

## HIGHLY LEACHED SAND

**General Description:** *Thick loose sand overlying ortstein (sand cemented by iron oxides and organic matter), overlying a yellow and brown sandy clay grading to soft red, yellow and grey sandstone.*

**Landform:** Slopes of undulating rises and low hills in the floors of ancient glacial valleys

**Substrate:** Soft massive sandstone

**Vegetation:** Eucalyptus baxteri / E. cosmophylla / E. fasciculosa scrub



**Type Site:** Site No.: CH021

1:50,000 sheet:	6526-1 (Torrens Vale)	Hundred:	Waitpinga
Annual rainfall:	850 mm	Sampling date:	31/07/92
Landform:	Upper slope of undulating low hills, 8% slope		
Surface:	Soft with no stones		

### Soil Description:

Depth (cm)	Description
0-10	Black soft loamy sand. Clear to:
10-22	Very dark grey soft loamy sand. Abrupt to:
22-65	Light grey loose sand. Abrupt to:
65-70	Reddish brown soft massive light sandy loam with up to 50% ortstein nodules. Abrupt to:
70-90	Moderately cemented brown and reddish yellow massive ortstein pan. Clear to:
90-140	Brownish yellow, yellow and red firm sandy light clay. Diffuse to:
140-200	Brownish yellow, red and pale yellow firm massive clayey sand (weathering sandstone).



**Classification:** Parapanic, Humosesquic/Sesquic, Aeric Podsol; medium, non-gravelly, sandy/loamy, moderate

## Summary of Properties

<b>Drainage</b>	Moderately well to well. Soil can remain wet for a few days to a week. Water may lie on the ortstein pan, so seepage may occur where topsoil is thin.
<b>Fertility</b>	Natural fertility is low as indicated by the low CEC values in all layers except for the highly organic surface. The low clay content of the topsoil and the particular mineralogy of the subsoil clay are the causes of the poor inherent fertility. At the type site, the data indicate that nutrient levels are adequate, although copper, calcium and iron are marginal. However there is evidence of substantial leaching of phosphorus and potassium (accumulation in the ortstein layers).
<b>pH</b>	Acidic at the surface, strongly acidic at base. Lime is required.
<b>Rooting depth</b>	140 cm at type site, but very few roots in and below the ortstein pan (70 cm).
<b>Barriers to root growth</b>	
<b>Physical:</b>	The ortstein pan is a physical barrier to root growth, although it is usually fractured, allowing roots to pass through.
<b>Chemical:</b>	Low pH (causing possible aluminium toxicity, molybdenum deficiency, poor nodulation and excessive leaching), and low nutrient retention capacity.
<b>Water holding capacity</b>	120 mm in rootzone (high), but only about half is available to plants because of poor root density in the subsoil clay.
<b>Seedling emergence</b>	Good, except where water repellence is a problem.
<b>Workability</b>	Good.
<b>Erosion Potential</b>	
<b>Water:</b>	Low, due to thick, highly permeable topsoil.
<b>Wind:</b>	Moderate due to thick loose sandy surface.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CaCO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> -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	
Paddock	6.0	5.5	0	0.16	1.28	3.4	30	430	9.4	1.0	0.5	60	8.5	7.7	8.9	5.6	2.1	<0.1	0.64	<1
											*1.0	*96	*31	*9.3						
0-10	6.5	6.2	0	0.11	0.60	3.0	29	250	7.8	0.9	0.4	35	8.3	10.4	7.1	4.9	2.1	<0.1	0.41	<1
10-22	6.2	5.6	0	0.09	0.46	2.9	21	220	9.7	0.8	0.6	51	6.9	9.8	8.0	6.3	1.0	<0.1	0.54	<1
22-65	6.0	5.3	0	0.03	0.12	0.1	<2	25	1.1	0.2	<0.1	4	<0.1	0.2	0.8	<0.4	<0.2	<0.1	0.08	na
65-70	5.2	4.6	0	0.09	0.62	0.6	105	250	5.0	0.5	0.1	201	0.2	0.2	2.9	1.4	0.6	<0.1	0.33	na
70-90	5.1	4.8	0	0.08	0.32	0.9	86	94	25	0.5	<0.1	78	<0.1	<0.1	3.8	0.6	0.3	0.16	0.24	na
90-140	4.7	4.3	0	0.08	0.31	0.2	27	130	18	0.4	<0.1	15	<0.1	<0.1	1.9	0.4	0.3	0.16	0.25	na
140-200	4.4	4.1	0	0.06	0.46	<0.1	<2	31	-	0.2	<0.1	2	<0.1	<0.1	1.2	<0.4	0.2	0.17	0.09	na

**Note:** Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

\* EDTA trace element analyses for "paddock" sample.

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.