

THICK BLEACHED SAND OVER BROWN MOTTLED CLAY

General Description: *Thick to very thick sand to loamy sand with a bleached subsurface layer, abruptly overlying a coarsely structured brown mottled heavy clay*

Landform: Gently inclined alluvial fans.

Substrate: Alluvial clay.

Vegetation:



Type Site: Site No.: CL040
1:50,000 sheet: 6728-4 (Angaston) Hundred: Moorooroo
Annual rainfall: 540 mm Sampling date: 29/11/04
Landform: Upper slope of alluvial fan, 2% slope
Surface: Soft with evidence of past clay spreading. No stones.

Soil Description:

Depth (cm)	Description
0-10	Brown soft single grain loamy sand. Clear to:
10-35	Brown soft single grain light loamy sand. Diffuse to:
35-65	Very pale brown (bleached), with reddish yellow mottles, soft single grain sand. Sharp to:
65-85	Yellowish brown, dark greyish brown, red and dark grey mottled hard heavy clay with weak very coarse columnar structure, breaking to strong medium angular blocky. Clear to:
85-135	Dark yellowish brown, yellowish brown and red mottled firm medium clay with moderate coarse subangular blocky structure, breaking to strong fine polyhedral. Diffuse to:
135-180	Dark yellowish brown, dark greyish brown and red mottled firm light clay with moderate coarse subangular blocky structure, breaking to weak medium angular blocky, and minor carbonate nodules.



Classification: Hypocalcic, Mottled-Mesonatric, Brown Sodosol; very thick, non-gravelly, sandy / clayey, very deep

Summary of Properties

- Drainage:** Moderately well to imperfectly drained. Water perches on top of the dispersive clay subsoil for a week or two following heavy or prolonged rainfall. However, given the thickness of the topsoil, this is unlikely to cause significant waterlogging problems for most crops.
- Fertility:** Inherent fertility is low, as indicated by the exchangeable cation data. Clay spreading has improved the nutrient retention capacity of the surface layer to some extent, but most of the soil's capacity is in the subsoil. Test results at this site indicate copper and zinc deficiencies.
- pH:** Slightly acidic at the surface, alkaline with depth.
- Rooting depth:** 100 cm in pit.
- Barriers to root growth:**
- Physical:** The dispersive clay subsoil prevents even root distribution, leading to loss of water use efficiency.
 - Chemical:** Moderate sodicity from 65 cm restricts root growth of horticultural crops.
- Water holding capacity:** (Estimates for potential root zone of irrigated crops)
- Total available: 95 mm
 - Readily available: 55 mm
- Seedling emergence:** Satisfactory, except where water repellence is a problem.
- Workability:** The sandy surface is easily worked over a range of moisture conditions.
- Erosion Potential**
- Water:** Moderately low.
 - Wind:** Moderately low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	6.5	5.7	0	0.037	0.23	0.76	53	121	4	2.9	0.6	1.92	75	23.8	1.93	5.2	3.52	1.34	0.06	0.29	1.2
10-35	6.8	6.2	0	0.037	0.34	0.29	37	65	7	5.5	0.3	1.62	231	7.05	0.92	2.6	1.73	0.66	0.06	0.13	na
35-65	7.0	6.4	0	0.029	0.33	0.10	10	56	5	4.5	0.2	0.79	64	2.82	0.40	1.2	0.76	0.29	0.08	0.09	na
65-85	7.8	6.6	0	0.203	1.38	0.39	2	151	100	20.2	1.5	1.21	84	2.79	0.30	18.3	5.34	8.65	3.92	0.36	21.5
85-135	8.2	6.9	0	0.206	1.44	0.26	2	142	120	26.8	2.4	1.40	23	10.4	0.35	17.2	3.58	8.81	4.39	0.38	25.6
135-180	8.8	7.7	0.3	0.400	2.27	0.16	2	198	183	54.2	2.9	1.15	22	24.5	0.20	17.7	3.55	7.59	6.05	0.54	34.1

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.