DEEP CALCAREOUS LOAM

General Description: *Reddish brown calcareous loamy soil, becoming more clayey and calcareous with depth, overlying Class I carbonate layer*

Landform: Alluvial plains and adjacent low angle alluvial fans. Slopes usually less than 4%.

Substrate: Alluvial clay loam to clay, calcified by windblown lime leached in from the overlying soil.

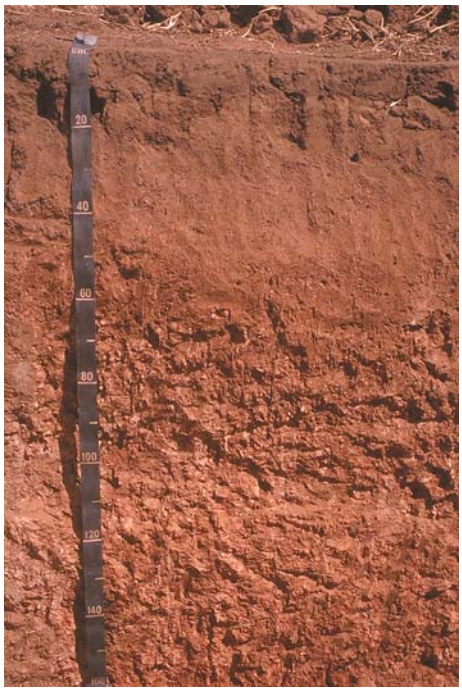
Vegetation:

Type Site: Site No.: CU005

1:50,000 sheet:	6531-2 (Gladstone)	Hundred:	Narridy
Annual rainfall:	400 mm	Sampling date:	21/02/92
Landform:	Lower slope of outwash fan, 2% slope		
Surface:	Firm with no stones		

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown strongly granular highly calcareous loam. Clear to:
10-20	Reddish brown moderately granular very highly calcareous clay loam. Clear to:
20-40	Yellowish red moderately granular very highly calcareous clay loam with 10-20% soft carbonate. Gradual to:
40-70	Yellowish red very highly calcareous clay loam with 20-50% soft lime, and up to 10% fine nodules. Gradual to:
70-110	Yellowish red, very highly calcareous light clay, with 20-50% soft lime and up to 10% fine nodules (Class I carbonate). Gradual to:
110-160	Yellowish red weakly subangular blocky very highly calcareous clay loam, with about 50% fine and nodular lime.



Classification: Endohypersodic, Regolithic, Hypercalcic Calcarosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage Well to moderately well drained. Soil is never wet for more than a week.

Fertility Fair to high, due to high levels of exchangeable cations. High carbonate ($CaCO_3$) levels may reduce availability of phosphorous and trace elements. Phosphorus (24 mg/kg) and organic carbon (1.0%) are marginal at this site

pH Alkaline at surface, grading to strongly alkaline with depth, due to high levels of exchangeable sodium.

Rooting depth 110 cm in pit, but few roots below 70 cm.

Barriers to root growth

Physical: None apparent.

Chemical: High levels of boron (more than 15 mg/kg), sodicity (exchangeable sodium (Na) more than 15% of cation exchange capacity), and carbonate are inhibiting root growth. There is negligible salinity.

Water holding capacity 150 mm in rootzone (high), but not all is available due to poor root growth below 70 cm.

Workability Good, due to the friability of the calcareous surface soil. There are no rocks or stones.

Seedling establishment Good. Calcareous surface maintains adequate structure**.**

Erosion potential

Water: Low.

Wind: Low to moderately low. Calcareous surface may become powdery if overgrazed or over cultivated.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4-S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	8.6	7.8	5.0	0.12	-	1.00	24	380	-	-	0.53	2.1	6.6	0.43	-	-	-	-	-	-
0-10	8.6	7.8	4.0	0.13	0.9	1.07	30	430	-	-	0.57	2.4	9.5	0.48	16.6	14.6	1.45	0.09	1.46	0.5
10-20	8.7	7.9	4.1	0.10	0.4	0.74	4	260	-	-	0.77	1.6	1.5	0.13	22.3	19.2	2.02	0.15	1.20	0.7
20-40	8.8	8.0	16.3	0.09	0.3	0.53	4	85	-	2.0	0.80	1.4	1.1	0.05	21.8	19.4	2.53	0.21	0.57	1.0
40-70	9.1	8.0	21.7	0.12	0.4	0.35	2	60	-	2.3	0.68	1.6	1.0	0.10	19.5	14.0	4.61	0.70	0.34	3.6
70-110	9.6	8.4	38.9	0.59	4.5	0.28	2	160	-	14.4	0.55	2.0	0.9	0.09	14.2	4.21	6.17	3.35	0.69	24
110-160	9.8	8.6	42.1	0.85	8.0	0.22	1	280	-	25.5	0.46	1.8	0.8	0.08	13.4	1.93	6.13	4.54	1.09	34

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

CEC (cation exchange capacity) is a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC.