SANDY LOAM OVER DISPERSIVE RED CLAY ON ROCK

General Description: *Hard quartzite gravelly sandy loam abruptly overlying a coarsely structured and dispersive red clay, calcareous with depth, grading to weathering basement rock*

Landform: Undulating to rolling rises and low hills.

Substrate: Basement quartzite, mantled by secondary carbonate.

Vegetation:

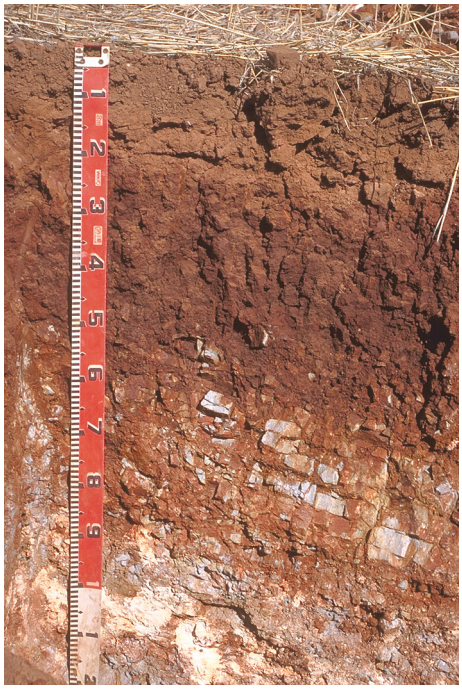
Type Site:

Site No.:	CU902	1:50,000 mapsheet:	6631-2 (Hallett)
Hundred:	Hallett	Easting:	301500
Section:	9	Northing:	6298550
Sampling date:	21/03/2000	Annual rainfall:	440 mm average

Upper slope of a gently undulating rise, 3% slope. Hard setting surface with 10-20% quartzite stones (20-60 mm).

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown hard massive sandy loam with 2-10% quartzite gravel (6-20 mm). Clear to:
10-19	Yellowish red very hard massive sandy loam with 2-10% quartzite gravel (6-20 mm). Clear to:
19-50	Dusky red very hard medium heavy clay with strong coarse prismatic structure and 2-10% quartzite gravel (6-20 mm). Gradual to:
50-85	Dark red hard massive highly calcareous medium clay with more than 50% quartzite gravel (6-60 mm). Gradual to:
85-120	Reddish yellow hard massive highly calcareous light clay with 20-50% quartzite gravel (20-60 mm) and 20-50% fine carbonate segregations. Gradual to:
120-140	Weathering quartzite.



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

Summary of Properties

Drainage: Moderately well drained. Water perches on the dispersive clayey subsoil for up to a week following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate. Nutrient retention capacity is sub-optimal due to relatively low clay content, acidification and marginally low organic matter levels of surface soil. Sulphur concentrations are also low in the surface.

pH: Acidic at the surface, alkaline with depth.

Rooting depth: 85 cm in pit, but few roots below 50 cm.

Barriers to root growth:

Physical: The hard coarsely structured clay does not prevent root growth, but it causes reduced density as roots are forced around aggregates, with few penetrating inside.

Chemical: Deep subsoil analyses unavailable, but likely causes of root restriction are sodicity and highly calcareous clay.

Waterholding capacity: Approximately 65 mm in the rootzone.

Seedling emergence: Fair. Hard setting, sealing surface affects emergence percentage.

Workability: Fair. Surface tends to shatter if worked too dry, and puddle if worked too wet.

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)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP	Ext Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
0-10	5.7	4.9	-	0.06	-	1.07	33	409	3.8	0.8	-	-	-	-	6.4	4.23	1.12	0.16	0.85	2.5	3.32
10-19	6.3	5.5	-	0.04	-	-	-	-	-	0.7	-	-	-	-	6.2	3.88	1.30	0.35	0.69	5.6	-
19-50	7.8	6.9	-	0.14	-	-	-	-	-	2.2	-	-	-	-	28.6	13.2	10.4	3.58	1.52	12.5	-
50-85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85-120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Sum of cations is an estimate of CEC (cation exchange capacity), 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 estimated CEC.

Further information: DEWNR Soil and Land Program