

CLAY LOAM OVER BROWN CLAY ON CALCRETE

General Description: *Medium thickness sandy clay loam to clay loam over a coarsely structured brown clay on calcreted limestone or semi hard carbonate.*

Landform: Level plains

Substrate: Calcreted limestone or calcareous clayey sand to sandy clay of the Padthaway Formation.

Vegetation:



Type Site:	Site No.:	SE156A	1:50,000 mapsheet:	6924-1 (Marcollat)
	Hundred:	Marcollat	Easting:	448870
	Section:	20	Northing:	5955340
	Sampling date:	02/04/2008	Annual rainfall:	545 mm average

Level plain. Firm surface with 10-20% calcrete stones (6-20 cm). Dryland (holding paddock).

Soil Description:

Depth (cm)	Description
0-5	Very dark brown soft massive clay loam, sandy. Sharp to:
5-15	Very dark brown soft clay loam, sandy, with weak very coarse prismatic structure. Clear to:
15-30	Olive brown and very dark brown mottled friable slightly calcareous light clay with weak very coarse prismatic structure. Sharp to:
30-35	Fractured calcrete pan. Sharp to:
35-50	Light yellowish brown, greyish brown and brownish yellow mottled soft highly calcareous light clay with weak medium polyhedral structure. Sharp to:
50-100	Semi hard to hard calcreted limestone.



Classification: Mottled, Petrocalcic, Brown Kandosol; medium, gravelly, clay loamy / clayey, shallow



Summary of Properties

Drainage: Moderately well to imperfectly drained. Water may perch on top of the subsoil clay for up to a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is low, as indicated by the exchangeable cation data. This is due to the low clay and low organic matter contents of the surface layers. Laboratory data indicate potassium deficiency.

pH: Alkaline throughout. High surface pH is due to effects of alkaline irrigation water (compare with site SE155A).

Rooting depth: 68 cm in sampling pit.

Barriers to root growth:

Physical: The calcrete cap on the carbonate layer imposes a significant barrier to root growth depending on the degree of fracturing. It can be disrupted by deep ripping, but the semi-hard carbonate below is still restrictive.

Chemical: Low nutrient availability is the main chemical barrier in the natural soil. This is attributable to low clay content of the topsoil, and high carbonate content of the lower subsoil. Under irrigation, substantial increases in salinity / chloride and exchangeable sodium (compare with site SE155A) affect sensitive species

Waterholding capacity: (Estimates for potential rootzone of irrigated crops)

Total available: 65 mm (above calcrete)

Readily available: 30 mm (above calcrete)

Seedling emergence: Satisfactory to fair, depending on degree of water repellence.

Workability: Sandy surface soils are easily worked.

Erosion Potential:

Water: Low.

Wind: Moderate.

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 (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP	
														Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
0-5	7.3	6.8	0	0.69	6.02	419	3.83	300	167	2090	32.8	-	2.2	0.53	43	13.5	2.36	19.8	11.0	2.32	1.02	5.51	5.2	
5-15	6.5	5.8	0	0.15	1.71	69	1.72	-	23	603	10.2	587	-	-	-	-	-	13.6	10.5	1.13	0.36	1.61	2.6	
15-30	8.3	7.6	0	0.20	1.21	62	0.84	-	16	399	14.8	720	-	-	-	-	-	21.7	18.4	1.7	0.38	1.2	1.8	
30-35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35-50	8.6	8.0	24.3	0.20	1.25	114	0.47	-	6	280	10.1	837	-	-	-	-	-	21.6	19.1	1.5	0.22	0.86	1.0	
50-100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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](#)

