SAND OVER COARSELY STRUCTURED BROWN CLAY

General Description: *Medium thickness sand over a coarsely structured dispersive brown or grey mottled clay, calcareous with depth*

Landform: Level plain.

Substrate: Medium textured Tertiary sediment.

Vegetation:

Type Site:

Site No.:	SE067	1:50,000 mapsheet:	7023-3 (Monbulla)
Hundred:	Coles	Easting:	459700
Section:	33	Northing:	5876200
Sampling date:	29/08/1997	Annual rainfall:	660 mm average

Level plain, 0% slope. Firm surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-10	Very dark grey soft single grain loamy sand. Clear to:
10-19	Greyish brown loose single grain coarse sand. Clear to:
19-25	Light brownish grey loose single grain coarse sand. Abrupt to:
25-43	Strong brown, brown and light yellowish brown firm medium clay with strong coarse columnar structure.
43-72	Yellowish brown, brown and dark greyish brown firm medium clay with strong coarse prismatic structure. Abrupt to:
72-92	Yellowish brown and brown friable calcareous light medium clay with coarse prismatic structure. Gradual to:
92-108	Light grey and yellow friable massive calcareous light medium clay with 2-10% carbonate concretions (6-20 mm). Clear to:
108-130	Very pale brown, light brownish grey and yellow friable massive calcareous sandy light clay with 2-10% carbonate concretions (6-20 mm).

Classification: Bleached-Sodic, Hypercalcic, Brown Chromosol; medium, non-gravelly, sandy / clayey, deep

Summary of Properties

Drainage: Imperfectly drained. Water perches on the dispersive clayey subsoil, saturating the upper profile for several weeks following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low as indicated by the exchangeable cation data. Surface nutrient retention capacity is largely attributable to organic matter, as clay content is low. Copper levels are low at the surface.

pH: Slightly acidic at the surface, strongly alkaline with depth.

Rooting depth: 130 cm in pit, but few roots below 92 cm.

Barriers to root growth:

Physical: The coarsely structured clayey subsoil restricts root density - roots are confined to the surfaces of the aggregates.

Chemical: Low nutrient status and retention capacity in the subsurface layers (10-25 cm) restrict root growth, which is further impeded by high pH and clayey carbonate content from 92 cm.

Waterholding capacity: Approximately 100 mm in the rootzone.

Seedling emergence: Good, except where water repellent.

Workability: Firm surface is easily worked.

Erosion Potential:

Water: Low.

Wind: Moderately low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP	Ext Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
Paddock	6.4	5.8	0	0.30	-	2.61	23	127	19.0	1.8	0.47	59	22.1	4.97	-	8.30	1.06	0.29	0.43	na	1.1
0-10	6.5	5.7	0	0.14	-	1.45	11	31	9.7	1.1	0.40	59	12.6	2.85	-	4.87	0.52	0.15	0.15	na	1.2
10-19	6.0	5.0	0	0.02	-	0.35	5	15	2.9	0.5	0.23	29	1.91	0.69	-	1.69	<0.01	0.05	0.09	na	1.1
19-25	6.0	5.1	0	0.02	-	0.24	3	11	2.9	0.4	0.30	53	1.23	0.71	-	1.38	<0.01	0.05	0.08	na	1.0
25-43	6.5	5.4	0.1	0.07	-	0.80	27	242	5.7	0.8	0.28	233	2.12	0.69	25	15.65	3.47	1.26	0.70	5.0	1.0
43-72	8.1	7.0	0.4	0.17	-	0.54	11	265	8.8	0.8	0.29	89	102	0.68	28	16.00	4.04	1.67	0.75	5.9	1.0
72-92	9.1	7.9	38	0.16	-	0.36	2	168	10.0	1.0	0.26	17	6.21	0.59	15	10.05	3.66	1.40	0.38	9.3	1.0
92-108	9.3	7.8	60	0.17	-	0.32	3	107	12.8	0.8	0.29	19	5.56	0.65	11	6.20	3.21	1.24	0.24	11.3	1.1
108-130	9.4	8.2	28	0.14	-	0.16	4	92	9.9	0.5	0.23	20	7.40	0.55	7	4.01	2.21	0.82	0.16	11.7	1.0

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