

SANDY LOAM OVER POORLY STRUCTURED BROWN CLAY

General Description: *Loamy sand to sandy clay loam, sharply overlying yellow, brown and red mottled clay.*

Landform: Slopes of rolling low hills

Substrate: Weakly consolidated clayey sand to sandy clay sediments deposited in ancient glacial valleys

Vegetation: Pink and blue gum woodland



Type Site: Site No.: CH005
 1:50,000 sheet: 6527-2 (Yankalilla) Hundred: Yankalilla
 Annual rainfall: 700 mm Sampling date: 30/01/92
 Landform: Lower slope of rolling low hills, 14% slope
 Surface: Firm with no stones

Soil Description:

Depth (cm)	Description
0-10	Dark greyish brown weakly granular sandy loam. Clear to:
10-21	White, massive loamy sand. Sharp to:
21-40	Greyish brown and yellowish brown strongly prismatic medium clay. Gradual to:
40-90	Light olive brown and pale olive strongly prismatic medium clay. Gradual to:
90-140	Light olive grey, brownish yellow and brown weakly prismatic sandy medium clay, with traces of fine carbonate. Gradual to:
140-175	Brown, light grey and brownish yellow massive sandy clay, with minor pockets of fine carbonate.



Classification: Calcic, Mottled-Subnatric, Brown Sodosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage	Moderately well to imperfect. Soil may remain wet for a week to several weeks.
Fertility	Low. Surface soil has very low natural fertility, as indicated by its low CEC. This is a result of cation leaching. Calcium, magnesium and potassium are all deficient. Phosphorus and boron levels are also low.
pH	Strongly acidic in the surface, moderately acidic in the upper subsoil, alkaline in lower subsoil. Lime or preferably dolomite required to correct the problem.
Rooting Depth	60 cm at type site, although root density below the top layer is low.
Barriers to root growth	
Physical:	Root development is retarded by the tough clay subsoil (caused by high levels of exchangeable sodium and magnesium).
Chemical:	Very low fertility and high acidity (possibly with associated aluminium toxicity).
Water holding capacity	60-80 mm in root zone (moderately low). This is not all available to plants because of the poor root density below the surface soil layer.
Seedling emergence	Good to fair, depending on hardness and water repellence of surface.
Workability	Good to fair, depending on hardness of surface.
Erosion potential	
Water:	Moderately high due to the slope and the highly erodible nature of the soil. This is due to the poorly structured, sandy, thin surface and the slowly permeable subsoil.
Wind:	Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CaCO 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	4.7	4.2	0	0.07	0.4	1.9	13	68	34	0.6	0.4	303	15.4	0.6	4.4	1.7	0.3	0.1	0.1	3
10-21	5.1	4.5	0	0.04	0.2	0.1	12	47	24	0.2	<0.1	59	4.5	<0.1	1.7	0.5	0.2	0.1	0.1	6
21-40	5.9	5.1	0	0.08	0.4	0.5	29	400	15	2.4	6.8	66	2.0	0.3	26.9	13.8	8.1	1.8	1.1	7
40-90	6.3	5.6	0	0.12	0.4	0.3	18	380	37	3.1	0.2	21	<0.5	<0.1	27.2	13.3	8.2	2.2	1.0	8
90-140	7.4	6.7	<0.1	0.19	1.0	0.1	8	220	101	2.1	0.2	7	<0.5	<0.1	16.3	9.8	4.7	1.7	0.4	10
140-175	8.5	8.0	3.7	0.42	2.8	0.0	12	210	330	1.6	0.1	4	<0.5	<0.1	16.4	10.9	4.4	1.9	0.4	11

Note: CEC (cation exchange capacity) is a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percent) is derived by dividing the exchangeable sodium value by the CEC.