

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 sheet: 6632-3 (Pekina)

Hundred: Pekina

Annual rainfall: 375 mm

Sampling date: 03/11/93

Landform: Lower slope of 3%

Surface: Hard setting with 2-10% surface quartzite stone

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

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.

Water holding capacity Approximately 120 mm in root zone (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 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	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.