BLEACHED ACIDIC LOAM OVER YELLOW CLAY

General Description: Heavy loam with some ironstone gravel and a bleached subsurface overlying mottled yellow light clay, which in turn overlies 'mottled

zone' substrate.

Landform: Plateau surface.

Substrate: Deeply weathered kaolin-clay-

> rich 'mottled zone', formed from Kanmantoo Group

metasediments.

Vegetation: Pasture species trial.

Type Site: Site No.: CK026 1:50,000 mapsheet: 6326-1 (Cassini)

Hundred: Seddon Easting: 705179 Section: 39 Northing: 6038436

07/12/10 Annual rainfall: Sampling date: 620 mm average

Level plateau surface. Firm surface.

Soil Description:

Depth (cm) Description

0 - 10Black, heavy fine sandy loam with weak granular

structure.

10-20 Yellowish brown (dry), very dark brown and strong

> brown, heavy fine sandy loam with massive structure, 2–10% ironstone nodules (2–6 mm) and

iron staining along root channels.

20 - 27Bleached, heavy fine sandy loam with massive

structure, 10–20% ironstone nodules (2–20 mm), 2-10% quartz fragments (6-20 mm) and iron

staining along root channels, abrupt to:

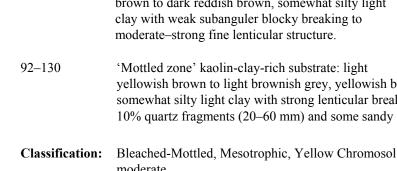
27 - 45Brownish yellow, yellow and strong brown, heavy

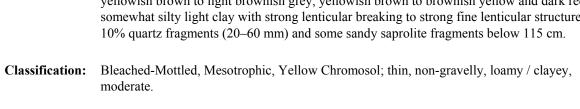
clay loam with weak subangular blocky structure.

45-92 Brownish yellow, yellow to pale yellow and reddish

brown to dark reddish brown, somewhat silty light clay with weak subanguler blocky breaking to

yellowish brown to light brownish grey, yellowish brown to brownish yellow and dark red, somewhat silty light clay with strong lenticular breaking to strong fine lenticular structure, 2-









Summary of Properties

Drainage: Imperfectly drained. Soil is likely to remain saturated for several weeks following

heavy or prolonged rainfall. The bleached subsurface horizon (20-27 cm) indicates

the presence of a seasonal perched watertable.

Fertility: Inherent fertility is low, as indicated by the sum of cation data, which is especially

low in subsurface horizons (10–20 and 20–27 cm). Topsoil nutrient retention capacity

is mostly attributable to surface soil organic matter content. Kaolinitic clays,

characteristic of ironstone soils, have low nutrient retention capacity. Ironstone fixes phosphorus, however, levels of available phosphorus are high in the surface soil (as a result of substantial addition of fertiliser at this trial site), and there is indication of phosphorus leaching within the topsoil. Calcium levels are low except in the organic-rich surface soil, which is fairly typical of such soils. Boron levels are marginal. Leaf

analyses are needed to confirm apparently marginal levels of zinc.

pH: Acidic throughout, with some horizons on the margins of strong acidity where

aluminium toxicity can become a problem (e.g. in the surface soil).

Rooting depth: Most root growth is in the upper 45 cm; with a few observable roots to 92 cm.

Barriers to root growth:

Physical: The subsoil and substrate are tightly structured, which impedes drainage. Root

growth is restricted by limited drainage and possibly by tight subsoil structure.

Chemical: Very low nutrient availability below 45 cm restricts root growth. 'Mottled zone'

substrate material (below 92 cm) is hostile to root growth.

Waterholding capacity: Approximately ((0.1x140) + (0.17x100x0.9) + (0.18x150) + (0.47x150x0.1)) 60 mm

in the potential rootzone for crop and pasture plants.

Seedling emergence: Satisfactory. **Workability:** Satisfactory.

Erosion Potential: Water: Low. Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaC1 ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	P	Avail. K mg/kg	Cl mg/kg	SO ₄ mg/kg	Boron mg/kg		Trace Elements mg/kg (EDTA)			cations	Exchangeable Cations cmol(+)/kg				Est. ESP		
													Cu	Fe	Mn	Zn	cmol (+)/kg	Ca	Mg	Na	K	Al	
Paddock	5.4	4.9	0	0.173	0.98	4.74	55	225	125.8	16.4	0.77	7.08	0.56	494	2.38	1.10	6.51	4.08	0.86	0.37	0.42	0.78	5.69
0.10	5.9	4.9	0	0.184	1.20	5.80	66	363	202.2	13.5	1.17	2.65	0.98	701	7.18	1 95	11.82	8.41	1 08	0.54	0.76	0.13	4.57
0–10																						<0.0	
10–20	6.1	5.5	0	0.064	0.42	1.41	28	137	33.3	9.3	0.49	< 0.20	0.44	209	2.19	0.11	2.29	1.34	0.52	0.18	0.25	01	7.86
20–27	6.1	5.4	0	0.039	0.41	0.47	8	141	11.5	12.9	0.46	1.68	0.20	72.0	1.40	<0.0 5	2.22	0.92	0.60	0.17	0.26	0.27	7.65
27–45	6.2	5.4	0	0.103	0.44	0.40	3	305	67.1	46.2	1.48	0.22	0.27	31.1	0.53	0.18	10.17	2.69	5.86	0.77	0.70	0.15	7.57
45–65	6.9	6.1	0	0.156	0.44	0.22	5	258	105.2	66.1	1.64	< 0.20	0.31	33.6	3.98	0.36	11.64	1.41	8.53	1.03	0.67	<0.0 01	8.85
65–92	6.7	5.7	0	0.120	0.40	0.09	3	356	99.7	56.6	1.95	<0.20	0.17	13.7	0.43	0.15	9.47	0.28	7.70	0.78	0.71	<0.0 01	8.24
92–115	5.7	4.9	0	0.071	0.39	0.08	<2	246	87.5	40.8	1.92	0.23	0.13	11.5	0.51	0.19	8.64	0.15	6.92	0.73	0.64	0.20	8.45
115–130	5.8	4.8	0	0.084	0.31	0.09	<2	167	58.7	34.1	1.63	1.14	0.11	14.5	2.00	0.23	6.50	0.22	4.99	0.53	0.43	0.33	8.15

Note: Paddock sample bulked from 20 cores (0–10 cm) taken around the pit.

Sum of cations 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, in this case estimated by the sum of cations.

Further information: DEWNR Soil and Land Program



