

BLACK CLAY OVER SEMI HARD CARBONATE

General Description: *Black well structured calcareous clay over semi-hard to hard carbonate at moderate depth*

Landform: Flat plains

Substrate: Lagoon-deposited limestone and calcareous clay of the Padthaway Formation.

Vegetation:



Type Site:	Site No.:	SE159B	1:50,000 mapsheet:	6924-3 (Minecrow)
	Hundred:	Townsend	Easting:	420980
	Section:	234	Northing:	5906510
	Sampling date:	20/02/2008	Annual rainfall:	625 mm average

Flat plain. Firm surface with no stones. Irrigated clover.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Black firm highly calcareous medium clay with moderate medium polyhedral structure. Gradual to:
10-20	Very dark grey firm highly calcareous medium heavy clay with moderate medium polyhedral structure. Clear to:
20-35	Dark grey friable very highly calcareous light clay with weak medium prismatic structure, breaking to moderate coarse polyhedral. Clear to:
35-60	Light grey friable very highly calcareous light clay with weak medium angular blocky structure and 20-50% carbonate nodules (>60 mm). Diffuse to:
60-90	Light grey friable very highly calcareous light clay with weak medium angular blocky structure 20-50% carbonate nodules (> 60 mm). Diffuse to:
90-110	More than 90% hard calcrete with pockets of light olive grey very highly calcareous light medium clay.



Classification: Melanic, Regolithic, Lithocalcic Calcarosol; thick, non-gravelly, clayey / clayey, moderate



Summary of Properties

- Drainage:** Moderately well drained due to favourable soil permeability, but rising seasonal watertables and inundation are likely to cause saturation for several weeks at a time in average to wetter seasons.
- Fertility:** Inherent fertility is very high, as indicated by the exchangeable cation data. This is due to the high clay and organic matter contents of the surface layers. Laboratory data indicate satisfactory levels of all tested nutrients, except for phosphorus, concentrations of which are marginal.
- pH:** Alkaline throughout.
- Rooting depth:** 110 cm in sampling pit, but few roots below 90 cm.
- Barriers to root growth:**
- Physical:** There are no significant physical barriers to root growth above the calcrete layer at 90 cm.
 - Chemical:** High carbonate content reduces availability of trace elements (especially zinc) at depth.
- Waterholding capacity:** (Estimates for potential rootzone of irrigated crops)
 Total available: 100 mm
 Readily available: 35 mm
- Seedling emergence:** Satisfactory.
- Workability:** Fair. Clayey surface becomes sticky when wet.
- Erosion Potential:**
- Water:** Low.
 - Wind:** Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Cl mg/kg	Org.C %	NO ₃ + NH ₄ mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	React Fe mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP	
														Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
0-10	8.3	7.6	7.8	0.67	1.75	222	5.66	33	27	326	38.9	-	3.4	0.8	10	1.79	1.72	43.4	30.5	9.74	2.24	0.84	5.2	
10-20	8.7	8.0	9.9	0.44	0.92	176	2.54	-	7	394	37.0	383	-	-	-	-	-	33.7	21.9	9.02	1.85	0.91	5.5	
20-35	8.9	8.0	16.2	0.51	0.95	198	0.76	-	6	510	33.9	508	-	-	-	-	-	33.5	20.0	9.97	2.22	1.32	6.6	
35-60	9.1	8.1	63.7	0.19	0.96	96	0.34	-	5	238	27.4	324	-	-	-	-	-	19.3	12.5	5.38	0.88	0.61	4.6	
60-90	8.8	7.8	66.7	0.22	1.09	88	0.31	-	5	235	27.7	225	-	-	-	-	-	18.6	12.3	4.90	0.85	0.60	4.6	
90-110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: 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, in this case estimated by the sum of cations.

Further information: [DEWNR Soil and Land Program](#)

