

HARD SANDY LOAM OVER DISPERSIVE RED CLAY

General Description: *Thin hard setting sandy loam overlying a very firm reddish mottled clay subsoil, calcareous with depth.*

Landform: Gently undulating slopes and rises.

Substrate: Ironstone rich alluvial clays of Tertiary age.

Vegetation: Blue gum - box woodland



Type Site: Site No.: SE001
 1:50,000 sheet: 7025-2 (Tatiara) Hundred: Tatiara
 Annual rainfall: 500 mm Sampling date: 11/12/91
 Landform: Mid-slope of gentle rise, 3% slope
 Surface: Hard setting with minor ironstone gravel

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-5	Dark greyish brown massive sandy loam with 2-10% ironstone nodules. Sharp to:
5-6	Pink massive sandy loam with 2-10% ironstone nodules. Sharp to:
6-34	Yellowish red and brown mottled very firm medium clay with very coarse prismatic structure. Clear to:
34-45	Reddish yellow firm highly calcareous medium clay with coarse polyhedral structure and 2-10% soft carbonate. Gradual to:
45-75	Yellowish red and brownish yellow mottled highly calcareous medium heavy clay with moderate coarse polyhedral structure and 10-20% soft carbonate. Diffuse to:
75-120	Strong brown, olive brown and yellowish red mottled highly calcareous medium heavy clay with strong coarse polyhedral structure and 10-20% soft carbonate.



Classification: Calcic, Mottled-Mesonatric, Red Sodosol; thin, slightly gravelly, loamy/clayey, deep

Summary of Properties

Drainage Moderately well to imperfectly drained. Soil may remain wet for several weeks due to the low permeability of the shallow clay subsoil.

Fertility Natural fertility is high, as indicated by the CEC values.

pH Acidic at the surface, alkaline with depth.

Rooting depth 75 cm in pit.

Barriers to root growth

Physical: Hard poorly structured surface layers and hard, sodic clay subsoil restrict satisfactory root development. Waterlogging on top of the clay may also prevent roots from making adequate downward growth.

Chemical: Class I carbonate layer from 45 cm typically affects root development. There are no apparent nutrient deficiencies or toxic materials, although the salt level is moderately high below 75 cm.

Water holding capacity 95 mm in root zone, but up to a third may be effectively unavailable to plants because of low root density in clay.

Seedling emergence Fair, due to poorly structured hard setting surface.

Workability Fair due to hard surface and narrow moisture range for effective working. Lower organic carbon levels than at the type site would further reduce ease of working.

Erosion Potential

Water: Moderate. Although the slope is only 3%, the soil is highly erodible due to its thin poorly structured surface soil and slowly permeable subsoil.

Wind: Low.

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	Cl mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
0-5	5.7	5.5	0	0.14	1.3	2.0	45	340	-	1.6	0.5	204	3.3	0.7	7.6	4.1	2.0	0.48	0.73	6	100
5-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6-34	7.1	6.4	<1	0.16	0.7	0.4	<5	120	-	2.5	0.2	19	<0.5	<0.1	15.4	5.6	7.8	2.70	0.31	18	50
34-45	8.9	8.3	4.8	0.70	2.8	0.2	<5	140	-	7.4	0.2	6	0.7	<0.1	20.6	6.0	10.3	5.44	0.36	26	374
45-75	9.2	8.3	12.8	1.14	6.4	0.2	<5	150	-	8.1	0.2	3	<0.5	<0.1	18.1	5.3	10.1	5.91	0.36	33	950
75-120	9.1	8.3	15.0	1.26	8.3	0.1	<5	120	-	9.4	0.2	3	<0.5	<0.1	15.9	4.4	8.9	4.82	0.28	30	1180

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.