SAND OVER BROWN SANDY CLAY

General Description: *Thin to medium thickness sand to loamy sand over a brown or red coarsely structured sandy clay loam to sandy clay, calcareous with depth*

Landform: Gently undulating rises.

Substrate: Tertiary sand.

Vegetation:

Type Site: Site No.: CY015

1:50,000 sheet:	6428-3 (Minlaton)	Hundred:	Ramsay
Annual rainfall:	450 mm	Sampling date:	10/12/92
Landform:	Rise with a slope of 1-2%		
Surface:	Loose with minor calcrete stone (20-60 mm)		

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown soft sand with a very thin bleach at the base. Sharp to:
10-19	Strong brown, pale olive and yellowish red mottled hard sandy medium clay with weak coarse prismatic, breaking to strong coarse angular blocky structure. Gradual to:
19-37	Strong brown and light olive brown firm slightly calcareous sandy medium clay with structure as for layer above. Clear to:
37-70	Brownish yellow friable massive very highly calcareous sandy light clay. Gradual to:
70-90	Very pale brown friable massive very highly calcareous sandy light clay with 20-50% calcrete fragments (6-20 mm). Diffuse to:
90-120	Very pale brown firm massive very highly calcareous sandy loam. Diffuse to:
120-160	Pale yellow firm massive very highly calcareous light sandy loam.

Classification: Mottled-Sodic, Supracalcic, Brown Chromosol; medium, non-gravelly, sandy/clayey, moderate

Summary of Properties

Drainage Imperfectly drained. Water perches on the clayey subsoil for more than a week after heavy or prolonged rainfall. Waterlogging is magnified by the shallow depth to clay.

Fertility Inherent nutrient retention capacity is low as indicated by the exchangeable cation data. Surface fertility relies on organic matter levels which are low, and on phosphorus levels which are marginal at this site. Zinc and copper concentrations are marginal. Manganese deficiency is likely in lupins. Potassium levels are adequate.

pH Neutral at the surface, alkaline at depth.

Rooting depth Roots to 100 cm in pit, but few below 70 cm.

Barriers to root growth

Physical The coarsely structured subsoil causes roots to grow around aggregates rather than into them, with consequent reduction in root density and water use efficiency.

Chemical High sodicity and pH from 90 cm prevent significant deeper root growth. Low trace element availability in the subsoil could be a contributing factor.

Water holding capacity Approximately 120 mm in rootzone, but about a third is effectively unavailable due to low root density in the subsoil.

Seedling emergence Good to fair due to water repellence.

Workability Good.

Erosion Potential

Water Moderately low.

Wind Moderate.

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	6.8	6.6	<1	0.09	0.58	0.62	21	270	-	1.0	0.18	22	1.9	0.45	4.9	4.02	0.76	0.12	0.40	2.4
0-10	7.5	7.2	<1	0.13	0.56	0.83	24	210	-	0.7	0.54	28	1.3	0.59	6.0	5.63	0.84	0.11	0.43	1.8
10-19	7.2	6.7	2	0.16	0.40	0.41	5.8	530	-	3.3	0.09	27	0.30	0.10	26.8	16.3	6.68	1.30	1.63	4.9
19-37	8.0	7.7	3	0.22	0.37	0.12	<2.0	470	-	2.2	0.15	16	0.42	0.07	26.5	16.1	5.60	0.89	1.37	3.4
37-70	9.0	8.1	30	0.36	1.40	0.13	<2.0	410	-	4.3	0.56	4.7	1.7	0.11	12.7	7.00	4.12	2.13	0.94	16.8
70-90	9.2	8.1	39	0.52	2.38	0.16	<2.0	460	-	3.3	0.72	3.3	0.85	0.12	11.7	5.50	3.95	3.20	1.01	27.4
90-120	9.3	8.1	46	1.06	6.23	0.15	<2.0	560	-	5.7	0.57	2.4	0.59	0.09	12.1	4.05	4.32	5.14	1.22	42.5
120-160	9.7	8.4	36	0.58	0.75	0.04	<2.0	810	-	11.9	0.41	3.1	0.48	0.10	17.7	3.45	5.85	8.50	1.88	48.0

Note: Paddock sample bulked from 20 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