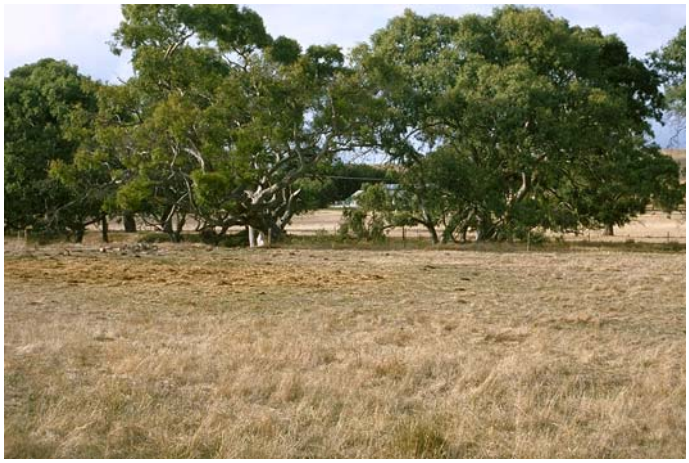
SANDY LOAM OVER POORLY STRUCTURED GREY CLAY

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 sheet:	6526-1 (Torrens Vale)	Hundred:	Yankalilla
Annual rainfall:	725 mm	Sampling date:	30/01/92
Landform:	Lower slope of undulating low hills, 3% slope		
Surface:	Hard setting with 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 water holding 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.

Water holding 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_2O	pH $CaC1_2$	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	<.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.