

**Project Name:** Soil Studies in the Lower Namoi Valley  
**Project Code:** EDGEROI **Site ID:** ed601 **Observation ID:** 1  
**Agency Name:** CSIRO Division of Soils (QLD)

#### Site Information

<b>Desc. By:</b> W.T. Ward	<b>Locality:</b> Arthur Lindsay-Smith, Waugan
<b>Date Desc.:</b> 13/07/87	<b>Elevation:</b> 215 metres
<b>Map Ref.:</b> Sheet No. : 8837_N 1:50000	<b>Rainfall:</b> No Data
<b>Northing/Long.:</b> 6670320 AMG zone: 55	<b>Runoff:</b> No Data
<b>Easting/Lat.:</b> 759930 Datum: AGD66	<b>Drainage:</b> No Data

#### Geology

<b>ExposureType:</b> Undisturbed soil core	<b>Conf. Sub. is Parent. Mat.:</b> No Data
<b>Geol. Ref.:</b> No Data	<b>Substrate Material:</b> No Data

#### Land Form

<b>Rel/Slope Class:</b> No Data	<b>Pattern Type:</b> No Data
<b>Morph. Type:</b> No Data	<b>Relief:</b> No Data
<b>Elem. Type:</b> Dune	<b>Slope Category:</b> Very gently sloped
<b>Slope:</b> 1 %	<b>Aspect:</b> 360 degrees

**Surface Soil Condition (dry):** Self-mulching, Recently cultivated

#### Erosion:

#### Soil Classification

<b>Australian Soil Classification:</b> N/A	<b>Mapping Unit:</b> N/A
<b>ASC Confidence:</b> Confidence level not specified	<b>Principal Profile Form:</b> Ug5.15
	<b>Great Soil Group:</b> Brown clay

**Site Disturbance:** Complete clearing. Pasture, native or improved, cultivated at some stage, Cultivation. Rainfed,

#### Vegetation:

#### Surface Coarse Fragments:

#### Profile Morphology

A11	0 - 0.05 m	Dark brown (7.5YR3/2-Moist); Dark grey (10YR4/1-Dry); ; Light clay; Weak grade of structure, 10-20 mm, Subangular blocky; Weak grade of structure, 2-5 mm, Granular; Smooth-ped fabric; Fine, (0 - 5) mm crack; Few (<1 per 100mm2) Very fine (0.075-1mm) macropores, Moderately moist; Very weak consistence; Field pH 6.8 (pH meter); Common, very fine (0-1mm) roots;
A12	0.05 - 0.1 m	Brown (7.5YR4/4-Moist); ; Silty clay loam; Weak grade of structure, 10-20 mm, Subangular blocky; Earthy fabric; Fine, (0 - 5) mm crack; Few (<1 per 100mm2) Very fine (0.075-1mm) macropores, Moderately moist; Weak consistence; Field pH 7.5 (pH meter); Few, very fine (0-1mm) roots; Sharp, Smooth change to -
2A11	0.1 - 0.25 m	Dark brown (7.5YR3/2-Moist); , 10YR42, 10-20% , 5-15mm, Distinct; Light medium clay; Weak grade of structure, 20-50 mm, Subangular blocky; Moderate grade of structure, 2-5 mm, Granular; Smooth-ped fabric; Fine, (0 - 5) mm crack; Few (<1 per 100mm2) Very fine (0.075-1mm) macropores, Moderately moist; Weak consistence; Field pH 8.5 (pH meter); Few, very fine (0-1mm) roots;
2A12	0.25 - 0.45 m	Dark brown (7.5YR3/2-Moist); , 10YR43, 0-2% , 0-5mm, Faint; Medium heavy clay; Moderate grade of structure, 20-50 mm, Subangular blocky; Smooth-ped fabric; Fine, (0 - 5) mm crack; Few (<1 per 100mm2) Very fine (0.075-1mm) macropores, Moderately moist; Very weak consistence; Field pH 8.8 (pH meter); Few, very fine (0-1mm) roots; Gradual, Smooth change to
2A13k	0.45 - 0.95 m	Dark brown (7.5YR3/2-Moist); ; Medium heavy clay; Moderate grade of structure, 20-50 mm, Subangular blocky; Smooth-ped fabric; Fine, (0 - 5) mm crack; Few (<1 per 100mm2) Very fine (0.075-1mm) macropores, Moderately moist; Weak consistence; Common (10 - 20 %), Calcareous, Fine (0 - 2 mm), Nodules; Few (2 - 10 %), Calcareous, Fine (0 - 2 mm), Soft segregations; Field pH 8.5 (pH meter); Few, very fine (0-1mm) roots; Diffuse, Smooth change to
2B21	0.95 - 1.9 m	Reddish brown (5YR4/3-Moist); , 7.5YR32, 10-20% , 5-15mm, Distinct; , 5YR56, 0-2% , 5-15mm, Distinct; Medium heavy clay; Moderate grade of structure, 50-100 mm, Subangular blocky; Smooth-ped fabric; Fine, (0 - 5) mm crack; Few (<1 per 100mm2) Very fine (0.075-1mm) macropores, Moderately moist; Firm consistence; Very few (0 - 2 %), Gypseous, Fine (0 - 2 mm), Crystals; Field pH 8.5 (pH meter); Few, very fine (0-1mm) roots;

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2B22      1.9 - 2.91 m      Dark reddish grey (5YR4/2-Moist); , 5YR46, 0-2% , 5-15mm, Distinct; Medium clay; Strong grade of structure, 20-50 mm, Lenticular; Moderate grade of structure, 10-20 mm, Angular blocky; Smooth-ped fabric; Fine, (0 - 5) mm crack; Few (<1 per 100mm<sup>2</sup>) Very fine (0.075-1mm) macropores, Moderately moist; Firm consistence; Very few (0 - 2 %), Gypseous, Fine (0 - 2 mm), Crystals; Few (2 - 10 %), Calcareous, Coarse (6 - 20 mm), Nodules; Field pH 8 (pH meter); Few, very fine (0-1mm) roots;

#### **Morphological Notes**

A11      Core at fenceline includes surface drift, 0-10cm, trapped at fence, on buried original soil. This drift is colour-differentiated, showing that it is not contemporary; the colour boundary at 5cm depth is abrupt, smooth, genetic, small white

A12      fragments, noncalcareous, occur at contact of drifted soil with prior soil. 10-20 is original topsoil, can be separated at 25cm from deeper A1 material because of its more granular appearance. This could be due to better drainage of the hig

2A11      her ground, or be remnant of original clay pellets (if the latter, the implication is that the clay dune is younger than the plain). Segregations appear at 45cm beside roots and as fine nodules. Traces of a rusty stain beside roots at 45-50

2A12      cm (2.5YR4/4). Slicks and polished peds start mostly about 160cm. Textures are subplastic. Half core taken by G. McTainsh.

#### **Observation Notes**

Parent Rock: aeolian sediment, clay, mixed texture, with lime parna on fourth fan

#### **Site Notes**

601 is on a small 60cm high knoll, 180x100m in extent, aligned SSW-NNE, 350m E of site 060. This knoll forms a very smooth, low, elongated oval dome with a friable surface. A second 1m core was taken because the first broke during recovery,

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**Laboratory Test Results:**

Depth	pH	1:5 EC	Exchangeable Cations			Exchangeable	CEC	ECEC	ESP
m		dS/m	Ca	Mg	K	Na	Acidity		%
						Cmol (+)/kg			
0 - 0.05	6.65A	0.449A	9.190001	5.26	6.23	0.31			
			B						
0.05 - 0.1	7.77A	0.248A	15.33B	7.05	8.21	0.89			
0.1 - 0.2	8.56A	0.209A	14.26B	11.21	10.13	1.5			
0.3 - 0.4	8.96A	0.273A	12.66B	14.12	13.31	1.83			
0.7 - 0.8	8.1A	1.712A	19.6B	11.19	13.39	3.12			
1.2 - 1.3	8.02A	1.917A	25.47B	14.18	6.78	6.29			
2.5 - 2.6	8.23A	1.825A	28.23B	13.23	1.12	10.95			

Depth  m	CaCO3	Organic C	Avail. P	Total P	Total N	Total K	Bulk Density	Particle Size		Analysis	
	%	%	mg/kg	%	%	%	Mg/m3	GV	CS	FS %	Silt Clay
0 - 0.05	<0.1B	4.96C	305.9J								
0.05 - 0.1	0.3B	3.83C	1976.5J								
0.1 - 0.2	0.2B	0.82C	492J								16.7 44.3
0.3 - 0.4	0.4B	0.67C	178.6J								16.9 52.8
0.7 - 0.8	0.5B	0.55C	26.6J								18.3 58
1.2 - 1.3	0.2B	0.11C	16.6J								16.7 57.8
2.5 - 2.6	1.2B	0.08C	7.4J								17.2 51

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**Laboratory Analyses Completed for this profile**

15A2_CA	Exchangeable bases (Ca <sup>2+</sup> ,Mg <sup>2+</sup> ,Na <sup>+</sup> ,K <sup>+</sup> ) - 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
19B1	Carbonates - manometric
3A1	EC of 1:5 soil/water extract
4A1	pH of 1:5 soil/water suspension
5A2	Chloride - 1:5 soil/water extract, automated colour
6B3	Total organic carbon - high frequency induction furnace, infrared
7B1	Water soluble nitrate - automated colour
9B1	Bicarbonate-extractable phosphorus - manual colour
P10_CF_C	Clay (%) - Coventry and Fett pipette method
P10_CF_Z	Silt (%) - Coventry and Fett pipette method