



agri-nutrients
Ballance



Hill Laboratories
BETTER TESTING BETTER RESULTS

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ANALYSIS REPORT

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Client:	Taratahi Agricultural Training Centre	Lab No:	791594	s2chpv1
Address:	Cornwall Road RD 7 MASTERTON 5887	Date Registered:	12-May-2010	
		Date Reported:	14-May-2010	
		Quote No:		
		Order No:	Mangarata	
		Client Reference:	3050309	
		Submitted By:	Mr M Cammock	

Sample Name:	pH pH Units	Olsen Phosphorus mg/L	Sulphate Sulphur mg/kg	Potassium MAF units	Calcium MAF units	Magnesium MAF units	Sodium MAF units
Ella's/Bills	6.0	35	11	22	17	57	6
Pampa's Flat	6.0	22	7	12	13	38	10
Burges/Al's	6.3	39	10	23	19	47	7
Spirals 2/Daniels	5.8	29	11	36	11	43	7
Back/Georges	5.7	23	8	16	11	44	7
Big Pond/Hum's Hill	6.1	29	11	22	11	38	10
Middle	6.1	20	8	14	18	43	8
No 5 Flat	6.2	50	17	9	14	32	9



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The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.



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Address: Cornwall Road RD 7 MASTERTON 5887	Date Registered: 12-May-2010	
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	Quote No:	
	Order No: Mangarata	
	Client Reference: 3050309	
	Submitted By: Mr M Cammock	

Sample Name: Ella's/Bills	Sample Name: Pampa's Flat				
Lab Number: 791594.1	Lab Number: 791594.2				
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)	Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)				
Analysis	Level	Optimum	Below	Optimum	Above
pH	pH Units	6.0	5.8 - 6.0		
Olsen Phosphorus	mg/L	35	20 - 30		
Potassium	MAF units	22	7 - 10		
Calcium	MAF units	17	4 - 6		
Magnesium	MAF units	57	8 - 10		
Sodium	MAF units	6			
Sulphate Sulphur	mg/kg	11	10 - 12		
Base Saturation %	K 4.8	Ca 59	Mg 11.2	Na 0.6	
me/100g	K 1.52	Ca 18.6	Mg 3.54	Na 0.20	
Additional Properties	Cation Exchange Capacity (me/100g)			32	
	Total Base Saturation (%)			76	
	Volume Weight (g/mL)			0.72	

Sample Name: Burges/Al's	Sample Name: Spirals 2/Daniels				
Lab Number: 791594.3	Lab Number: 791594.4				
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)	Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)				
Analysis	Level	Optimum	Below	Optimum	Above
pH	pH Units	6.3	5.8 - 6.0		
Olsen Phosphorus	mg/L	39	20 - 30		
Potassium	MAF units	23	7 - 10		
Calcium	MAF units	19	4 - 6		
Magnesium	MAF units	47	8 - 10		
Sodium	MAF units	7			
Sulphate Sulphur	mg/kg	10	10 - 12		
Base Saturation %	K 5.0	Ca 67	Mg 9.3	Na 0.7	
me/100g	K 1.62	Ca 21.6	Mg 2.98	Na 0.21	
Additional Properties	Cation Exchange Capacity (me/100g)			32	
	Total Base Saturation (%)			82	
	Volume Weight (g/mL)			0.70	

Sample Name: Back/Georges	Sample Name: Big Pond/Hum's Hill				
Lab Number: 791594.5	Lab Number: 791594.6				
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)	Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)				
Analysis	Level	Optimum	Below	Optimum	Above
pH	pH Units	5.7	5.8 - 6.0		
Olsen Phosphorus	mg/L	23	20 - 30		
Potassium	MAF units	16	7 - 10		
Calcium	MAF units	11	4 - 6		
Magnesium	MAF units	44	8 - 10		
Sodium	MAF units	7			
Sulphate Sulphur	mg/kg	8	10 - 12		
Base Saturation %	K 4.3	Ca 48	Mg 10.8	Na 0.8	
me/100g	K 1.07	Ca 11.9	Mg 2.67	Na 0.20	
Additional Properties	Cation Exchange Capacity (me/100g)			25	
	Total Base Saturation (%)			64	
	Volume Weight (g/mL)			0.72	

Sample Name: Ella's/Bills	Sample Name: Pampa's Flat				
Lab Number: 791594.1	Lab Number: 791594.2				
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)	Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)				
Analysis	Level	Optimum	Below	Optimum	Above
pH	pH Units	6.0	5.8 - 6.0		
Olsen Phosphorus	mg/L	22	20 - 30		
Potassium	MAF units	12	7 - 10		
Calcium	MAF units	13	4 - 6		
Magnesium	MAF units	38	8 - 10		
Sodium	MAF units	10			
Sulphate Sulphur	mg/kg	7	10 - 12		
Base Saturation %	K 3.4	Ca 57	Mg 9.5	Na 1.2	
me/100g	K 0.74	Ca 12.4	Mg 2.06	Na 0.26	
Additional Properties	Cation Exchange Capacity (me/100g)			22	
	Total Base Saturation (%)			72	
	Volume Weight (g/mL)			0.81	

Sample Name: Ella's/Bills	Sample Name: Pampa's Flat				
Lab Number: 791594.1	Lab Number: 791594.2				
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)	Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)				
Analysis	Level	Optimum	Below	Optimum	Above
pH	pH Units	6.0	5.8 - 6.0		
Olsen Phosphorus	mg/L	22	20 - 30		
Potassium	MAF units	12	7 - 10		
Calcium	MAF units	13	4 - 6		
Magnesium	MAF units	38	8 - 10		
Sodium	MAF units	10			
Sulphate Sulphur	mg/kg	7	10 - 12		
Base Saturation %	K 3.4	Ca 57	Mg 9.5	Na 1.2	
me/100g	K 0.74	Ca 12.4	Mg 2.06	Na 0.26	
Additional Properties	Cation Exchange Capacity (me/100g)			22	
	Total Base Saturation (%)			72	
	Volume Weight (g/mL)			0.81	

Sample Name: Ella's/Bills	Sample Name: Pampa's Flat				
Lab Number: 791594.1	Lab Number: 791594.2				
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)	Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)				
Analysis	Level	Optimum	Below	Optimum	Above
pH	pH Units	6.0	5.8 - 6.0		
Olsen Phosphorus	mg/L	22	20 - 30		
Potassium	MAF units	12	7 - 10		
Calcium	MAF units	13	4 - 6		
Magnesium	MAF units	38	8 - 10		
Sodium	MAF units	10			
Sulphate Sulphur	mg/kg	7	10 - 12		
Base Saturation %	K 3.4	Ca 57	Mg 9.5	Na 1.2	
me/100g	K 0.74	Ca 12.4	Mg 2.06	Na 0.26	
Additional Properties	Cation Exchange Capacity (me/100g)			22	
	Total Base Saturation (%)			72	
	Volume Weight (g/mL)			0.81	



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		Client Reference:	3050309	
		Submitted By:	Mr M Cammock	

Analysis	Level	Optimum	Below	Optimum	Above
Sample Name: Middle					
Lab Number: 791594.7					
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)					
pH	pH Units	6.1	5.8 - 6.0		
Olsen Phosphorus	mg/L	20	20 - 30		
Potassium	MAF units	14	7 - 10		
Calcium	MAF units	18	4 - 6		
Magnesium	MAF units	43	8 - 10		
Sodium	MAF units	8			
Sulphate Sulphur	mg/kg	8	10 - 12		
Base Saturation %		K 3.1	Ca 64	Mg 8.4	Na 0.8
me/100g		K 1.08	Ca 22.4	Mg 2.95	Na 0.27
Additional Properties		Cation Exchange Capacity (me/100g)			35
		Total Base Saturation (%)			76
		Volume Weight (g/mL)			0.65
Sample Name: No 5 Flat					
Lab Number: 791594.8					
Sample Type: SOIL Mixed Pasture, Dry Stock (Ash) (S185)					
pH	pH Units	6.2	5.8 - 6.0		
Olsen Phosphorus	mg/L	50	20 - 30		
Potassium	MAF units	9	7 - 10		
Calcium	MAF units	14	4 - 6		
Magnesium	MAF units	32	8 - 10		
Sodium	MAF units	9			
Sulphate Sulphur	mg/kg	17	10 - 12		
Base Saturation %		K 2.4	Ca 66	Mg 8.1	Na 1.2
me/100g		K 0.60	Ca 16.1	Mg 1.98	Na 0.28
Additional Properties		Cation Exchange Capacity (me/100g)			25
		Total Base Saturation (%)			77
		Volume Weight (g/mL)			0.72

The above nutrient graph compares the levels found with reference interpretation levels. NOTE: It is important that the correct sample type be assigned, and that the recommended sampling procedure has been followed. R J Hill Laboratories Limited does not accept any responsibility for the resulting use of this information. IANZ Accreditation does not apply to comments and interpretations, i.e. the 'Range Levels' and subsequent graphs.

Analyst's Comments

Samples 1-8 Comment:
Soil Mg MAF levels of 25-30 are required to ensure pasture Mg is adequate for animal health.



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SUMMARY OF METHODS

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Samples
Sample Registration*	Samples were registered according to instructions received.	-	1-8
Soil Prep (Dry & Grind)*	Air dried at 35 - 40°C overnight (residual moisture typically 4%) and crushed to pass through a 2mm screen.	-	1-8
pH	1:2 (v/v) soil:water slurry followed by potentiometric determination of pH.	0.1 pH Units	1-8
Olsen Phosphorus	Olsen extraction followed by Molybdenum Blue colorimetry.	1 mg/L	1-8
Sulphate Sulphur	0.02M Potassium phosphate extraction followed by Ion Chromatography.	1 mg/kg	1-8
Potassium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES.	2 MAF units	1-8
Calcium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES.	2 MAF units	1-8
Magnesium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES.	2 MAF units	1-8
Sodium (MAF)	1M Neutral ammonium acetate extraction followed by ICP-OES.	2 MAF units	1-8
Potassium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.01 me/100g	1-8
Calcium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.5 me/100g	1-8
Magnesium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.04 me/100g	1-8
Sodium	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.05 me/100g	1-8
Potassium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.1 %BS	1-8
Calcium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES.	1 %BS	1-8
Magnesium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.2 %BS	1-8
Sodium (Sat)	1M Neutral ammonium acetate extraction followed by ICP-OES.	0.1 %BS	1-8
CEC	Summation of extractable cations (K, Ca, Mg, Na) and extractable acidity.	2 me/100g	1-8
Total Base Saturation	Calculated from Extractable Cations and Cation Exchange Capacity.	5 %	1-8
Volume Weight	The weight/volume ratio of dried, ground soil.	0.01 g/mL	1-8

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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Wendy Homewood
Quality Assurance Officer - Agriculture Division