

SAND OVER BROWN CLAY ON CALCRETE

General Description: *Medium to thick sand to loamy sand with a bleached subsurface layer, over a brown coarsely structured clay on calcrete capped semi-hard carbonate within 100 cm, and often within 50 cm*

Landform: Very gently undulating plains

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

Vegetation:



Type Site:	Site No.:	SE155A	1:50,000 mapsheet:	7025-4 (Cannawigara)
	Hundred:	Pendleton	Easting:	461100
	Section:	50	Northing:	5997280
	Sampling date:	13/12/2007	Annual rainfall:	485 mm average

Very gently undulating plain. Soft surface with no stones. Non irrigated pasture.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-15	Very dark greyish brown soft single grain loamy sand. Gradual to:
15-32	Very pale brown (bleached) soft single grain light loamy sand. Sharp to:
32-60	Strong brown firm light clay with weak coarse columnar structure. Gradual to:
60-80	Strong brown firm light medium clay with moderate coarse subangular blocky structure. Diffuse to:
80-90*	Brown firm light clay. Sharp to:
90-95	Calcrete capping.
95-160	Semi-hard carbonate.

* Note significant variation in depth to carbonate (55-90 cm). Description applies to a solution hole.



Classification: Bleached, Petrocalcic, Brown Chromosol; thick, non-gravelly, sandy / clayey, moderate



Summary of Properties

Drainage:	Moderately well drained. Water may perch on top of the subsoil clay for up to a week 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 relatively low organic matter contents of the surface layers. Laboratory data indicate deficiencies of phosphorus and potassium, and possibly copper and zinc.
pH:	Slightly acidic at the surface, alkaline with depth.
Rooting depth:	60 cm in sampling pit, but few roots below 32 cm.
Barriers to root growth:	
Physical:	The carbonate layer imposes a variable barrier to root growth depending on its hardness. Some calcrete pan development at the surface of the layer is usual, and (depending on fractures) this is a significant barrier unless disrupted by deep ripping.
Chemical:	Low nutrient availability is the main chemical barrier. This is attributable to low clay content of the topsoil, and high carbonate content of the lower subsoil.
Waterholding capacity:	Approximately 110 mm in the potential rootzone (i.e. to 90 cm), but 65 mm where carbonate layer is at 55 cm.
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		
0-15	6.3	5.7	0	0.03	0.40	23	1.51	8	11	85	5.3	130	0.5	0.74	45	13.7	1.83	5.6	4.74	0.61	0.08	0.20	1.4	
15-32	6.5	5.6	0	0.02	0.11	4	0.11	-	3	60	1.8	141	-	-	-	-	-	1.0	0.73	0.13	0.02	0.10	na	
32-60	6.9	6.3	0	0.05	0.33	16	0.52	-	3	353	4.0	714	-	-	-	-	-	13.2	10.1	1.89	0.18	0.99	1.4	
60-80	7.5	6.9	0	0.09	0.58	16	0.69	-	5	302	6.4	773	-	-	-	-	-	25.2	20.6	3.34	0.34	0.95	1.3	
80-90	7.6	7.0	0	0.07	0.45	18	0.64	-	3	375	6.1	967	-	-	-	-	-	31.9	26.3	3.94	0.51	1.13	1.6	
90-95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95-160	8.9	7.9	-	0.12	0.59	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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](#)

