SANDY LOAM OVER BROWN MOTTLED CLAY

General Description: *Medium to thick sandy loam to loam with a bleached A2 layer, abruptly overlying a brown mottled coarsely structured heavy clay, weakly calcareous with depth*

Landform: Slopes of rolling low hills

Substrate: Coarsely structured heavy clay – glacial valley deposit

Vegetation:

Type Site:

Site No.:	CH151	1:50,000 mapsheet:	6527-2 (Yankalilla)
Hundred:	Yankalilla	Easting:	253400
Section:	1102	Northing:	6069700
Sampling date:	11/10/06	Annual rainfall:	595 mm average

Lower slope of rolling low hills, 16% slope. Hard setting surface with minor quartzite stones.

Soil Description:

Depth (cm)	*Description*
0-12	Very dark greyish brown firm fine sandy loam with weak granular structure and minor quartzite fragments to 20 mm. Gradual to:
12-34	White, with brownish grey and dark yellowish brown mottles, hard massive fine sand with minor quartzite fragments to 20 mm. Abrupt to:
34-70	Olive brown, dark yellowish brown, dark greyish brown and red mottled extremely hard heavy clay with strong coarse blocky structure and 2-10% quartzite fragments to 60 mm. Diffuse to:
70-95	Light yellowish brown, dark greyish brown, brownish yellow, yellowish red and red mottled hard medium clay with moderate coarse blocky structure. Gradual to:
95-125	Brown and yellow very hard medium heavy clay with strong very coarse prismatic structure. Diffuse to:
125-155	Dark yellowish brown firm slightly calcareous medium heavy clay with weak coarse subangular blocky structure and 2-10% soft carbonate segregations.

Classification: Calcic, Mottled-Mesonatric, Brown Sodosol; thick, non-gravelly, loamy / clayey, moderate

Summary of Properties

Drainage: Imperfectly drained. Water perches on top of the clayey subsoil for several weeks following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low to moderate due to the clay content of the surface soil (although there is ample nutrient retention capacity in the subsoil). At the sampling site, data indicate deficiencies of phosphorus, copper and zinc. Levels of potassium and sulphur are marginal.

pH: Acidic at the surface, strongly alkaline with depth.

Rooting depth: 125 cm in sampling pit, but few roots below 34 cm.

Barriers to root growth:

Physical: The high strength of the subsoil clay, and the density of the bleached A2 layer restrict root density.

Chemical: Strong alkalinity and high sodicity from 125 cm indicate chemically hostile conditions, but this is not within the potential root zone of annual pastures, and not influencing rooting depth at this site.

Waterholding capacity: Approximately 70 mm in the rootzone.

Seedling emergence: Fair to good, depending on friability of surface.

Workability: Fair to good, depending on friability of surface.

Erosion Potential:

Water: Moderately high due to slope and inherent erodibility of the soil.

Wind: Low to moderately low – surface will pulverize if over-grazed.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4-S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-12	6.1	5.0	0	0.05	0.50	1.81	4	103	3.7	0.5	0.80	515	22.7	0.46	7.2	4.97	1.45	0.49	0.25	6.8
12-34	7.1	6.5	0	0.09	0.89	0.47	2	117	3.5	0.5	0.55	91	6.33	0.42	7.6	3.87	2.37	0.98	0.34	13.0
34-70	7.7	6.6	0	0.21	0.76	0.62	2	476	5.3	2.4	1.24	56	6.0	0.41	32.5	10.9	14.8	5.51	1.25	17.0
70-95	8.3	7.0	0	0.17	1.01	0.35	6	307	5.7	2.6	0.94	31	47.4	0.25	21.8	6.12	10.4	4.41	0.84	20.2
95-125	9.0	8.0	0	0.29	1.30	0.28	6	308	6.9	2.8	1.35	38	105	0.30	22.7	7.74	9.06	5.07	0.79	22.4
125-155	9.4	8.4	2.9	0.43	1.66	0.21	2	346	20	3.1	0.70	21	16.3	0.26	27.7	9.20	10.6	7.00	0.85	25.3

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

Further information: DEWNR Soil and Land Program