

GRADATIONAL CALCAREOUS LOAM

General Description: *Brown calcareous loam, more clayey and calcareous with depth over very highly calcareous clay from about 30 cm, grading to weathering basement rock, variably capped by Tertiary deposits*

Landform: Gently undulating rises.

Substrate: Veneer of Tertiary age sandy clay overlying basement phyllite of the Kanmantoo Group.

Vegetation:



Type Site: Site No.: MO060

1:50,000 sheet:	6727-4 (Monarto)	Hundred:	Monarto
Annual rainfall:	375 mm	Sampling date:	09/03/06
Landform:	Lower slope of gentle rise, 1% slope		
Surface:	Firm with 2-10% calcrete and sandstone fragments (20-60 mm)		

Soil Description:

Depth (cm)	Description
0-10	Dark brown firm highly calcareous loam with moderate granular structure. Clear to:
10-25	Dark reddish brown hard highly calcareous clay loam with moderate fine polyhedral structure and 2-10% carbonate nodules (2-6 mm). Clear to:
25-45	Dark brown hard very highly calcareous light clay with weak polyhedral structure, and 10-20% fine and 2-10% nodular carbonate segregations. Clear to:
45-75	Very pale brown firm massive very highly calcareous sandy light medium clay with more than 50% fine carbonate segregations and 20% soft sandstone fragments. Gradual to:
75-120	Brownish yellow and olive grey firm massive coarse sandy medium clay with 20-50% fine carbonate segregations and 20-50% ironstone and sandstone fragments. Gradual to:
120-160	Weathering phyllite with pockets of sandy light clay (as above), 2-10% ironstone gravel and 2-10% fine carbonate segregations.



Classification: Epihypersodic, Regolithic, Hypercalcic Calcarosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Well drained. The soil is unlikely to remain wet for more than a day or two following heavy or prolonged rainfall.

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data. The relatively high clay content and high level of calcium saturation indicate that nutrient reserves and supply are satisfactory. However, the calcareous surface soil may reduce the availability of phosphorus, manganese and zinc. Levels of all tested nutrient elements are adequate.

pH: Alkaline at the surface, strongly alkaline with depth.

Rooting depth: Good root growth to 75 cm in sampling pit.

Barriers to root growth:

Physical: There are no apparent physical barriers, although the Tertiary materials from 75 cm are commonly massive and hard.

Chemical: High pH and sodicity and moderate salinity below 45 cm restrict deeper root growth.

Water holding capacity: Approximately 100 mm in potential rootzone of annual plants.

Seedling emergence: Satisfactory.

Workability: Calcareous loams are generally well structured and easily worked over a range of moisture conditions.

Erosion Potential

Water: Low.

Wind: Moderately low - calcareous loams become powdery if excessively cultivated or over-grazed..

Laboratory Data

Depth cm	pH H ₂ O	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	
0-10	8.4	7.8	8	0.27	2.16	2.19	63	584	7.8	1.6	1.56	22	17.8	5.79	22.8	18.6	2.21	0.47	1.48	2.1
10-25	9.0	8.1	2	0.17	0.82	0.74	3	321	2.7	1.6	1.81	25	15.8	1.22	24.4	16.5	5.75	1.28	0.86	5.3
25-45	9.2	8.2	23	0.37	2.81	0.74	4	171	23	1.8	1.05	20	3.05	0.82	24.2	15.6	5.33	2.76	0.46	11.4
45-75	9.4	8.3	24	1.04	10.0	0.43	2	87	107	5.1	0.87	19	1.85	0.73	23.9	10.6	6.54	6.52	0.27	27.3
75-120	9.8	8.5	8	0.99	8.52	0.13	0	122	99	3.9	0.70	21	0.5	0.68	21.9	7.25	7.40	6.95	0.33	31.7
120-165	9.6	8.5	1	0.90	8.86	0.1	0	193	92	5.4	1.04	99	12.2	0.92	18.2	3.38	7.53	6.82	0.48	37.5

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.