CALCAREOUS GRADATIONAL SANDY CLAY LOAM

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

Landform: Level to very gently undulating plains.

Substrate: Pooraka Formation - clayey alluvial sediments with pockets of fine carbonate leached in from above.

Vegetation:

Type Site:

Site No.:	CU072	1:50,000 mapsheet:	6531-3 (Crystal Brook)
Hundred:	Crystal Brook	Easting:	236910
Section:	256	Northing:	6308120
Sampling date:	18/09/2007	Annual rainfall:	400 mm average

Very gently sloping plain (1% slope) adjacent to dunefield. Firm surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown friable highly calcareous light fine sandy clay loam with weak granular structure. Gradual to:
10-30	Dark reddish brown friable massive very highly calcareous fine sandy clay loam. Gradual to:
30-50	Yellowish red friable massive very highly calcareous fine sandy light clay with 10-20% fine carbonate and 2-10% carbonate nodules (6-20 mm). Diffuse to:
50-75	Yellowish red friable massive very highly calcareous light clay with more than 50% fine carbonate segregations and minor carbonate nodules. Diffuse to:
75-100	Yellowish red firm very highly calcareous light clay with weak subangular blocky structure and 20-50% fine carbonate segregations. Diffuse to:
100-150	Red and yellowish red firm very highly calcareous medium clay with weak coarse subangular blocky structure, 10-20% fine carbonate segregations and minor soft and nodular manganese segregations. Diffuse to:

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

Summary of Properties

Drainage: Well drained. No part of the profile is likely to be saturated for more than a day or so at a time following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. Test data indicate that levels of all nutrient elements are adequate to high.

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

Rooting depth: 100 cm in sampling pit, with an occasional root below, but all roots from 75 cm are in biopores.

Barriers to root growth:

Physical: There are no apparent physical barriers, although there is evidence of near surface compaction due to long term cultivation and trafficking.

Chemical: Low nutrient availability caused by high carbonate concentrations and high pH in a clayey matrix reduce root capacity to absorb nutrients below 50 cm. High boron concentration and moderate salinity / chloride below 75 cm restrict water uptake, while high sodicity from 75 cm is potentially toxic.

Waterholding capacity: Approximately 130 mm in the potential rootzone, but up to 50 mm of this may be effectively unavailable due to uptake constraints.

Seedling emergence: Satisfactory.

Workability: Calcareous sandy clay loams are easily worked over a range of moisture conditions, although dry working causes powdering.

Erosion Potential:

Water: Low.

Wind: Low.

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-S mg/kg	Boron mg/kg	React Fe mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	8.8	7.9	7	0.12	1.08	1.70	31	759	12	7.4	1.3	0	1.47	5.4	10.6	2.90	26.6	22.4	2.14	0.12	1.92	0.5
10-30	8.9	7.9	13	0.10	0.40	1.35	12	394	6	3.8	1.4	0	1.84	6.3	4.99	1.34	27.6	23.3	3.07	0.20	1.08	0.7
30-50	9.0	8.0	19	0.12	0.40	0.55	3	172	6	3.6	1.6	0	2.07	7.1	3.92	14.5	22.6	17.9	3.56	0.61	0.52	2.7
50-75	9.5	8.3	28	0.26	1.01	0.35	2	131	79	7.4	5.2	0	1.75	7.5	2.75	0.15	23.6	13.8	5.97	3.46	0.41	14.6
75-100	9.5	8.4	39	0.73	4.77	0.25	6	219	458	118	15.7	0	1.33	6.5	2.11	0.17	24.1	10.9	5.41	7.25	0.60	30.0
100-150	9.4	8.4	39	0.88	6.96	0.30	5	275	802	179	18.7	0	1.02	5.0	1.94	0.21	22.5	9.4	4.12	8.18	0.75	36.4

Note: 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