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 leucoxylon and Casuarina spp

Type Site: Site No.: SE002

1:50,000 sheet:	7025-2 (Tatiara)	Hundred:	Tatiara
Annual rainfall:	500 mm	Sampling date:	23/01/91
Landform:	Lower slope of low rise, 3% slope		
Surface:	Firm with no stones		

Soil Description:

Depth (cm)	*Description*
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.

Water holding 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_2O	pH $CaC1_2$	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		
0-12	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.