SANDY LOAM OVER POORLY STRUCTURED CLAY

General Description: *Medium thickness firm sandy loam, usually with a thin paler coloured subsurface layer, sharply overlying a coarsely structured red clay, calcareous with depth*

Landform: Gently undulating rises.

Substrate: Massive sandy clays, clayey sands and sandstones of Tertiary age.

Vegetation:

Type Site:

Site No.:	MO059	1:50,000 mapsheet:	6727-4 (Monarto)
Hundred:	Monarto	Easting:	330210
Section:	259	Northing:	6111970
Sampling date:	09/03/2006	Annual rainfall:	395 mm average

Lower slope of gentle rise, 1% slope. Firm surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-12	Dark brown friable coarse sandy loam with weak granular structure. Abrupt to:
12-18	Dark reddish brown very hard massive gritty coarse sandy loam. Abrupt to:
18-48	Red extremely hard medium heavy clay with weak coarse angular blocky structure Clear to:
48-110	Red, yellowish red and strong brown hard massive very highly calcareous coarse sandy medium clay with more than 50% fine carbonate segregations. Diffuse to:
110-160	Yellowish brown, olive and greyish brown hard massive moderately calcareous coarse sandy light clay with 10-20% fine carbonate segregations.

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

Summary of Properties

Drainage: Moderately well drained. The poorly structured subsoil clay perches water causing saturation of the topsoil and upper subsoil for up to a week following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low, as indicated by the exchangeable cation data. The relatively low clay content surface has limited capacity to retain and supply nutrients. Copper levels are low according to the test results.

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

Rooting depth: 110 cm in sampling pit, but few roots below 48 cm.

Barriers to root growth:

Physical: The coarsely structured dispersive subsoil affects root distribution patterns, causing most roots to follow the surfaces of the aggregates, rather than penetrate. As a result, water use efficiency is sub-optimal.

Chemical: High pH and sodicity below 48 cm restrict deeper root growth.

Waterholding capacity: Approximately 70 mm in potential rootzone of annual plants.

Seedling emergence: The surface soil is prone to sealing which will reduce emergence percentage.

Workability: Surface soil should be workable over a range of moisture conditions provided organic matter levels are maintained at above 1% organic carbon.

Erosion Potential:

Water: Moderately low due to gentle slope, although soil is inherently highly erodible.

Wind: Moderately low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC 1:5 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 (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-12	6.4	5.4	0	0.09	1.17	1.04	41	328	6.2	0.7	0.75	82	38.5	5.03	6.9	4.69	1.22	0.20	0.83	2.9
12-18	6.8	6.3	0	0.05	0.33	0.66	25	217	3.5	0.7	0.99	72	54.6	6.13	6.3	4.03	1.52	0.19	0.54	3.0
18-48	9.0	8.1	0	0.21	0.68	0.32	2	293	4.5	6.1	1.72	55	50.0	0.68	26.9	11.8	11.9	2.43	0.77	9.0
48-110	9.6	8.4	20	0.45	2.69	0.22	0	177	29	11.0	0.72	21	1.42	0.58	22.6	8.93	9.42	3.77	0.46	16.7
110-160	9.8	8.6	9	0.53	3.21	0.08	0	114	34	4.9	0.39	18	0.40	0.77	20.5	6.79	8.32	5.12	0.30	24.9

Note: Sum of cations, in a neutral to alkaline soil, approximates the 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 estimated exchangeable sodium value by the sum of cations.

Further information: DEWNR Soil and Land Program