GRADATIONAL CLAY LOAM

General Description: *Reddish brown loam to clay loam, more clayey with depth, over rubbly carbonate within 50 cm. Rubble grades to fine carbonate which merges with clayey alluvium or highly weathered rock.*

Landform: Lower slopes and pediments adjacent to ranges of the Northern Agricultural Districts

Substrate: Highly weathered sandstone, capped by Class III C carbonate layer

Vegetation: Mallee scrub

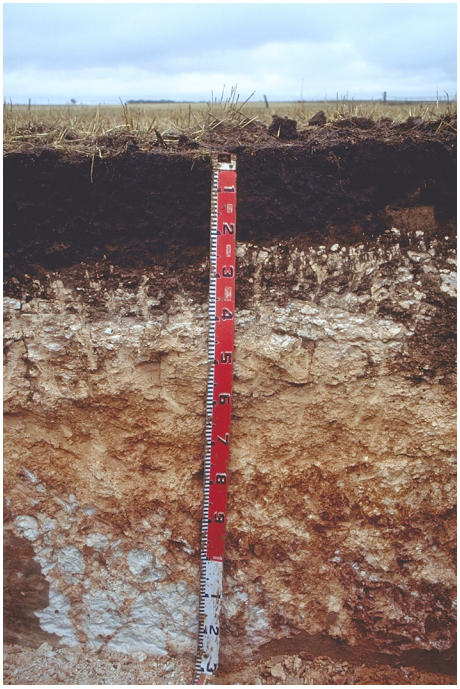
Type Site:

Site No.:	CU041	1:50,000 mapsheet:	6532-2 (Booleroo)
Hundred:	Booleroo	Easting:	247900
Section:	137E	Northing:	6366450
Sampling date:	06/06/1994	Annual rainfall:	395 mm average

Lower slope (2%) of a gently undulating rise. Firm surface with minor calcrete, sandstone and ironstone gravel.

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown light clay with weak subangular blocky structure. Clear to:
10-21	Reddish brown weakly calcareous light medium clay with moderate subangular blocky structure. Abrupt to:
21-38	Reddish brown very highly calcareous massive light clay with 20-50% carbonate nodules. Abrupt to:
38-50	Moderately cemented nodular calcrete pan (Class III C carbonate). Clear to:
50-80	Orange very highly calcareous sandy light clay with 2-10% carbonate nodules. Clear to:
80-105	Red highly calcareous medium heavy clay with strong angular blocky structure and 10-20% soft carbonate. Gradual to:
105-140	Weathering sandstone with 2-10% soft carbonate segregations.



Classification: Sodic, Lithocalcic, Red Dermosol; medium, non-gravelly, clayey / clayey, deep

Summary of Properties

Drainage: Well drained. The soil is unlikely to remain wet for more than a week following rain.

Fertility: The soil has a high nutrient storage capacity (high CEC values) and good calcium status (more than 75% of CEC), indicating favourable fertility. Organic carbon levels are also satisfactory (adequate nitrogen reserves). All elements except phosphorus appear to be in good supply.

pH: Alkaline at the surface, strongly alkaline with depth.

Rooting depth: 105 cm in pit but there are very few roots below 80 cm.

Barriers to root growth:

Physical: There are no physical barriers except where the calcrete becomes massive.

Chemical: Salt and boron levels are not a problem, but high pH and carbonate contents limit nutrient availability in the subsoil. High sodium (ESP more than 30%) affects root growth.

Waterholding capacity: Approximately 80 mm.

Seedling emergence: Good.

Workability: Good.

Erosion Potential:

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 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	8.3	7.9	1.0	0.12	0.56	1.6	18	666	-	1.6	0.7	6	13.1	1.2	23.5	18.0	2.3	0.18	2.0	0.8
0-10	8.2	7.7	0.1	0.10	0.50	1.6	15	552	-	1.8	0.6	7	12.4	1.5	22.9	17.3	2.3	0.16	1.7	0.7
10-21	8.2	7.8	0.1	0.12	0.74	0.8	4	254	-	1.9	0.5	7	3.9	0.3	17.6	15.8	3.5	0.24	0.81	1.4
21-38	8.7	8.1	14.8	0.15	0.58	1.1	4	138	-	2.6	0.6	7	3.2	0.4	20.2	13.8	5.4	0.76	0.46	3.8
38-50	9.4	8.3	66.8	0.31	1.40	0.7	4	74	-	6.0	0.3	2	0.8	0.4	9.9	4.4	4.2	1.9	0.23	18.9
50-80	9.6	8.3	60.9	0.51	1.90	0.3	<4	90	-	5.9	0.4	3	0.7	0.3	12.2	3.9	5.2	3.6	0.26	29.6
80-105	9.6	8.5	22.5	0.57	1.39	0.2	<4	147	-	11.1	4.6	4	0.8	0.4	20.7	4.7	8.9	7.1	0.45	34.5
105-140	9.7	8.5	6.8	0.42	2.40	0.1	<4	60	-	6.9	0.1	1	0.4	0.3	7.7	1.9	2.9	2.5	0.13	32.2

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.

Further information: DEWNR Soil and Land Program