

SANDY CLAY LOAM OVER DISPERSIVE RED CLAY

General Description: *Hard setting red brown loamy surface soil overlying a dark reddish brown dispersive clayey subsoil, calcareous with depth*

Landform: Plains, flats and lower slopes.

Substrate: Pleistocene age clay (Hindmarsh Clay equivalent), mantled by soft carbonate.

Vegetation: Open savannah woodland or grassland.



Type Site: Site No.: CU013

1:50,000 sheet: 6531-1 (Laura)

Hundred: Booyoolie

Annual rainfall: 425 mm

Sampling date: 31/08/92

Landform: Lower slope of low rise, 1% slope

Surface: Hard setting with no stones

Soil Description:

Depth (cm)	Description
0-10	Reddish brown hard weakly granular sandy clay loam. Clear to:
10-30	Dark reddish brown heavy clay with polyhedral structure. Gradual to:
30-40	Dark red moderately calcareous heavy clay with coarse blocky structure. Gradual to:
40-60	Dark red highly calcareous medium heavy clay with 10% soft carbonate pockets. Gradual to:
60-100	Red highly calcareous medium clay with more than 20% soft carbonate in pockets (Class I carbonate layer).



Classification: Hypercalcic, Subnatric, Red Sodosol; medium, non-gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage	Imperfect. Soil may remain wet for several weeks.
Fertility	High natural fertility as indicated by the high CEC values. There are no surface soil deficiencies.
pH	Slightly acidic to neutral in surface, grading to strongly alkaline in subsoil.
Rooting depth	80 cm at type site.
Barriers to root growth	
Physical:	Very firm consistence of the clay subsoil, caused by high exchangeable sodium (ESP more than 25% below 40 cm).
Chemical:	Toxic levels of boron occur below 60 cm (15 mg/kg is critical concentration).
Water holding capacity	110 mm in root zone, but not all is available due to low root density below 30 cm.
Seedling emergence	Patchy due to tendency of surface to set hard and seal over.
Workability	Fair due to poorly structured surface which tends to shatter when wet and puddle when dry. Moisture range for effective working is low.
Erosion Potential	
Water:	Low, although on sloping ground these soils are prone to erosion.
Wind:	Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	6.6	6.2	-	0.10	0.41	1.5	58	751	-	2.2	1.4	33	37	0.7	14.0	10.6	3.8	0.60	1.5	4.3
0-10	7.0	6.7	-	0.11	0.46	1.4	41	1271	-	2.3	1.5	19	30	0.7	16.3	11.0	3.7	0.57	1.5	3.5
10-30	7.8	7.0	-	0.11	0.36	0.8	6	835	-	6.2	1.7	10	9.7	0.3	34.7	19.4	10.1	3.3	2.0	9.5
30-40	8.9	8.2	7.2	0.31	0.60	0.6	<5	616	-	9.3	1.7	7.8	3.5	0.2	32.8	15.2	11.8	6.2	1.9	19
40-60	9.1	8.3	16.7	0.38	0.56	0.4	<5	485	-	14.8	1.3	7.7	2.5	0.2	29.3	10.7	12.0	7.5	1.7	26
60-100	9.3	8.3	24.7	0.54	0.93	0.2	<5	475	-	29.4	0.7	6.6	1.2	<0.1	21.9	6.3	9.2	7.7	1.2	35

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

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.