

SAND OVER COARSELY STRUCTURED CLAY (Wharminda soil)

General Description: *Medium to thick sand over a coarsely structured and dispersive red or brown clay, calcareous with depth*

Landform: Gently undulating rises.

Substrate: Tertiary sandy clay.

Vegetation:



Type Site: Site No.: EE050

1:50,000 sheet: 6130-2 (Verran)

Hundred: Verran

Annual rainfall: 340 mm

Sampling date: 13/11/91

Landform: Upper slope of gently undulating rise

Surface: Loose with no stones

Soil Description:

Depth (cm)	Description
0-15	Greyish brown loose loamy sand. Diffuse to:
15-20	Pale brown loose loamy sand. Sharp to:
20-30	Yellowish brown hard medium clay with very coarse prismatic structure. Abrupt to:
30-80	Yellowish brown friable very highly calcareous light clay with moderate fine subangular blocky structure and more than 50% fine carbonate segregations. Diffuse to:
80-130	Brownish yellow friable slightly calcareous light medium clay with moderate coarse subangular blocky structure and 2-10% soft manganiferous segregations.



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

Summary of Properties

Drainage Moderately well drained. Water perches on top of the dispersive clayey subsoil for up to a week at a time following heavy or prolonged rainfall.

Fertility Inherent fertility is moderately low, as indicated by the exchangeable cation data. Topsoil nutrient retention capacity is poor (low clay content), but subsoil traps leached material. Regular phosphorus applications are essential - levels at the sampling site are marginal. Nitrogen levels depend on cropping history and legume status of pastures. Zinc, copper and manganese deficiencies are likely from time to time and concentrations of all are low. Sulphur levels are also likely to be declining, although there are ample subsoil reserves.

Slightly acidic at the surface, strongly alkaline with depth.

Rooting depth Not recorded. Estimate 30 cm in pit.

Barriers to root growth

Physical: The dense dispersive subsoil clay prevents strong uniform root growth - most grow between the coarse aggregates.

Chemical: High pH, sodicity and boron concentrations from 30 cm limit deeper root growth.

Water holding capacity Approximately 35 mm in the root zone.

Seedling emergence: Satisfactory except in drier seasons when water repellence becomes 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	
0-15	6.5	6.0	0	0.1	1.3	0.40	17.0	-	14	0.9	0.12	15.0	0.64	0.27	3.4	2.34	0.63	0.25	0.14	7.4
15-20	7.1	6.3	0	0.1	1.1	0.15	13.0	-	6	0.8	<0.1	7.1	0.32	0.23	2.5	1.60	0.51	0.32	0.12	12.8
20-30	8.2	7.3	1	0.3	2.1	0.27	5.3	-	21	5.5	0.11	19.0	0.62	0.41	12.0	3.84	4.66	2.46	1.03	20.5
30-80	9.5	8.4	21	0.7	4.4	<0.1	3.3	-	160	17.2	0.39	7.5	0.75	0.16	16.6	2.68	6.48	5.98	1.47	36.0
80-130	9.5	8.4	15	0.9	6.8	<0.1	2.5	-	240	16.9	0.30	6.7	0.63	0.17	12.5	1.64	4.35	5.21	1.26	41.6

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