

SANDY LOAM OVER DISPERSIVE RED CLAY ON ROCK

General Description: *Hard setting loamy surface with a bleached A2 horizon overlying a reddish brown tough clayey subsoil with minor soft carbonate at depth, grading to weathering fine grained rock*

Landform: Slopes of rises and low hills in the southern Flinders Ranges

Substrate: Shales or siltstones of the Tarcowie and Tapley Hill Formations

Vegetation:



Type Site: Site No.: CU029

1:50,000 sheet: 6632-3 (Pekina)

Hundred: Pekina

Annual rainfall: 400 mm

Sampling date: 03/11/93

Landform: Lower slope of a pediment, 3% slope

Surface: Hard setting and sheet eroded with no stones

Soil Description:

Depth (cm)	Description
0-10	Yellowish red hard fine sandy loam with weak coarse prismatic structure. Clear to:
10-20	Light reddish brown hard fine sandy clay loam with weak coarse prismatic structure. Abrupt to:
20-35	Dark reddish brown very hard medium clay with strong coarse angular blocky structure. Gradual to:
35-55	Dark red very hard medium clay with strong coarse angular blocky structure. Clear to:
55-80	Red moderately calcareous light medium clay with weak subangular blocky structure and minor soft carbonate segregations. Clear to:
80-150	Soft weathering shale.



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

Summary of Properties

Drainage: Dispersive clay subsoil lets water through very slowly so upper part of the profile may remain wet for a week or more after heavy rain. The sealing surface however sheds significant water.

Chemical fertility: The soil has a low capacity to hold nutrients in the surface due to its low clay and organic matter content. The clayey subsoil has a high storage capacity. Phosphorus is very low, calcium is deficient and the low organic carbon indicates low nitrogen reserves.

pH: Neutral at the surface, alkaline with depth.

Root depth: Very few roots below 35 cm.

Barriers to root growth

Physical: Very high soil strength due to sodic clay is a severe barrier to good root development.

Chemical: High sodicity is toxic to some crops.

Water holding capacity: Approximately 60 mm in root zone (moderate). Profile will hold more, but most is not available to roots.

Seedling emergence: Fair to poor due to hard setting, sealing surface.

Workability: Fair to poor, due to poorly structured surface; shatters if too dry, puddles if too wet.

Erosion potential

Water: Moderate, due to length of slope, poorly structured surface and slowly permeable profile.

Wind: Moderately low; surface is easily powdered by excessive cultivation or livestock trampling.

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	6.8	6.3	0	0.06	0.47	0.7	3	275	-	1.8	0.7	9	13.2	0.4	5.3	3.48	1.48	0.69	0.53	13.0
0-10	6.4	6.0	0	0.06	0.48	0.8	4	281	-	1.6	0.7	10	13.0	0.5	4.9	2.97	1.12	0.66	0.53	13.5
10-20	6.8	6.0	0	0.05	0.40	0.4	<4	201	-	1.9	0.9	4	5.6	0.3	5.8	2.99	1.93	0.93	0.39	15.5
20-35	7.9	7.1	0	0.14	0.79	0.5	<4	289	-	7.8	1.2	5	5.6	0.3	15.3	5.34	6.12	3.64	0.91	23.8
35-55	8.8	8.2	0.1	0.33	1.57	0.3	<4	319	-	9.9	0.7	3	2.8	0.2	15.8	5.03	6.86	4.50	1.00	28.5
55-80	9.0	8.5	1.2	0.54	2.98	0.1	<4	253	-	9.6	0.5	2	1.0	0.3	14.9	4.72	6.92	4.57	0.93	30.7
80-150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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.