

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 sheet: 7025-4 (Cannawigara) Hundred: Cannawigara
 Annual rainfall: 450 mm Sampling date: 10/12/91
 Landform: Slope of a gently undulating rise, with a gradient of 2%
 Surface: Soft and water repellent with no stones

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.
Water holding 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 ₂ O	pH CaCl 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	
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.