SANDY LOAM OVER RED CLAY ON CALCIFIED ROCK

General Description: *Hard sandy loam over a red strongly structured clay, calcareous with depth, grading to basement rock within 100 cm.*

Landform: Undulating rises and low hills.

Substrate: Kanmantoo Group schist mantled by fine carbonate.

Vegetation:

Type Site: Site No.: MO026

1:50,000 sheet:	6727-4 (Monarto)	Hundred:	Monarto
Annual rainfall:	375 mm	Sampling date:	1976
Landform:	Upper slope of undulating low hills, 4% slope		
Surface:	Hard setting with minor stones		

Soil Description:

Depth (cm)	*Description*
0-9	Dark reddish brown soft sandy loam. Sharp to:
9-21	Dark reddish brown hard medium clay with prismatic structure. Clear to:
21-31	Dark reddish brown and light brown hard calcareous light clay with weak angular blocky structure and 2-10% fire carbonate segregations. Gradual to:
31-41	Very pale brown very highly calcareous massive calcareous silty clay loam with pockets of hard dark reddish brown clay. Clear to:
41-60	Mainly weathering schist of sandy loam texture, with 10-20% pockets of fine carbonate. Gradual to:
60-80	Weathering schist with 2-10% pockets of fine carbonate.

Classification: Calcic, Subnatric, Red Sodosol; thin, slightly gravelly, loamy / clayey, moderate

Summary of Properties

Drainage: Moderately well drained. The soil rarely remains wet for more than a week following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. Surface nutrient retention is adequate although not ideal due to relatively low clay content, but there are ample subsoil reserves of macro nutrients. The only significant deficiencies are likely to be phosphorus and nitrogen.

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

Rooting depth: Not recorded. Estimate 30 cm in pit.

Barriers to root growth:

Physical: Hard basement rock is the major limitation – depth is critical.

Chemical: High pH in the subsoil limits root zone depth.

Water holding capacity: Approximately 40 mm in the root zone.

Seedling emergence: Fair due to tendency of surface soil to seal over and set hard.

Workability: Fair. Surface is prone to puddling when wet and shattering when dry.

Erosion Potential

Water: Moderate to moderately high.

Wind: Low.

Laboratory Data

Depth cm	Coarse sand %	Fine sand %	Silt %	Clay %	pH H_2O	CO_3 %	EC 1:5 dS/m	Cl mg/kg	CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
										Ca	Mg	Na	K	
0-9	25	59	3	11	7.5	0	0.09	<50	9	2.8	1.2	0.27	0.81	3.0
9-21	13	22	5	55	8.9	0.4	0.31	124	35	9.9	11.7	3.9	2.5	11.1
21-31	13	23	3	42	9.6	14	0.34	236	27	12.0	9.9	3.6	2.0	13.3
41-60	26	44	6	14	9.8	11	0.46	480	12	5.1	5.1	2.7	0.80	22.5

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.