CALCAREOUS RUBBLY SANDY LOAM

General Description: *Calcareous sandy loam grading to a rubbly light sandy clay loam over a semi-hard carbonate pan, with texture becoming more clayey, and carbonate content deceasing at depth*

Landform: Broad flats between low sandhills.

Substrate: Red coarsely structured clay mantled by carbonates. Old alluvium or lake bed sediment.

Vegetation: Mallee

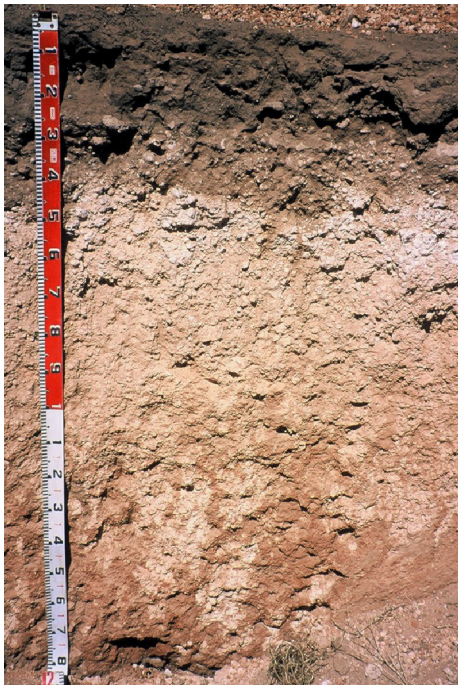
Type Site:

Site No.:	CU069	1:50,000 mapsheet:	6531-3 (Crystal Brook)
Hundred:	Wandearah	Easting:	222635
Section:	95	Northing:	6295420
Sampling date:	10/02/2005	Annual rainfall:	350 mm average

Broad flat, 0% slope. Firm surface with up to 10% surface calcrete stone (6 - 60 mm).

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown friable highly calcareous sandy loam with minor calcrete nodules and a strong plough pan at base. Abrupt to:
10-30	Dark brown friable very highly calcareous light sandy clay loam with 2-10% calcrete nodules. Clear to:
30-48	Brown friable very highly calcareous light sandy clay loam with more than 50% calcrete nodules. Abrupt to:
48-60	Semi cemented calcrete pan comprising more than 90% hard fragments with a yellowish light sandy clay loam matrix. Clear to:
60-100	Reddish yellow friable very highly calcareous sandy clay loam with more than 50% calcrete nodules. Diffuse to:
100-160	Red friable highly calcareous sandy light clay with 20-50% soft carbonate. Diffuse to:
160-200	Red firm medium clay with strong coarse angular blocky structure, 2-10% soft carbonate and 2-10% manganese segregations.



Classification: Hypervescent, Regolithic, Lithocalcic Calcarosol; thick, slightly gravelly, loamy/clay loamy, deep

Summary of Properties

Drainage: Well drained. The soil is unlikely to remain wet for more than a day or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. However, highly calcareous soils tie up phosphorus, manganese and zinc, a problem which can become acute when surface carbonate concentrations exceed 8-10%. Laboratory data indicate satisfactory levels of tested nutrients (possible exception of Mn), but tissue testing is required in order to make fertilizer recommendations.

pH: Alkaline at the surface, strongly alkaline with depth, and tending towards neutral in the substrate.

Rooting depth: 70 cm in sampling pit, with strong growth to 30 cm.

Barriers to root growth:

Physical: The calcrete layer is a barrier where it is massive and unfractured. This condition is sporadic around the site, and not a problem in the sampling pit. A strong plough pan at 10 cm can be removed by variable depth tillage.

Chemical: High sodicity and moderately high salinity from 30 cm, and high pH from 60 cm restrict root growth.

Waterholding capacity: Approximately 50 mm in the potential rootzone.

Seedling emergence: Satisfactory.

Workability: Calcareous sandy loams are easily worked over a wide range of moisture conditions.

Erosion Potential:

Water: Low.

Wind: Moderately low. Calcareous sandy loams are easily pulverized by livestock trampling or excessive cultivation, making them vulnerable to sweeping.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
Paddock	8.5	7.8	11.9	0.37	3.3	1.53	40	725	193	11.8	1.6	1.14	3.3	2.10	18.3	20.8	16.1	2.39	0.51	1.81	2.4
0-10	8.5	7.8	12.0	0.35	3.9	1.36	34	649	254	10.3	1.9	1.27	2.4	7.21	21.3	21.0	16.7	1.98	0.66	1.65	3.1
10-30	8.6	8.0	17.3	0.48	4.4	1.36	5	551	458	11.4	2.3	1.17	4.7	5.47	7.60	24.7	18.5	3.42	1.46	1.32	5.9
30-48	9.1	8.4	18.8	1.44	12.1	1.04	5	280	1632	164	2.1	1.70	3.8	12.8	7.14	30.8	14.3	7.86	7.94	0.69	25.8
48-60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60-100	9.4	8.4	60.3	1.10	14.1	0.21	2	322	1148	169	5.9	1.07	5.4	7.49	1.01	17.6	7.29	3.97	5.58	0.79	31.7
100-160	9.1	8.6	34.4	2.03	15.0	0.15	2	482	2100	253	21.2	0.71	4.2	13.7	1.93	21.1	5.82	5.55	8.51	1.17	40.4
160-200	7.7	7.2	0.3	2.19	15.1	0.11	2	675	2538	408	22.8	1.53	12	16.3	126	26.1	3.51	8.26	12.7	1.61	48.7

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.
Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

Further information: DEWNR Soil and Land Program