SANDY LOAM OVER DISPERSIVE RED CLAY

General Description: *Hard setting reddish brown sandy loam to clay loam overlying a strongly structured dark reddish brown clayey subsoil with soft calcareous segregations at depth, forming in fine grained alluvium*

Landform: Lower slopes and valley flats

Substrate: Fine grained alluvium, mantled by soft secondary carbonates, of the Pooraka Formation

Vegetation: Open savannah with scattered blue gum, red gum, sheoak and irongrass

Type Site:

Site No.:	CU031	1:50,000 mapsheet:	6632-3 (Pekina)
Hundred:	Pekina	Easting:	271750
Section:	151	Northing:	6370650
Sampling date:	03/11/1993	Annual rainfall:	365 mm average

Lower slope (3%), hard setting surface, 2-10% surface quartzite.

Soil Description:

Depth (cm)	Description
0-10	Dark reddish brown sandy loam with weak granular structure and 2-10% quartzite gravel. Clear to:
10-25	Red massive light sandy clay loam with 2-10% quartzite gravel. Clear to:
25-40	Red massive coarse light sandy clay loam with 20-50% quartzite and shale gravel. Abrupt to:
40-70	Dark reddish brown medium heavy clay with strong coarse prismatic structure breaking to angular blocky, and 2-10% quartzite gravel. Clear to:
70-130	Red medium clay with coarse angular blocky structure, 2-10% quartzite gravel and minor soft carbonate. Gradual to:
130-170	Red fine sandy medium clay with weak blocky structure and 2-10% quartzite gravel.

Classification: Hypocalcic, Mesonatric, Red Sodosol; thick, slightly gravelly, loamy / clayey, deep

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Summary of Properties

Drainage:	The soil is moderately well drained, although the dispersive, sodic clay subsoil holds water up after prolonged rainfall.
Fertility:	The surface soil has a low nutrient retention capacity due to low contents of organic matter and clay. The subsoil clay has a high capacity. Phosphorus and potassium are well supplied, but low organic matter indicates low nitrogen reserves.
pH:	Acidic at the surface, alkaline with depth.
Rooting depth:	130 cm in pit, but few roots below 70 cm.
Barriers to root growth:	
Physical:	The hard sodic clay subsoil limits root proliferation to some extent, as will the compact surface layers.
Chemical:	Low surface nutrient retention capacity is the only apparent limitation. There are no restrictions due to salinity or boron toxicity.
Waterholding capacity:	Approximately 120 mm in rootzone (high), but not all is readily available due to low root densities.
Seedling emergence:	Good, provided surface structure is improved with higher organic matter levels.
Workability:	Good to fair. Organic matter levels and / or gypsum applications are needed to maintain adequate workability.
Erosion Potential:	
Water:	Moderately low.
Wind:	Low.

Laboratory Data

Depth cm	pH H_2O	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	5.5	4.9	0	0.03	0.20	0.5	46	303	-	1.3	1.0	14	42	3.1	4.3	2.89	1.01	0.21	0.65	4.9
0-10	5.5	5.0	0	0.03	0.14	0.6	54	320	-	1.1	0.9	14	37	0.7	5.4	3.23	0.93	0.17	0.66	3.1
10-25	5.9	5.1	0	0.01	0.07	0.3	14	216	-	1.3	1.1	8	20	0.4	5.0	3.24	1.14	0.20	0.44	4.0
25-40	7.1	6.1	0	0.02	0.19	0.2	4	189	-	1.0	0.9	5	15	0.9	4.2	2.69	2.05	0.54	0.33	12.9
40-70	8.2	7.1	0	0.09	0.31	0.4	<4	348	-	6.4	1.9	5	4.2	0.2	27.6	9.23	12.84	4.46	1.50	16.2
70-130	8.9	8.3	1.7	0.27	0.98	0.3	4	289	-	9.5	1.0	3	3.1	0.1	18.6	6.55	9.80	3.83	1.15	20.6
130-170	8.8	7.9	0	0.14	0.87	0.1	9	151	-	5.1	0.7	2	2.7	0.2	13.9	4.61	6.99	2.65	0.66	19.1

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.

Further information: DEWNR Soil and Land Program