

THICK SAND OVER CLAY (Wharminda soil - thick surface)

General Description: *Thick sand over a coarsely structured dispersive brown clay, calcareous with depth*

Landform: Gently undulating dune field.

Substrate: Tertiary clay.

Vegetation:

No landscape image available

Type Site: Site No.: EL042

1:50,000 sheet: 5929-1 (Kiana)

Hundred: Mitchell

Annual rainfall: 450 mm

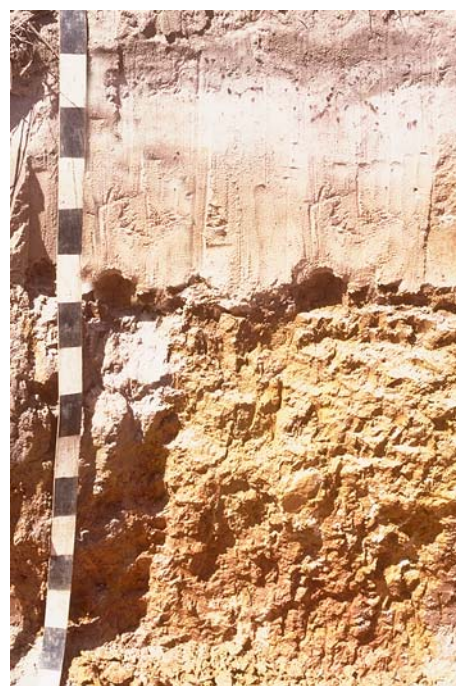
Sampling date: 03/03/92

Landform: Lower dune slope (1-2%)

Surface: Loose with 2-10% calcrete stones (20-60 mm)

Soil Description:

Depth (cm)	Description
0-12	Dark brown loose sand. Clear to:
12-30	Pale brown loose sand. Gradual to:
30-60	Brownish yellow loose sand with a thin bleached layer at the base. Sharp to:
60-100	Yellowish brown and red very hard medium heavy clay with strong coarse columnar structure. Gradual to:
100-160	Yellowish brown and red hard medium clay with minor fine carbonate segregations. Gradual to:
160-	Yellowish brown and red hard medium clay with more than 50% fine carbonate segregations.



Classification: Calcic, Mesonatric, Brown Sodosol; very thick, slightly gravelly, sandy / clayey, deep

Summary of Properties

Drainage Moderately well drained. Water ponds on the top of the clayey subsoil for a week or so at a time, but the thickness of the surface sand prevents waterlogging from being a serious problem.

Fertility Inherent fertility is low, as indicated by the exchangeable cation data which reflects low surface soil clay content and organic matter. Regular phosphorus applications are essential (levels are very low at sampling site). Zinc and copper deficiencies may also occur depending on seasonal conditions. Nitrogen levels are dependent on cropping history and legume content of pastures. Sulphur levels, although not measured, are likely to be low.

pH Alkaline at the surface, strongly alkaline in the deep subsoil.

Rooting depth 100 cm in pit, but few roots below 12 cm.

Barriers to root growth

Physical: The dense dispersive clayey subsoil inhibits strong even root growth.

Chemical: There are no chemical barriers within the upper 100 cm, but low nutrient status and retention capacity limit root growth.

Water holding capacity Approximately 60 mm in the root zone, but only about 30 mm are actually available due to poor root distribution patterns.

Seedling emergence: Satisfactory, except in seasons when water repellence is a problem.

Workability: Loose surface is easily worked.

Erosion Potential

Water: Low.

Wind: Moderate.

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	
0-12	8.1	7.0	0	0.0	0.3	0.38	7.2	8	-	0.3	0.18	13	2.5	0.47	2.0	1.34	0.20	0.04	0.04	na
12-30	7.8	6.8	0	0.0	0.2	0.08	12	16	-	0.3	0.05	10	0.10	0.17	0.9	0.44	0.11	0.03	0.03	na
30-60	7.6	6.8	0	0.0	0.4	0.03	15	23	-	4.7	0.09	3.0	0.03	0.14	0.9	0.48	0.13	0.03	0.03	na
60-100	8.3	6.8	1	0.2	0.6	0.15	3.0	370	-	0.4	0.03	13	0.16	0.20	15.7	3.54	6.11	2.60	1.00	16.6
100-160	9.5	8.3	2	0.4	0.9	0.06	2.0	560	-	9.1	0.04	4.0	0.12	0.23	21.1	4.65	9.81	5.14	1.44	24.4
160+	9.7	8.1	62	0.3	1.1	0.13	3.2	290	-	5.2	0.13	2.2	0.23	0.25	10.3	4.27	5.31	1.90	0.72	18.4

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