

CLAY LOAM OVER REDDISH BROWN CLAY ON LIMESTONE

General Description: *Clay loam over reddish brown clay on limestone.*

Landform: Plain.

Substrate: Gambier Limestone.

Vegetation: Permanent pasture.



Type Site:	Site No.:	SE169	1:50,000 mapsheet:	7022-3 (Schank)
	Hundred:	Kongorong	Easting:	463800
	Section:	555	Northing:	5804700
	Sampling date:	23/11/10	Annual rainfall:	755 mm average

Flat (0%). Hard surface. Some worm activity is evident to 96 cm.

Soil Description:

Depth (cm)	Description
0–9	Hard, very dark brown, fine sandy clay loam with weak, fine granular structure.
9–25	Dark brown, light fine sandy clay loam with massive structure, clear to:
25–45	Dark brown, heavy fine sandy light clay with moderate fine polyhedral structure and 2–10% limestone fragments (20–60 mm), gradual to:
45–96	Dark reddish brown, light medium clay with weak lenticular structure breaking to moderate, fine polyhedral structure showing evidence of stress cutans.
96–99	Dark brown light clay with weak lenticular structure breaking to weak, fine polyhedral structure.
99–140	Gambier Limestone.



Classification: Haplic, Eutrophic, Red Dermosol; medium, non-gravelly, clay loamy / clayey, moderate.



Summary of Properties

Drainage:	Soil profile is moderately well drained.
Fertility:	Inherent fertility within the soil profile is high to moderate, as indicated by the sum of cations. Surface soil phosphorus levels are very high. Surface soil organic carbon levels are good; while subsoil carbon levels are high. Potassium levels in the pit surface soil are extreme, however, the surrounding area is not similarly affected: a sign the pit is located where fertiliser has previously been dumped.
pH:	Soil pH varies from neutral to acidic to slightly acidic down the profile.
Rooting depth:	Most root growth is in the upper 45 cm, with a few roots extending to 99 cm.
Barriers to root growth:	
Physical:	There are no significant physical impediments to drainage or root growth in the soil profile; while the limestone substrate is a barrier to roots.
Chemical:	There are no chemical toxicity barriers to root growth in the soil profile. However, few subsoil roots could be due to nutrient limitations (e.g. zinc).
Waterholding capacity:	Approximately 115 mm in the potential rootzone for crop and pasture plants. [(0.09x200) + (0.16x180) + (0.20x150x0.95) + (0.54x150x0.5)] This variable is owing to variation in soil depth 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	6.9	6.2	0.26	0.206	0.66	4.40	300	511	40.9	14.6	1.05	<0.20	1.55	228	7.86	5.37	21.1	17.1	2.75	0.25	0.97	0.0	1.18
0–9	6.9	6.2	0.28	1.07	6.25	4.47	290	3166	692	74.3	2.27	<0.20	1.70	228	13.8	5.61	23.2	15.8	2.26	0.68	4.48	0.0	2.93
9–25	7.2	6.4	0.23	0.190	0.98	1.88	19	299	34.6	7.9	0.65	<0.20	0.57	49.7	0.77	0.50	11.3	8.85	1.81	0.12	0.54	0.0	1.06
25–45	6.4	5.4	0.29	0.050	0.30	1.25	4	216	15.7	4.3	0.76	0.57	0.49	75.1	0.38	0.32	13.3	9.61	2.87	0.27	0.55	0.04	2.02
45–96	6.6	5.6	0.38	0.149	0.52	1.23	3	143	24.0	29.2	0.92	<0.20	0.37	18.2	0.06	0.24	22.1	15.9	4.63	1.21	0.37	0.0	5.48
96–99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
99–140	8.4	7.4	98.4	0.109	0.61	0.07	4	24	25.6	9.8	0.10	<0.20	0.50	<1.0	0.17	0.33	8.19	7.76	0.24	0.13	0.06	0.0	1.59

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](#)

