

SANDY LOAM OVER POORLY STRUCTURED GREY CLAY

General Description: *Hard massive loamy sand to sandy clay loam, between 20 and 60 cm thick, sharply overlying a yellow, grey and brown mottled very firm blocky clay, sometimes calcareous with depth*

Landform: Gently inclined lower slopes and level flats. Slope range is 0% to 8%.

Substrate: Alluvial clays.

Vegetation: Red gum woodland.



Type Site:	Site No.:	CH004	1:50,000 mapsheet:	6526-1 (Torrens Vale)
	Hundred:	Yankalilla	Easting:	260150
	Section:	1135	Northing:	6067600
	Sampling date:	30/01/92	Annual rainfall:	630 mm average

Lower slope of undulating low hills, 3% slope. Hard setting surface, no stones.

Soil Description:

Depth (cm)	Description
0-10	Dark brown massive sandy loam. Clear to:
10-30	Brown massive sandy loam. Clear to:
30-55	White massive loamy sand. Sharp to:
55-70	Very dark grey, light grey and dark yellowish brown strongly blocky medium heavy clay. Gradual to:
70-130	Olive and yellow strongly blocky heavy clay. Gradual to:
130-170	Olive grey and yellowish brown heavy clay, with minor carbonate nodules.



Classification: Hypocalcic, Mottled-Subnatric, Grey Sodosol; thick, non-gravelly, loamy/clayey, very deep



Summary of Properties

- Drainage:** Imperfect to slow. Soil may remain wet for several weeks to several months.
- Fertility:** Cation leaching has reduced fertility to very low levels, as indicated by the low cation exchange capacity, although the subsoil clay has a high nutrient storage capacity. Calcium, magnesium and potassium are all at very low levels.
- pH:** Strongly acidic at surface, acidic in upper subsoil, alkaline in lower subsoil. Lime and dolomite are required to correct the problem.
- Rooting depth:** 130 cm at type site, but growth is very poor in the bleached layer and sporadic in the underlying clay.
- Barriers to root growth:**
- Physical:** The bleached layer is saturated during winter, preventing root growth. If there is a quick finish to the season, this layer, having a very low waterholding capacity, dries rapidly and becomes very hard, preventing roots from penetrating and accessing subsoil moisture and nutrients. The clay subsoil is also very firm, adding a further barrier to adequate proliferation of roots.
- Chemical:** The low fertility of the topsoil, due to low clay content and high acidity, restricts good root growth in the surface. Moderately high aluminium associated with low pH is also a problem for sensitive species. Salt and other toxic elements are not a problem.
- Waterholding capacity:** 120-150 mm in rootzone. This is high, but depending on the season only a fraction of this is available to plants because of poor root growth in the bleached layer and the subsoil clay.
- Seedling emergence:** Fair to poor, due to hard, poorly structured surface and waterlogging.
- Workability:** Fair. Hard, fine sandy surface has narrow moisture range for effective working. There are no rocks and stones.
- Erosion potential:**
- Water:** Moderately low due to low slope, but soil itself is highly erodible because of poorly structured surface soil and impeded drainage.
- Wind:** Low. Pulverising and baring off due to overgrazing could lead to minor sweeping.

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	Cl 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	
0-10	4.2	4.1	0	0.09	0.8	1.9	50	62	38	0.8	0.2	360	19.3	2.1	4.4	1.3	0.3	0.1	0.1	3
10-30	4.2	4.1	0	0.04	0.2	0.5	67	47	7	0.3	0.4	144	17.6	0.9	2.6	0.6	<0.2	<0.1	0.05	ns
30-55	5.3	5.3	0	0.04	0.1	0.0	19	61	9	0.2	<0.1	7	2.1	0.2	1.1	<0.4	<0.2	<0.1	<0.05	ns
55-70	6.0	5.5	0	0.10	0.6	0.5	27	170	46	1.4	1.2	55	2.3	0.6	13.9	7.9	4.7	1.1	0.3	8
70-130	6.5	6.2	0	0.38	1.7	0.3	18	250	249	3.6	0.4	15	2.9	<0.1	27.4	12.0	11.8	4.2	0.5	15
130-170	8.5	8.1	2.7	0.65	3.5	0.0	6	190	404	2.9	0.3	5	1.0	<0.1	18.0	7.6	7.6	3.6	0.4	20

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](#)

