

HARD SANDY LOAM OVER DISPERSIVE RED CLAY

General Description: *Hard setting sandy loam over a coarsely structured dispersive red clay, calcareous with depth, grading to deeply weathered rock*

Landform: Lower slopes and pediments of rises and low hills

Substrate: Highly weathered siltstones and fine sandstones, variably metamorphosed

Vegetation:



Type Site: Site No.: CL021

1:50,000 sheet: 6729-4 (Eudunda)

Hundred: Neales

Annual rainfall: 350 mm

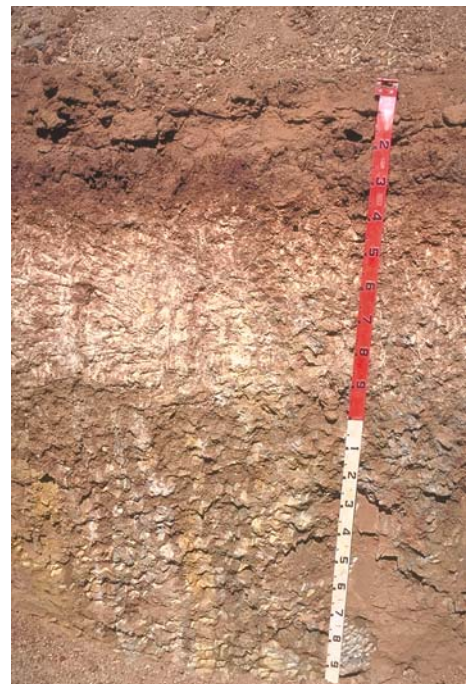
Sampling date: 17/03/95

Landform: Lower slope of undulating rise, 4% slope

Surface: Hard setting with no stones

Soil Description:

Depth (cm)	Description
0-20	Reddish brown hard massive sandy loam. Abrupt to:
20-35	Dark reddish brown hard medium clay with strong very coarse prismatic structure. Clear to:
35-70	Yellowish red highly calcareous light clay with strong coarse polyhedral structure. Clear to:
70-110	Reddish brown highly calcareous clay loam with 10-20% fragments of micaceous siltstone. Clear to:
110-150	Dark brown and red slightly calcareous medium clay with 20-50% fragments of micaceous siltstone. Sharp to:
150-180	Weathering micaceous siltstone with dark brown clay in fissures.



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

Summary of Properties

Drainage	Moderately well drained. Water will perch on the dispersive clay subsoil for a week or so after heavy or prolonged rainfall.
Fertility	Natural fertility is moderately high as indicated by the exchangeable cation data, although nutrient retention in the surface soil is restricted by relatively low clay content. Organic carbon levels are average for this rainfall zone and texture type. All measured nutrient elements are adequately supplied.
pH	Slightly alkaline at the surface, strongly alkaline with depth, neutral from 150 cm.
Rooting depth	70 cm in pit but few roots below 35 cm.
Barriers to root growth	
Physical:	Hard consistence in both surface and subsoil prevents optimum root growth. In coarsely structured dispersive clays, roots tend to proliferate in the spaces between the aggregates, with little growth inside them.
Chemical:	High to very high sodicity (ESP greater than 25 from 35 cm), highly alkalinity (up to pH 9.5) in the rootzone, moderately high boron from 35 cm.
Water holding capacity	Moderately low (approximately 50 mm) in the rootzone.
Seedling emergence:	Hard setting, compact and sodic sandy loam surface soil impedes even emergence and should respond well to gypsum application.
Workability:	Fair to good, depending on organic matter content. These soils may shatter if worked too dry, and puddle if worked too wet.
Erosion Potential	
Water:	Moderate due to high soil erodibility and gentle slope..
Wind:	Moderately 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 -S 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	7.9	7.2	0	0.1	1.1	1.1	28	418	11	3.7	-	-	-	-	13.5	7.65	2.78	0.98	1.11	7.2
0-20	8.0	7.2	0	0.1	0.6	0.6	23	277	7	1.6	-	-	-	-	9.3	5.05	1.88	0.74	0.58	7.9
20-35	9.1	8.3	0.6	0.5	1.7	0.9	5	411	18	14.5	-	-	-	-	35.0	12.61	11.93	7.14	1.83	20.4
35-70	9.5	8.6	22.5	1.1	6.0	0.5	10	304	118	18.0	-	-	-	-	21.4	5.27	9.02	7.42	1.10	34.6
70-110	9.6	8.7	15.4	0.6	9.4	0.0	12	198	218	9.4	-	-	-	-	19.4	3.62	8.57	8.45	0.50	43.5
110-150	9.2	8.6	0	1.7	10.3	0.1	13	190	185	12.8	-	-	-	-	20.4	2.90	8.44	9.20	0.39	45.0
150-180	6.8	6.4	0	1.2	10.1	0.1	8	184	179	2.9	-	-	-	-	24.5	3.94	9.57	11.00	0.44	44.8

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.