SAND OVER DISPERSIVE BROWN CLAY

General Description: *Leached siliceous sand, between 10 and 30 cm deep, sharply overlying a yellowish mottled very firm columnar clay, calcareous with depth.*

Landform: Flat plains, swales between sand ridges, undulating rises and lower slopes of calcreted ridges. Slope range is 0 to 4%.

Substrate: Tertiary sandy clays.

Vegetation: Blue gum / mallee brush.

Type Site:

Site No.:	SE005	1:50,000 mapsheet:	7025-4 (Cannawigara)
Hundred:	Cannawigara	Easting:	471500
Section:	8	Northing:	5997150
Sampling date:	10/12/1991	Annual rainfall:	475 mm average

Slope of a gently undulating rise, with a gradient of 2%. Soft water repellent surface.

Soil Description:

Depth (cm)	*Description*
0 - 10	Grey loose single grained loamy sand. Abrupt to:
10 - 14	White loose single grained sand. Sharp to:
14 - 35	Yellowish brown, olive yellow and orange mottled very firm sandy heavy clay with coarse columnar structure. Gradual to:
35 - 60	Light yellowish brown, orange and olive yellow slightly calcareous sandy heavy clay with moderate coarse angular blocky structure. Gradual to:
60-100	Pale olive, orange and olive yellow very highly calcareous sandy medium clay with moderate angular blocky structure and 20-50% soft carbonate segregations. Gradual to:
100-130	Pale olive, orange and red slightly calcareous medium heavy clay with strong angular blocky structure.

Classification: Hypercalcic, Mottled-Mesonatric, Brown Sodosol; medium, non-gravelly, sandy/clayey, deep

Summary of Properties

Drainage: Imperfect due to impermeable subsoil. Soil may remain wet for several weeks.

Fertility: Nutrient retention capacity is poor in topsoil, moderate in subsoil, as indicated by the CEC values. High organic matter levels must be maintained for satisfactory surface soil fertility. Likely deficiencies: phosphorus, nitrogen, sulphur, zinc and copper.

pH: Acidic at surface, grading to strongly alkaline in deep subsoil.

Rooting depth: Approximately 60 cm at type site.

Barriers to root growth:

Physical: Hard, sodic subsoil and waterlogging above the clay retard root growth. Rapid drying in a quick finish of the near surface sand may prevent roots from accessing subsoil moisture reserves.

Chemical: Highly sodic, Class I carbonate layer typically affects root growth.

Waterholding capacity: Approximately 65 mm in rootzone at type site (moderately low). Value is affected by:

a) depth of sand - there are 6 mm of available water for each 100 mm of sand;
b) structure of clay - water availability varies from virtually nil to about 15 mm for each 100 mm thickness; and
c) depth to a very highly calcareous layer in which little root growth occurs.

Seedling emergence: Fair to good, depending on degree of water repellence.

Workability: Good.

Water erosion potential: Low to moderate depending on slope and depth of sand. Soils with thin sandy layers and on slopes more than 3% are most vulnerable.

Wind erosion potential: Moderately low to moderate, depending on exposure and depth of sand.

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	
0-10	6.6	6.1	0	0.26	3.1	1.4	53	170	-	0.9	0.5	82.6	2.0	3.3	3.8	3.4	1.0	0.15	0.24	3.9
10-14	7.1	7.0	<0.1	0.07	1.1	0.2	26	84	-	0.6	0.1	92.7	0.5	0.3	1.2	0.6	0.4	0.23	0.10	n.a.
14-35	7.8	6.9	<0.1	0.20	0.6	0.3	4	458	-	5.5	0.1	23.4	0.1	0.1	18.7	5.3	9.2	4.13	1.14	22.1
35-60	9.4	8.7	0.6	0.47	1.1	0.2	<4	405	-	8.1	0.5	8.8	0.1	0.1	19.2	4.4	9.6	5.57	0.98	29.0
60-100	9.8	8.9	32.5	1.03	7.1	<0.1	<4	478	-	11.7	0.2	3.4	0.1	0.1	18.2	2.7	9.2	7.81	1.08	42.9
100-130	9.4	8.9	0.6	1.27	6.3	<0.1	<4	498	-	12.6	0.3	4.8	0.4	0.2	21.9	2.0	10.9	8.43	1.09	38.5

Note: 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