HARD SANDY LOAM OVER DISPERSIVE RED CLAY

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

Landform: Undulating rises.

Substrate: Deeply weathered siltstone.

Vegetation:

Type Site:

Site No.:	CU008	1:50,000 mapsheet:	6533-4 (Willochra)
Hundred:	Yarrah	Easting:	220900
Section:	104	Northing:	6428350
Sampling date:	3/09/1991	Annual rainfall:	335 mm average

Upper slope of rise, 9%. Hard setting surface with 10-20% quartzite (60-200 mm).

Soil Description:

Depth (cm)	*Description*
0-15	Dark reddish brown hard fine sandy loam with platy structure. Abrupt to:
15-35	Dark reddish brown firm heavy clay with strong polyhedral structure. Clear to:
35-70	Brown hard massive slightly calcareous heavy clay with minor fine carbonate segregations. Gradual to:
70-100	Yellowish brown hard massive moderately calcareous medium clay with more than 50% siltstone fragments and 2-10% gypsum veins. Diffuse to:
100-150	Soft weathering siltstone. Diffuse to:
150-200	Siltstone.

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

Summary of Properties

Drainage: Moderately well drained. Water perches on top of the clayey subsoil for a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. Phosphorus is needed regularly and is deficient at the sampling site. Zinc levels are also low. Organic carbon concentrations are sub-optimal.

pH: Slightly alkaline at the surface, alkaline with depth, and strongly acidic in the substrate.

Rooting depth: Not recorded. Estimate 35 cm in pit, with most growth occurring in the upper 15 cm.

Barriers to root growth:

Physical: The sodic subsoil restricts root growth.

Chemical: High sodicity, boron and salinity from 35 cm prevent deeper root growth.

Waterholding capacity: Approximately 35 mm in the potential rootzone for cereals. Deeper rooted chenopod shrubs will have access to substantially more water.

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

Workability: Fair. Soil shatters if worked to dry and puddles if worked too wet.

Erosion Potential:

Water: Moderate.

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	
0-15	7.4	-	2.0	0.11	-	0.93	9	250	-	1.3	0.8	0.2	17.5	0.2	6.0	5.3	2.2	0.5	0.6	8
15-35	8.8	-	1.6	0.40	-	0.79	<4	190	-	6.7	0.9	0.2	6.3	0.1	18.5	15.7	7.1	2.7	0.7	15
35-70	9.0	-	11.6	1.82	-	0.42	<4	140	-	20.0	0.6	0.1	1.4	0.1	20.1	46.4	9.8	5.5	0.6	27
70-100	8.3	-	12.5	4.36	-	0.24	<4	120	-	8.7	0.3	0.1	0.4	0.1	13.1	74.2	6.0	2.7	0.4	20
100-150	7.7	7.6	0.1	4.0	11.9	0.12	<4	157	-	16.1	0.4	1.4	1.2	0.1	20.2	9.9	7.0	7.7	0.3	38
150-200	4.6	4.5	0	3.8	10.8	0.07	<4	98	-	3.3	0.4	9.5	0.4	0.2	10.9	9.1	3.7	3.8	0.2	29

Note: 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.
* High exchangeable calcium values (relative to CEC) are caused by un-removed gypsum in soil sample.

Further information: DEWNR Soil and Land Program