HARD LOAM OVER POORLY STRUCTURED RED CLAY

General Description: Hard setting red brown sandy loam to clay loam overlying a reddish brown coarsely structured clay grading to a Class I carbonate layer

Landform: Lower slopes and valley flats

Substrate: Red to brown sandy clay to

clay alluvium (Pooraka Formation), calcified in its upper part with soft

carbonate

Vegetation: Grassland with occasional

blue gum and sheoak



Type Site: Site No.: CM022 1:50,000 mapsheet: 6630-2 (Apoinga)

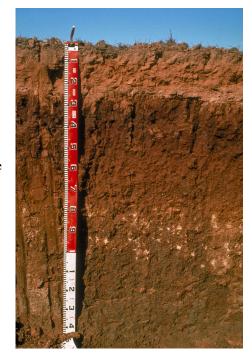
Hundred:StanleyEasting:298250Section:11Northing:6244250

Sampling date: 04/12/91 Annual rainfall: 510 mm average

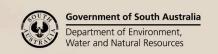
Flat between gently undulating rises with a 1% slope and a hard setting surface.

Soil Description:

Depth (cm)	Description
0-10	Reddish brown hard fine sandy loam with weak subangular blocky structure. Clear to:
10-20	Yellowish red massive clay loam. Abrupt to:
20-25	Reddish yellow massive clay loam. Sharp to:
25-50	Dark reddish brown heavy clay with strong coarse prismatic structure. Gradual to:
50-75	Red heavy clay with strong coarse polyhedral structure. Gradual to:
75-100	Brown highly calcareous light clay with strong polyhedral structure and fine calcareous segregations (Class I carbonate layer). Gradual to:
100-150	Brown and red mottled light clay with strong polyhedral structure.



Classification: Calcic, Mesonatric, Red Sodosol; medium, non-gravelly, loamy / clayey, deep





Summary of Properties

Drainage: The soil is moderately well to imperfectly drained; the sodic clay subsoil prevents

satisfactory water movement. The hard setting sealing surface also tends to pond

water. In wet years the soil may remain wet for several weeks.

Fertility: The subsoil has a high nutrient retention capacity, but the surface layers with lower

CEC values (due to lower clay content and acidification) have moderately low fertility unless organic matter levels are high. Organic carbon is low at this site (1.5% is

desirable). Phosphorus levels are high.

pH: Acidic at the surface, strongly alkaline with depth.

Rooting depth: 75 cm in sampling pit, with few roots below 50 cm.

Barriers to root growth:

Physical: Root densities are poor in the hard massive subsurface layer, and roots are largely

confined to the surfaces of the coarse aggregates in the sodic subsoil clay. Waterlogging in the surface layers limits root elongation in wet years.

Chemical: The only apparent chemical limitation is the high exchangeable sodium percent,

which is the cause of the poor structural condition of both the surface and subsoil. The

very high pH at depth probably induces deficiencies of some trace elements.

Waterholding capacity: Approximately 80 mm in rootzone, but not all is available due to low root densities in

most horizons.

Seedling emergence: Poor due to the hard setting, sealing surface and tendency for surface ponding of

water.

Workability: Poor due to the hard, dispersive surface soil which tends to shatter if worked too dry

and puddle if worked too wet.

Erosion Potential:

Water: Low, because there is no slope. However, this soil is highly erodible.

Wind: Low, but the soil will blow if excessively worked or pulverized by livestock.

Laboratory Data

Depth cm	pH H ₂ O	pH CaC1 ₂	CO ₃	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K		Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exc	ESP			
							mg/Kg	66			Cu	Fe	Mn	Zn	()/118	Ca	Mg	Na	K	
0-10	6.0	5.6	0	0.08	0.4	1.20	59	247	10	2.0	1.2	93.0	58.5	0.5	7.4	5.3	1.1	0.28	0.50	3.8
10-20	5.2	4.6	0	0.06	0.3	0.32	12	198	19	1.5	0.8	19.3	54.6	0.1	4.3	2.3	0.6	0.26	0.39	6.0
20-25	6.3	5.4	0	0.05	0.4	0.19	4	172	14	1.3	0.5	12.6	20.4	0.1	3.6	2.2	1.0	0.33	0.30	9.2
25-50	7.5	6.6	< 0.1	0.13	0.4	0.49	<4	455	15	8.6	2.0	13.8	8.2	0.1	24.1	7.4	11.5	4.36	1.31	18.1
50-75	9.1	8.5	0.4	0.50	1.4	0.24	<4	499	53	14.2	1.6	5.2	2.1	0.1	25.2	6.8	14.3	6.61	1.34	26.2
75-100	9.3	8.5	11.0	0.60	2.3	< 0.02	<4	424	99	13.9	1.0	5.0	1.8	0.1	21.0	5.2	10.1	5.43	0.97	25.9
100-150	9.2	8.6	0.8	0.66	3.1	0.14	<4	395	127	13.4	0.9	5.7	2.3	0.1	18.9	4.5	9.5	5.34	0.91	28.3

Note: CEC (cation exchange capacity) is 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.

Further information: <u>DEWNR Soil and Land Program</u>



