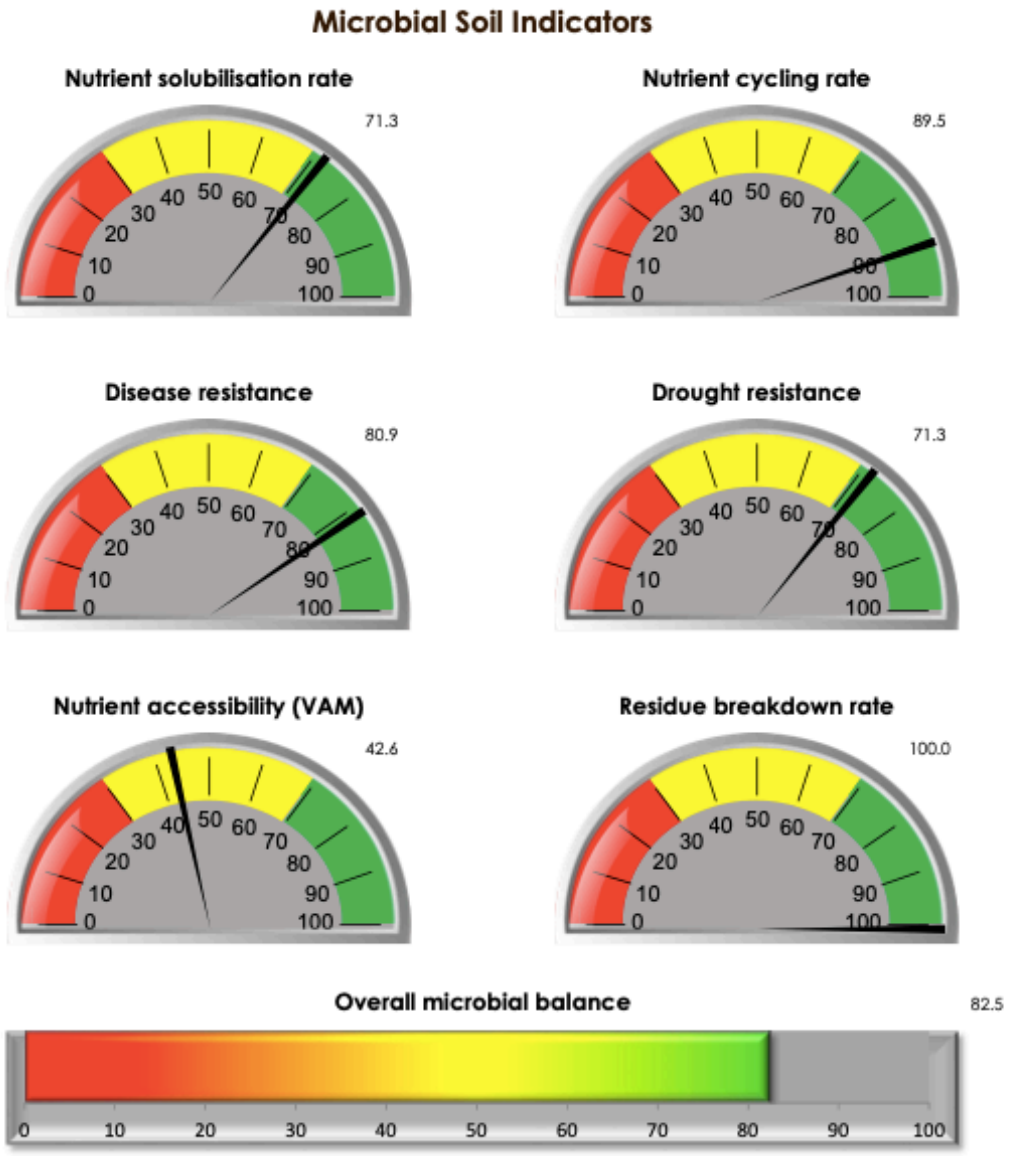
4.1 Soil Biology test results



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Key Microbe Groups

Group	Biomass (mg/kg) Yours	Guide
Total microorganisms	**72.6**	50.0
Total bacteria	**14.0**	15.0
Total fungi	**56.3**	33.8

Microbial indicators	Yours	Guide
Microbial diversity	**38.5**	80.0
Fungi : Bacteria	**4.0**	2.3
Bacterial stress	**0.2**	< 0.5

Key *BDL = Below Detectable Limit (0.001 mg/kg)

Poor **Fair** **Good**

Group	Biomass (mg/kg) Yours	Guide
Bacteria		
Pseudomonas	**1.892**	1.000
Actinomycetes	**1.964**	1.000
Gram positive	**7.676**	4.000
Gram negative	**6.362**	11.000
Methane oxidisers	**0.000**	0.500
Sulphur reducers	**0.000**	< 0.005
True anaerobes	**0.348**	< 0.005
Eukaryotes		
Protozoa	**2.254**	1.300
Mycorrhizal fungi (including VAM)	**4.260**	10.000

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4.3 Note Soil Biology

The soil indicators were all good, except for Nutrient accessibility. The total mass of microbes in your sample was good. Biomasses of other key desirable microbe groups ranged were good. Except for Gram negative bacteria and VAM, which were lower than any other group. Protozoa, which were good here, are important for nutrient transfer and cycling between soil trophic levels, and can be sensitive to agrochemicals, particularly herbicides. True anaerobes were elevated, which indicates that this soil was recently waterlogged, or compacted. Microbial diversity was fair. These results suggest that management practices should initially focus on building bacteria biomass and VAM. Re-test periodically, and once biomass has improved concentrate on minimising True anaerobes, building microbial diversity and biomasses of any key desirable groups that remain low.

General Note on Soil Biology:

The Microbe test measures the biomasses of key microbial groups directly from your sample. It uses molecular ('DNA type') technology to analyse the unique cell membrane 'fingerprint' of each microbe type to identify and quantify key groups important to soil processes. This method is more accurate and precise than other methods, such as direct microscopy or plate culture, because it uses chemical extraction to remove the maximum amount of microbial material from the sample and is repeatable to 0.01% between replicate analyses. It measures organisms that are alive or recently dead (within a few days). Always compare your results with a control sample. Guide values are included as a help, but because a large number of factors affect microbiology the guide levels may not be optimal for your specific conditions.

Disclaimer:

Analysis by Test Needs traded by Plant Needs pty Ltd ACN. 130532375 .The information in this report should be used under consideration of particular production conditions. The guide levels are derived from published data and ongoing research carried out by Test Needs Australia . They are intended as a general guide only and do not take into account your specific conditions. Comparison of results with those obtained using other methods may be inaccurate, as accurate interpretation relies on specific sampling and analysis methods. Test Needs Australia and its employees or agents will not be liable for any loss or damage arising from the use of the information supplied in this report. Please seek specific guidance and recommendations from a qualified agriculture professional.

5.0 Recommendation

Basal application :
Soil Amendments @350kg/ha
Fish Meal or fish liquid @100kg/ha to improve the biology (gm-ve bacteria)
Less leaching N fertiliser through soil application , or Split application
Zn,Manganese and a trace of molybdenum to be added in a program .

Top dressings: might need few applications-
{First application during active growing period , but well before winter ,repeat it every fortnight or monthly depending on the growth and performance of the crop. Ideally, it is better to test the leaves/ tissues (sometime after the first topdressing, say 15 days after the application) before fine tuning the crop.}

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