Project Name: Regional

Project Code: REG Site ID: T178 Observation ID: 1

Agency Name: CSIRO Division of Soils (QLD)

**Site Information** 

Desc. By: G. Smith Locality: 5.8KM north of Olive Vale on Lakefield Road running

north from Laura: 7.8KM from Kennedy Highway:

Date Desc.: 04/11/70 Elevation: No Data Map Ref.: Sheet No.: 7766 1:100000 Rainfall: 910 Northing/Long.: 144.425 Runoff: Very slow Easting/Lat.: -15.5041666666667 Drainage: Well drained

Geology

ExposureType: Undisturbed soil core Conf. Sub. is Parent. Mat.: No Data Geol. Ref.: Tf Substrate Material: No Data

**Land Form** 

Rel/Slope Class:No DataPattern Type:RisesMorph. Type:CrestRelief:15 metresElem. Type:HillcrestSlope Category:Gently inclinedSlope:0 %Aspect:No Data

Surface Soil Condition (dry): Firm

**Erosion:** 

**Soil Classification** 

Australian Soil Classification:Mapping Unit:N/AManganic Mesotrophic Red KandosolPrincipal Profile Form:Gn2.14ASC Confidence:Great Soil Group:Red earth

All necessary analytical data are available.

**<u>Site Disturbance:</u>** No effective disturbance other than grazing by hoofed animals

consistence; Gradual change to -

consistence; Gradual change to -

Vegetation:

B22

1.5 - 1.8 m

Tall Strata - Tree, 12.01-20m, Sparse. \*Species includes - Eucalyptus tetrodonta, Eucalyptus polycarpa

**Surface Coarse Fragments:** No surface coarse fragments

Profile	e Morphology	
A11	0 - 0.05 m	Dark reddish brown (5YR3/3-Moist); Reddish brown (5YR4/4-Dry); ; Loamy sand; Massive grade of structure; Dry; Strong consistence; Clear change to -
A21	0.05 - 0.1 m	Dark red (2.5YR3/5-Moist); Red (2.5YR4/6-Dry); ; Loamy sand; Massive grade of structure; Dry; Strong consistence; Gradual change to -
A22	0.1 - 0.2 m	Dark red (2.5YR3/8-Moist); Red (2.5YR4/6-Dry); ; Loamy sand; Massive grade of structure; Dry; Very strong consistence; Gradual change to -
A22	0.2 - 0.3 m	Dark red (2.5YR3/8-Moist); ; Loamy sand; Massive grade of structure; Dry; Very strong consistence; Gradual change to -
B1	0.3 - 0.4 m	Dark red (10R3/8-Moist); ; Loamy sand (Heavy); Massive grade of structure; Earthy fabric; Dry; Rigid consistence; Gradual change to -
B1	0.4 - 0.5 m	Dark red (10R3/8-Moist); ; Sandy loam (Light); Massive grade of structure; Dry; Strong consistence; Gradual change to -
B21	0.5 - 0.6 m	Dark red (10R3/8-Moist); ; Sandy clay loam (Light); Massive grade of structure; Dry; Strong consistence; Gradual change to -
B21	0.6 - 0.75 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Dry; Very strong consistence; Gradual change to -
B21	0.75 - 0.9 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Dry; Very strong consistence; Gradual change to -
B22	0.9 - 1.2 m	Dark red (10R3/8-Moist); , 0-2% , 5-15mm, Distinct; , 0-2% , 5-15mm, Distinct; Sandy clay loam (Heavy); Massive grade of structure; Earthy fabric; Dry; Very strong consistence; Gradual change to -
B22	1.2 - 1.5 m	Dark red (10R3/8-Moist); ; Sandy clay loam (Heavy); Massive grade of structure; Dry; Rigid

Dark red (10R3/8-Moist); ; Sandy clay loam (Heavy); Massive grade of structure; Dry; Rigid

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1.8 - 2.1 m	Dark red (10R3/8-Moist); ; Sandy clay loam (Heavy); Massive grade of structure; Rigid consistence; Gradual change to -
2.1 - 2.4 m	Dark red (10R3/8-Moist); ; Sandy clay loam (Heavy); Massive grade of structure; Rigid consistence; Gradual change to -
2.4 - 2.7 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Rigid consistence; Gradual change to -
2.7 - 3 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Rigid consistence; Gradual change to -
3 - 3.3 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Very strong consistence; Gradual change to -
3.3 - 3.6 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Very strong consistence; Gradual change to -
3.6 - 3.9 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Very strong consistence; Gradual change to -
3.9 - 4.2 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Very strong consistence; 0-2%, medium gravelly, 6-20mm, subrounded, Quartz, coarse fragments; Gradual change to -
4.2 - 4.3 m	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Very strong consistence; 20-50%, medium gravelly, 6-20mm, rounded, Quartz, coarse fragments; Many (20 - 50 %), Manganiferous, Coarse (6 - 20 mm), Nodules; Clear change to -
4.3 - 4.45 n	Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Very strong consistence; 50-90%, coarse gravelly, 20-60mm, Quartz, coarse fragments; Gradual change to -
4.45 - 4.55	m Dark red (10R3/8-Moist); ; Sandy clay loam; Massive grade of structure; Very strong consistence;

Morphological Notes
Observation Notes
Site Notes

LAURA

Regional REG Site ID: T178 CSIRO Division of Soils (QLD) Observation ID: 1

Project Name: Project Code: Agency Name:

## **Laboratory Test Results:**

Depth	pН	1:5 EC	ı	Exchang	eable (	Cations		Excha	ingeable	CEC		ECEC		ESP
m	•	dS/m	Ca	Mg		K	Na Cmol	Ac	cidity					%
0 - 0.05	6.1A	0.029 <i>A</i>	A 1.8E	3 0.6	66	0.09	0.17		1.9F			4.6F		
0.05 - 0.1	6.3A	0.017	1.2	3 0.4	12	0.06	0.12		0.4F			2.2F		
0.1 - 0.2	6.4A	0.014	A 0.8E	3 0.3	34	0.08	0.17		0.4F			1.8F		
0.2 - 0.3	6.5A	0.011				0.04	0.14		0.7F			1.6F		
0.3 - 0.4	6.5A	0.011				0.04	0.14		0.4F			1.3F		
0.4 - 0.5	6.3A	0.017		-					• • • • • • • • • • • • • • • • • • • •					
0.5 - 0.6	6.4A	0.011												
0.6 - 0.75	6.3A		0.56	B 0.8	34	0.04	0.12		0.4F			2F		
0.75 - 0.9	6.2A	0.008												
0.9 - 1.2	6.1A	0.017												
1.2 - 1.5	6.2A	0.011 <i>A</i>	0.4	3 1.	3	0.03	0.12		0.7F			2.6F		
1.5 - 1.8	6.3A	0.011 <i>A</i>	Ą											
1.8 - 2.1	6.4A	0.011 <i>A</i>	0.22	B 2.0	09	0.04	0.14		0.7F	2.38/	4	3.2F		5.88
2.1 - 2.4	6.4A	0.017	A											
2.4 - 2.7	6.2A	0.008	0.12	B 1.	9	0.03	0.14		0.7F			2.9F		
2.7 - 3	6.4A	0.011	A											
3 - 3.3	6.4A	0.011	A											
3.3 - 3.6	6.4A	0.011 <i>A</i>	A											
3.6 - 3.9	6.4A	0.008	0.12	B 1.	8	0.03	0.12		0.4F			2.5F		
3.9 - 4.2	6.1A	0.032 <i>A</i>	Ą											
4.2 - 4.3	6.6A	0.011 <i>A</i>	0.12	B 1.	6	0.04	0.12							
4.3 - 4.45	6.5A	0.011 <i>A</i>												
4.45 - 4.55	6.4A	0.014 <i>A</i>	0.12	B 1.	6	0.04	0.17							
Depth	CaCO3	Organic C	Ava		Total	Total N	Tot		Bulk Density		rticle		nalysi	
Depth m	CaCO3	Organic C %	Ava P mg/		Total P %	Total N %	Tot K %		Bulk Density Mg/m3	Pa GV	rticle CS	Size A FS %	•	is Clay
m 0 - 0.05		<b>c</b> %	P mg/ 4.	<b>/kg</b> 9B 0.	<b>P</b> %	<b>N</b> %	<b>K</b> % 4A 0.	.06A	Density	<b>GV</b> 0	<b>CS</b> 58A	<b>FS</b> %	Silt 2	Clay 5
m 0 - 0.05 0.05 - 0.1		0.66D 0.33D	P mg/ 4. 5.	<b>/kg</b> 9B 0. 5B 0.	<b>P</b> % 005A 007A	N %	4A 0. 3A 0.	.06A .06A	Density	<b>GV</b> 0 0	<b>cs</b> 58A 57A	<b>FS</b> % 35 36	<b>Silt</b> 2 2 2	<b>Clay</b> 5 5
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2		0.66D 0.33D 0.2D	P mg/ 4. 5. 3.	<b>/kg</b> 9B 0. 5B 0. 5B 0.	<b>P</b> %	<b>N</b> %	4A 0. 3A 0.	.06A	Density	<b>GV</b> 0 0 0	58A 57A 54A	FS % 35 36 38	Silt 2 2 2 2	5 5 6
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3		0.66D 0.33D	P mg/ 4. 5. 3.	<b>/kg</b> 9B 0. 5B 0.	<b>P</b> % 005A 007A	<b>N</b> %	4A 0. 3A 0.	.06A .06A	Density	0 0 0 0	58A 57A 54A 48A	FS % 35 36 38 42	Silt 2 2 2 2 2	5 5 6 7
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4		0.66D 0.33D 0.2D	P mg/ 4. 5. 3.	<b>/kg</b> 9B 0. 5B 0. 5B 0.	<b>P</b> % 005A 007A	<b>N</b> %	4A 0. 3A 0.	.06A .06A	Density	<b>GV</b> 0 0 0	58A 57A 54A	FS % 35 36 38	Silt 2 2 2 2	5 5 6 7
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5		0.66D 0.33D 0.2D	P mg/ 4. 5. 3.	<b>/kg</b> 9B 0. 5B 0. 5B 0.	<b>P</b> % 005A 007A	<b>N</b> %	4A 0. 3A 0.	.06A .06A	Density	0 0 0 0	58A 57A 54A 48A	FS % 35 36 38 42	Silt 2 2 2 2 2	5 5 6 7
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0	58A 57A 54A 48A 54A	75 % 35 36 38 42 35	2 2 2 2 2	5 5 6 7 9
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	<b>P</b> % 005A 007A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A	Density	0 0 0 0	58A 57A 54A 48A	FS % 35 36 38 42	Silt 2 2 2 2 2	5 5 6 7 9
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0	58A 57A 54A 48A 54A	75 % 35 36 38 42 35	2 2 2 2 2	5 5 6 7 9
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0	58A 57A 54A 48A 54A	FS % 35 36 38 42 35	2 2 2 2 2 2 2 2 2	5 5 6 7 9 21
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0	58A 57A 54A 48A 54A	FS % 35 36 38 42 35	2 2 2 2 2	5 5 6 7 9 21
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2	58A 57A 54A 48A 54A 47A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8 1.8 - 2.1		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0	58A 57A 54A 48A 54A	## 35	2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2	58A 57A 54A 48A 54A 47A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33
m  0 - 0.05  0.05 - 0.1  0.1 - 0.2  0.2 - 0.3  0.3 - 0.4  0.4 - 0.5  0.5 - 0.6  0.6 - 0.75  0.75 - 0.9  0.9 - 1.2  1.2 - 1.5  1.5 - 1.8  1.8 - 2.1  2.1 - 2.4		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2 <2 2	58A 57A 54A 48A 54A 47A 39A 37A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33
m  0 - 0.05  0.05 - 0.1  0.1 - 0.2  0.2 - 0.3  0.3 - 0.4  0.4 - 0.5  0.5 - 0.6  0.6 - 0.75  0.75 - 0.9  0.9 - 1.2  1.2 - 1.5  1.5 - 1.8  1.8 - 2.1  2.1 - 2.4  2.4 - 2.7		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2 <2 2	58A 57A 54A 48A 54A 47A 39A 37A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33
m 0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8 1.8 - 2.1 2.1 - 2.4 2.4 - 2.7 2.7 - 3		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2 <2 2 2	58A 57A 54A 48A 54A 47A 39A 37A 35A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33
m  0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8 1.8 - 2.1 2.1 - 2.4 2.4 - 2.7 2.7 - 3 3 - 3.3 3.3 - 3.6 3.6 - 3.9		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2 <2 2	58A 57A 54A 48A 54A 47A 39A 37A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33 30
m  0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8 1.8 - 2.1 2.1 - 2.4 2.4 - 2.7 2.7 - 3 3 - 3.3 3.3 - 3.6 3.6 - 3.9 3.9 - 4.2		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2 <2 2 2	58A 57A 54A 48A 54A 47A 39A 37A 35A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33 30
m  0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8 1.8 - 2.1 2.1 - 2.4 2.4 - 2.7 2.7 - 3 3 - 3.3 3.3 - 3.6 3.6 - 3.9 3.9 - 4.2 4.2 - 4.3		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2 <2 2 2	58A 57A 54A 48A 54A 47A 39A 37A 35A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33 30
m  0 - 0.05 0.05 - 0.1 0.1 - 0.2 0.2 - 0.3 0.3 - 0.4 0.4 - 0.5 0.5 - 0.6 0.6 - 0.75 0.75 - 0.9 0.9 - 1.2 1.2 - 1.5 1.5 - 1.8 1.8 - 2.1 2.1 - 2.4 2.4 - 2.7 2.7 - 3 3 - 3.3 3.3 - 3.6 3.6 - 3.9 3.9 - 4.2		0.66D 0.33D 0.2D	P mg/ 4. 5. 3. 4.	/kg 9B 0. 5B 0. 5B 0. 2B	P % 005A 007A 005A	<b>N</b> %	4A 0. 3A 0. 0.	.06A .06A .06A	Density	0 0 0 0 0 0 <2 <2 <2 2 2	58A 57A 54A 48A 54A 47A 39A 37A 35A	## 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 7 9 21 28 33 30

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Depth	COLE	_	Gra	K sat	K unsat			
m		Sat.	0.05 Bar	0.5 Bar g/g - m3/r	5 Bar	15 Bar	mm/h	mm/h
0 - 0.05								
0.05 - 0.1								
0.1 - 0.2								
0.2 - 0.3								
0.3 - 0.4								
0.4 - 0.5								
0.5 - 0.6								
0.6 - 0.75								
0.75 - 0.9								
0.9 - 1.2								
1.2 - 1.5								
1.5 - 1.8								
1.8 - 2.1								
2.1 - 2.4								
2.4 - 2.7								
2.7 - 3								
3 - 3.3								
3.3 - 3.6								
3.6 - 3.9								
3.9 - 4.2								
4.2 - 4.3								
4.3 - 4.45								
4.45 - 4.55								

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## **Laboratory Analyses Completed for this profile**

10A1 Total sulfur - X-ray fluorescence

12\_HF\_CU Total element - Cu(mg/kg) - HF/HClO4 Digest
12\_HF\_FE Total element - Fe(%) - HF/HClO4 Digest
12\_HF\_MN Total element - Mn(mg/kg) - HF/HClO4 Digest
12\_HF\_ZN Total element - Zn(mg/kg) - HF/HClO4 Digest

13C1\_AL Citrate/dithionite-extractable iron, aluminium, Manganese and Silicon 13C1\_FE Citrate/dithionite-extractable iron, aluminium, Manganese and Silicon

15A2\_CA Exchangeable bases (Ca2+,Mg2+,Na+,K+) - 1M ammonium chloride at pH 7.0, pretreatment for

soluble salts

15A2\_CEC Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts 15A2\_K Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts 15A2\_MG Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts 15A2\_NA Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts

15G\_C Exchange acidity (hydrogen and aluminium) - meq per 100g of soil - By 1M KCl exch. acidity by

titration to pH 8.4

15J1 Effective CEC

17A1 Total potassium - X-ray fluorescence

3A1 EC of 1:5 soil/water extract 4A1 pH of 1:5 soil/water suspension

6A1\_UC Organic carbon (%) - Uncorrected Walkley and Black method

7A2 Total nitrogen - semimicro Kjeldahl , automated colour

9A1 Total phosphorus - X-ray fluorescence

9G\_BSES Available P (mg/kg) - Acid P - 0.005M H2SO4 (BSES)

P10\_CF\_C Clay (%) - Coventry and Fett pipette method

P10\_CF\_CS
P10\_CF\_S
P10\_CF\_S
P10\_CF\_Z
Coarse sand (%) - Coventry and Fett pipette method
Fine sand (%) - Coventry and Fett pipette method
Silt (%) - Coventry and Fett pipette method

P10\_GRAV Gravel (%)