Project Name: **Improving Soil Survey Field Measurement and Interpretation. LWRRDC Project No. 90/R16**
Project Code: **Morphology** **Site ID:** **CP307** **Observation ID:** **1**
Agency Name: **CSIRO Division of Soils (ACT)**

Site Information

Desc. By:	N.J. McKenzie	**Locality:**	
Date Desc.:	05/02/92	**Elevation:**	No Data
Map Ref.:	1:100000	**Rainfall:**	No Data
Northing/Long.:	147.446	**Runoff:**	No Data
Easting/Lat.:	-34.997	**Drainage:**	No Data

Geology

ExposureType:	No Data	**Conf. Sub. is Parent. Mat.:**	No Data
Geol. Ref.:	No Data	**Substrate Material:**	No Data

Land Form

Rel/Slope Class:	No Data	**Pattern Type:**	No Data
Morph. Type:	Simple-slope	**Relief:**	No Data
Elem. Type:	Hillslope	**Slope Category:**	No Data
Slope:	%	**Aspect:**	0 degrees

Surface Soil Condition (dry): Firm

Erosion: Minor (sheet)

Soil Classification

Australian Soil Classification:
Haplic Eutrophic Red Kandosol Medium Non-gravelly Loamy Clayey Deep

Mapping Unit: N/A
Principal Profile Form: Dr2.12

ASC Confidence:
All necessary analytical data are available.

Great Soil Group: Red earth

Site Disturbance: Cultivation. Rainfed

Vegetation:

Surface Coarse Fragments: No surface coarse fragments

Profile Morphology

A11	0 - 0.08 m	Dark reddish brown (5YR3/2-Moist); ; Loam; Weak grade of structure, 10-20 mm, Subangular blocky; Earthy fabric; Moist; Weak consistence; Field pH 6.5 (Raupach); Abundant, very fine (0-1mm) roots; Abrupt, Smooth change to -
A12	0.08 - 0.15 m	Dark reddish brown (5YR3/3-Moist); Yellowish red (5YR4/6-Dry); ; Sandy clay loam; Massive grade of structure; Earthy fabric; Moderately moist; Field pH 6 (Raupach); Abundant, very fine (0-1mm) roots; Abrupt, Smooth change to -
B21	0.15 - 0.3 m	Dark red (2.5YR3/6-Moist); ; Light clay; Massive grade of structure; Earthy fabric; Moderately moist; 2-10%, medium gravelly, 6-20mm, angular, dispersed, Quartz, coarse fragments; Field pH 7 (Raupach); Many, coarse (>5mm) roots;
B21	0.3 - 0.4 m	Dark red (2.5YR3/6-Moist); ; Light clay; Massive grade of structure; Earthy fabric; Moderately moist; 2-10%, medium gravelly, 6-20mm, angular, dispersed, Quartz, coarse fragments; Field pH 7 (Raupach); Many, coarse (>5mm) roots; Gradual, Smooth change to -
B22	0.4 - 0.6 m	Red (2.5YR4/6-Moist); ; Light medium clay; Weak grade of structure, 10-20 mm, Polyhedral; Earthy fabric; Moderately moist; Field pH 7.5 (Raupach); Many, very fine (0-1mm) roots; Gradual, Smooth change to -
B31	0.6 - 0.75 m	Red (2.5YR4/6-Moist); ; Medium clay; Weak grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Moderately moist; Few cutans, <10% of ped faces or walls coated, distinct; Very few (0 - 2 %), Ferromanganiferous, Medium (2 -6 mm), Nodules; Field pH 7.5 (Raupach); Common, very fine (0-1mm) roots; Gradual, Smooth change to -
B32	0.75 - 0.9 m	Strong brown (7.5YR5/6-Moist); , 5YR46, 10-20% , 0-5mm, Distinct; Medium clay; Weak grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Moderately moist; Few cutans, <10% of ped faces or walls coated, distinct; Few (2 - 10 %), Ferromanganiferous, Medium (2 -6 mm), Nodules; Field pH 7.5 (Raupach); Common, very fine (0-1mm) roots; Clear, Smooth change to -
2B2	0.9 - 1.2 m	Yellowish brown (10YR5/4-Moist); , 7.5YR56, 10-20% , 0-5mm, Distinct; Moderate grade of structure, 5-10 mm, Polyhedral; Smooth-ped fabric; Moderately moist; Common cutans, 10-50% of ped faces or walls coated, distinct; Common (10 - 20 %), Ferromanganiferous, Medium (2 -6 mm), Nodules; Field pH 7.5 (Raupach); Few, very fine (0-1mm) roots;

Morphological Notes

B21 CFs transported from upslope.

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B31	Subplastic
B32	Subplastic

Observation Notes

Canola stuble cover. Decreasing K with depth. Minimal deep drainage. Very dense at base. 'Classic' red earth of the Wagga area, except for the coarse fragments. Yarrabee overlying Brucedale.

Site Notes

Bill Baker's, Brucedale, N.S.W (Morph 6)

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Laboratory Test Results:

Depth	pH	1:5 EC	Exchangeable Cations Ca	Mg	K	Na	Exchangeable Acidity	CEC	ECEC	ESP
m		dS/m				Cmol (+)/kg				%
0 - 0.08	5.88A	0.18A	5B	1.2	1.5	0.05		9.8A		0.51
0 - 0.15										
0 - 0.15										
0.08 - 0.15	5.14A	0.08A	3B	0.87	0.96	0.04		7.9A		0.51
0.15 - 0.3	5.77A	0.05A	4.5B	1.4	0.98	0.02		8.7A		0.23
0.2 - 0.4										
0.2 - 0.4										
0.3 - 0.4	6.72A	0.05A	5.6B	2.3	1.1	0.06		9.6A		0.63
0.4 - 0.6	7A	0.04A	6.2B	3.3	0.9	0.1		11.4A		0.88
0.4 - 0.6	7A	0.04A	6.2B	3.3	0.9	0.1		11.4A		0.88
0.4 - 0.6	7A	0.04A	6.2B	3.3	0.9	0.1		11.4A		0.88
0.6 - 0.75	7.26A	0.04A	5.7B	3.8	0.66	0.28		11.2A		2.50
0.75 - 0.9	7.2A	0.04A	4.7B	4	0.76	0.36		11.1A		3.24
0.9 - 1.2	7A	0.05A	5.4B	5.3	1	0.58		13.5A		4.30

Depth	CaCO3	Organic C	Avail. P	Total P	Total N	Total K	Bulk Density	Particle Size Analysis GV	CS	FS	Silt	Clay
m	%	%	mg/kg	%	%	%	Mg/m3			%		
0 - 0.08		2.14B						6				
0 - 0.15							1.16					
							1.24					
							1.41					
							1.50					
0 - 0.15							1.16					
							1.24					
							1.41					
							1.50					
0.08 - 0.15		1.05B					1.54	5				
0.15 - 0.3		0.55B					1.61	14				
0.2 - 0.4							1.49					
							1.56					
							1.42					
							1.62					
0.2 - 0.4							1.49					
							1.56					
							1.42					
							1.62					
0.3 - 0.4		0.39B						14				
0.4 - 0.6		0.35B					1.28	13				
							1.42					
							1.41					
							1.45					
							1.49					
0.4 - 0.6		0.35B					1.28	13				
							1.42					
							1.41					
							1.45					
							1.49					

0.4 - 0.6	0.35B	1.28	13
		1.42	
		1.41	
		1.45	
		1.49	
0.6 - 0.75	0.26B		5
0.75 - 0.9	0.17B		6
0.9 - 1.2	0.16B		4

Depth	COLE	Gravimetric/Volumetric Water Contents							K sat	K unsat
		Sat.	0.05 Bar	0.1 Bar	0.5 Bar	1 Bar	5 Bar	15 Bar		
m				g/g - m3/m3					mm/h	mm/h
0 - 0.08										
0 - 0.15		0.39E	0.3E	0.26E	0.18D		0.12F	0.1F	605.7D	27.2A
		0.41E	0.31E	0.27E	0.19D		0.14F	0.11F		
		0.44E	0.33E	0.29E	0.21D					
		0.39E	0.32E	0.28E	0.21D					
0 - 0.15		0.39E	0.3E	0.26E	0.18D		0.12F	0.1F	605.7D	27.2A
		0.41E	0.31E	0.27E	0.19D		0.14F	0.11F		
		0.44E	0.33E	0.29E	0.21D					
		0.39E	0.32E	0.28E	0.21D					
0.08 - 0.15	0.013B									
0.15 - 0.3	0.013B									
0.2 - 0.4		0.35E	0.3E	0.27E	0.21D		0.15F	0.13F	242.7D	29.1A
		0.37E	0.3E	0.27E	0.21D		0.15F	0.13F		
		0.4E	0.33E	0.3E	0.24D					
		0.36E	0.29E	0.27E	0.22D					
0.2 - 0.4		0.35E	0.3E	0.27E	0.21D		0.15F	0.13F	242.7D	29.1A
		0.37E	0.3E	0.27E	0.21D		0.15F	0.13F		
		0.4E	0.33E	0.3E	0.24D					
		0.36E	0.29E	0.27E	0.22D					
0.3 - 0.4										
0.4 - 0.6	0.025B	0.41E	0.35E	0.33E	0.29D		0.22F	0.2F	80D	43A
		0.42E	0.36E	0.33E	0.29D		0.21F	0.16F		
		0.44E	0.36E	0.33E	0.27D					
		0.43E	0.36E	0.33E	0.26D					
0.4 - 0.6	0.025B	0.41E	0.35E	0.33E	0.29D		0.22F	0.2F	80D	43A
		0.42E	0.36E	0.33E	0.29D		0.21F	0.16F		
		0.44E	0.36E	0.33E	0.27D					
		0.43E	0.36E	0.33E	0.26D					
0.4 - 0.6	0.025B	0.41E	0.35E	0.33E	0.29D		0.22F	0.2F	80D	43A
		0.42E	0.36E	0.33E	0.29D		0.21F	0.16F		
		0.44E	0.36E	0.33E	0.27D					
		0.43E	0.36E	0.33E	0.26D					
0.6 - 0.75										
0.75 - 0.9										
0.9 - 1.2										

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Laboratory Analyses Completed for this profile

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
3A1	EC of 1:5 soil/water extract
4A1	pH of 1:5 soil/water suspension
5A1	Chloride - 1:5 soil/water extract, potentiometric titration
6B2	Total organic carbon - high frequency induction furnace, volumetric
P10_GRAV	Gravel (%)
P10_S_0.20	0.20 micron (cumulative %) - Sedigraph
P10_S_1000	1000 micron (cumulative %) - Sedigraph
P10_S_125	125 micron (cumulative %) - Sedigraph
P10_S_2	2 micron (cumulative %) - Sedigraph
P10_S_20	20 micron (cumulative %) - Sedigraph
P10_S_2000	2000 micron (cumulative %) - Sedigraph
P10_S_250	250 micron (cumlative %) - Sedigraph
P10_S_31.2	31.2 micron (cumulative %) - Sedigraph
P10_S_500	500 micron (cumulative %) - Sedigraph
P10_S_63	63 micron (cumulative %) - Sedigraph
P3A1	Bulk density - g/cm3
P3B2VL_15	15 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate
P3B2VL_5	5 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate
P3B3VLb001	0.01 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb003	0.03 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb005	0.05 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb01	0.1 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb05	0.5 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLbSAT	Saturated Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P4_50_McK	Unsaturated Hydraulic Conductivity - 50mm potential (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P4_sat_McK	Saturated Hydraulic Conductivity (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P5_LS_MOD	Modified linear shrinkage (McKenzie, Jacquier and Ringrose-Voase, AJSR, 1994, 32, 931-8)