

UNIFORM DARK TO BROWN CLAY LOAM

General Description: Alkaline, uniformly textured, dark to brown clay loam.

Landform: Rises (jumbled dune appearance).

Substrate: Light clay substrate (formed from limestone or calcarenite).

Vegetation: Non-irrigated permanent pasture.



Type Site:	Site No.:	SE167	1:50,000 mapsheet:	7022-4 (Kalangadoo)
	Hundred:	Young	Easting:	473000
	Section:	92	Northing:	5824740
	Sampling date:	23/11/10	Annual rainfall:	755 mm average

Swale to midslope (1.5%). Hard surface. Some worm activity is evident at depth.

Soil Description:

Depth (cm)	Description
0–15	Hard, black, fine sandy clay loam with moderate, fine polyhedral structure.
15–32	Moderately calcareous, black, heavy fine sandy clay loam with weak, fine subangular blocky structure and 2–10% carbonate fragments (6–20 mm).
32–50	Moderately calcareous, very dark brown, heavy fine sandy clay loam with weak, fine subangular blocky structure, 10–20% carbonate fragments (6–60 mm) and 10–20% carbonate root linings with ash-like coatings.
50–85	Moderately calcareous, very dark brown, heavy fine sandy clay loam with massive structure, 10–20% carbonate tubules (20–60 mm) and 10–20% carbonate root linings with ash-like coatings.
85–150	Highly calcareous, brown, light clay with massive structure, 10–20% carbonate tubules (>60 mm) and 10–20% carbonate root linings with ash-like coatings



Classification: Melanic, Regolithic, Calcic, Calcarosol; thick, non-gravelly, clay loamy / clay loamy, deep.



Summary of Properties

- Drainage:** Soil profile is well drained.
- Fertility:** Inherent fertility within the soil profile is high, as indicated by the sum of cations. Surface soil phosphorus levels are also high; as are calcium levels on clay exchange surfaces. Surface soil organic carbon levels are good; while subsoil carbon levels are high. However, sulphur and boron levels are on the cusp of being marginal; and it is likely that magnesium levels are limiting.
- pH:** Soil profile pH is within the neutral range (slightly alkaline) to alkaline range, with non-calcareous surface soil and moderately calcareous subsoil.
- Rooting depth:** Most root growth is in the upper 50 cm, with a few roots extending to 150 cm.
- Barriers to root growth:**
- Physical:** There are no physical impediments to drainage or root growth.
- Chemical:** There are no chemical toxicity barriers to root growth in the soil profile. However, low levels of some nutrients in the subsoil could be limiting.
- Waterholding capacity:** Approximately 120 mm in the potential rootzone for crop and pasture plants.
 $[(0.15 \times 200) + (0.17 \times 180 \times 0.95) + (0.18 \times 150 \times 0.85) + (0.35 \times 150 \times 0.5) + (0.70 \times 150 \times 0.1)]$
 This is variable owing to considerable soil variation over short distances.
- Seedling emergence:** There are no significant limitations to seedling emergence.
- Workability:** No limitation.
- Erosion Potential:**
- Water:** Low.
- Wind:** Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ mg/kg	Boron mg/kg	Al CaCl ₂ 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	Al	
Paddock	7.6	6.8	6.62	0.191	0.90	3.90	101	256	14.7	10.9	1.37	<0.2	1.22	59.4	30.8	3.73	34.9	32.9	1.40	0.16	0.49	0.0	0.46
0–15	7.5	6.8	1.10	0.204	0.83	4.00	50	164	9.9	10.5	1.19	<0.2	0.74	47.3	28.1	1.69	27.6	25.9	1.14	0.18	0.35	0.0	0.65
15–32	8.0	7.1	19.96	0.164	0.62	2.76	17	151	2.4	5.3	0.89	<0.2	0.66	12.9	14.8	0.40	30.1	29.0	0.57	0.12	0.35	0.0	0.40
32–50	7.8	6.8	38.59	0.166	0.45	1.89	12	126	1.9	4.6	0.82	<0.2	0.74	7.86	10.3	0.14	25.4	24.5	0.42	0.16	0.32	0.0	0.63
50–85	8.1	7.1	47.04	0.145	0.44	1.56	9	97	1.6	14.5	0.83	<0.2	0.57	7.28	9.35	0.22	23.4	22.5	0.45	0.21	0.25	0.0	0.90
85–150	8.0	7.0	59.10	0.142	0.51	0.73	6	83	26.0	8.9	0.52	<0.2	0.42	7.06	4.84	0.21	16.9	16.1	0.34	0.27	0.21	0.0	1.59
Carbon- ate *	8.4	7.4	96.64	0.079	0.24	0.12	<2	17	<1.0	8.1	0.18	<0.2	0.53	<1.0	1.95	0.14	7.76	7.51	0.09	0.12	0.04	0.0	1.55

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.

* Sample from carbonate-rich inclusion to the right of the described soil profile (at a depth of 30–120 cm).

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

