DEEP CALCAREOUS LOAM (SALINE)

General Description: *Calcareous loam becoming more clayey and calcareous with depth, grading to a coarsely structured clay from about 100 cm*

Landform: Gently undulating plains with low dunes

Substrate: Coarsely structured red clay with soft manganese and occasional gypsum segregations

Vegetation: Mallee

Type Site:

Site No.:	CU066	1:50,000 mapsheet:	6531-3 (Crystal Brook)
Hundred:	Wandearah	Easting:	222400
Section:	95	Northing:	6295650
Sampling date:	22/01/2001	Annual rainfall:	350 mm average

Flat in gently undulating dunefield. Firm surface with sporadic scalding. Site is on edge of bare scald.

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown hard highly calcareous loam with weak coarse subangular blocky structure. Clear to:
10-25	Reddish brown firm very highly calcareous massive clay loam with 2-10% carbonate nodules (6-20 mm). Gradual to:
25-45	Yellowish red firm very highly calcareous massive light clay with more than 50% fine carbonate. Diffuse to:
45-65	Yellowish red hard very highly calcareous massive light medium clay with more than 50% fine carbonate. Diffuse to:
65-100	Red hard highly calcareous medium clay with moderate angular blocky structure and 20-50% fine carbonate. Diffuse to:
100-135	Red hard highly calcareous medium clay with strong coarse prismatic structure, 2-10% fine carbonate and 2-10% fine manganiferous segregations. Diffuse to:
135- 200	Red firm (moderately moist) moderately calcareous medium clay with 2-10% fine manganese and gypsum segregations.

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

Summary of Properties

Drainage: Well drained. The soil rarely remains wet for more than a few days, although the lower horizons may be influenced by a fluctuating saline watertable.

Fertility: Inherent fertility is moderate. The soil has a high nutrient retention capacity (as indicated by the exchangeable cation data), but high carbonate content causes some fixation of phosphorus, zinc, manganese and iron. Concentrations of measured nutrient elements are adequate to high, probably due to salt induced low yields.

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

Rooting depth: 65 cm in pit, but few roots below 45 cm.

Barriers to root growth:

Physical: There are no significant physical barriers.

Chemical: Moderate salinity (high at the surface), high boron (>15 mg/kg), high pH (>9.2) and high sodicity (ESP >25) restrict most root growth to upper 45 cm.

Waterholding capacity: Approximately 70 mm in the rootzone.

Seedling emergence: Good to poor depending on level of salt at the surface (varies widely across paddock).

Workability: Satisfactory.

Erosion Potential:

Water: Low

Wind: Low to moderate, depending on salinity (reduces potential for surface cover).

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	Cl mg/kg	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum of cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock A	8.4	7.9	-	0.72	980	1.20	42	780	16	3.4	1.08	-	11.0	1.19	24.8	17.8	3.42	1.78	1.74	7.2
Paddock B	8.4	8.2	-	6.29	2750	0.90	44	670	870	6.5	1.38	-	7.31	1.64	54.6	17.0	9.50	26.5	1.51	48.6
0-10	8.5	8.2	-	2.33	2750	1.10	62	770	270	5.6	1.58	-	8.60	2.77	35.8	16.5	5.75	11.74	1.72	32.8
10-25	8.8	8.3	-	1.90	2350	0.55	8	560	175	9.0	1.45	-	4.21	0.44	29.1	13.5	5.42	8.91	1.26	30.6
25-45	9.4	8.5	-	1.29	1400	0.21	5	430	240	26.0	1.15	-	1.19	0.26	23.8	9.50	5.00	8.26	0.95	34.8
45-65	9.6	8.6	-	1.18	1120	0.20	5	420	200	33.0	0.86	-	0.56	0.30	23.0	7.90	5.83	8.26	0.92	36.0
65-100	9.5	8.7	-	1.58	1800	0.20	5	480	210	37.0	0.65	-	0.89	0.27	27.7	6.70	8.17	11.7	1.05	42.4
100-135	9.3	8.7	-	2.13	2400	0.51	5	470	290	30.0	0.53	-	0.90	0.29	31.8	6.20	8.83	15.7	1.05	49.2
135-200	9.3	8.6	-	1.94	2350	0.20	5	440	240	24.0	0.45	-	0.81	0.22	28.3	5.20	7.33	14.8	0.97	52.2

Note: Paddock sample taken from 20 soil cores (0-10 cm) from around pit. "Paddock A" sample in stubble, "Paddock B" sample in scalded area. Sum of cations is an estimate of 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 estimated CEC.

Further information: DEWNR Soil and Land Program