

IRONSTONE SANDY LOAM OVER RED ALKALINE CLAY

General Description: *Hard setting medium thickness massive sandy loam to sandy clay loam with ironstone gravel, sharply overlying a reddish mottled coarsely structured clay, calcareous with depth.*

Landform: Gentle slopes running down to the flats of the Tatiara and Nalang Creeks. Slopes range from 1% to 4%

Substrate: Tertiary sandy clays, ferruginised in places

Vegetation: Open woodland of Eucalyptus leucoxyton and Casuarina spp



Type Site:	Site No.:	SE002	1:50,000 mapsheet:	7025-2 (Tatiara)
	Hundred:	Tatiara	Easting:	480400
	Section:	Racecourse	Northing:	5981850
	Sampling date:	23/01/1991	Annual rainfall:	490 mm average

Lower slope of low rise, 3% slope. Firm surface.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-12	Dark reddish brown massive light sandy clay loam, with 5% ironstone gravel. Clear to:
12-27	Pink massive light sandy loam with up to 50% ironstone gravel. Abrupt to:
27-45	Red and dark brown heavy clay with strong angular blocky structure. Gradual to:
45-70	Red, brown and brownish yellow heavy clay with strong angular blocky structure. Gradual to:
70-150	Yellowish grey highly calcareous medium clay (Class I carbonate layer).



Classification: Ferric, Mottled-Subnatric, Red Sodosol; medium, slightly gravelly, loamy / clayey, very deep



Summary of Properties

- Drainage:** Moderately well to imperfectly drained. Soil may remain wet for a week to several weeks due to its slowly permeable subsoil.
- Fertility:** Natural fertility is high as indicated by the CEC values, although the 12-27 cm layer is strongly leached. Provided that organic matter levels are maintained, nutrient deficiencies other than nitrogen, phosphorus and possibly zinc should not be a problem.
- pH:** Neutral to slightly alkaline at the surface, strongly alkaline with depth.
- Rooting depth:** 70 cm at pit site.
- Barriers to root growth:**
- Physical:** The poorly structured gravelly layer (12-27 cm) and the hard sodic clay subsoil restrict root development. Waterlogging in the gravelly layer is likely, preventing root growth. This layer, having a very low moisture storage capacity will dry out rapidly in spring-time and may prevent surface roots from extending into the moisture reserves in the clay.
- Chemical:** Class I carbonate layers typically impede root growth.
- Waterholding capacity:** 110 mm in rootzone at type site. Some of this is effectively unavailable due to low root density in the subsoil.
- Seedling emergence:** Fair, due to the tendency of the poorly structured surface soil to seal over.
- Workability:** Fair. Hard setting surface pulverises when too dry and puddles when too wet.
- Erosion Potential:**
- Water:** Moderately low.
- 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 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		
0-12	7.7	7.5	0.6	0.16	-	1.9	19	340	-	1.5	0.3	11.2	3.8	0.5	12.1	10.4	0.9	0.1	0.8	1	55
12-27	7.6	7.4	<0.1	0.08	-	0.6	3	22	-	0.9	0.1	10.7	0.8	<0.1	6.1	5.1	0.5	0.1	0.3	2	8
27-45	8.1	7.8	0.4	0.37	-	1.1	<2	360	-	7.0	0.5	25.9	1.0	1.2	30.4	13.3	12.3	4.3	1.2	14	81
45-70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70-150	9.4	8.7	23.4	0.81	-	0.3	<2	380	-	8.8	0.2	4.2	0.5	<0.1	27.7	4.8	12.8	7.0	1.2	25	587

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](#)

