

GRADATIONAL LOAMY SAND

General Description: *Sand grading to sandy loam, becoming calcareous and more clayey with depth overlying clayey alluvium*

Landform: Very gently sloping outwash fans

Substrate: Alluvial clay with stones and mantled by soft carbonate

Vegetation:



Type Site: Site No.: CU058
 1:50,000 sheet: 6532-3 (Melrose) Hundred: Baroota
 Annual rainfall: 315 mm Sampling date: 07/05/96
 Landform: Flat on gently inclined fan, 0.5% slope
 Surface: Loose with no stones

Soil Description:

Depth (cm)	Description
0-8	Red brown loose loamy sand. Abrupt to:
8-25	Red brown hard massive light sandy loam (plough pan). Gradual to:
25-40	Red brown firm massive sandy loam. Clear to:
40-60	Yellowish red highly calcareous light sandy clay loam with weak coarse prismatic structure and 10-20% quartzite and sandstone gravel. Clear to:
60-80	Yellowish red very highly calcareous weakly structured sandy clay loam with 10-20% fine carbonate and 10-20% gravel. Gradual to:
80-120	Yellowish red very highly calcareous weakly structured sandy light clay with 2-10% gravel and 10-20% fine carbonate. Diffuse to:
120-170	Yellowish red highly calcareous medium clay with weak polyhedral structure and 2-10% fine carbonate.



Classification: Sodic, Calcic, Red Kandosol; medium, non-gravelly, sandy / clayey, deep

Summary of Properties

Drainage	Rapidly drained. The soil is rarely saturated for more than a few hours.
Fertility	Natural fertility is moderately low due to the low clay content of the surface. Phosphorus, potassium and other major nutrients are adequate, but surface nutrient retention capacity can only be improved by maximizing organic matter levels. Levels of 0.6% to 0.8% are the most that can be expected on light soils in this rainfall.
pH	Neutral at the surface, alkaline with depth.
Rooting depth	Few roots below 120 cm in pit.
Barriers to root growth	
Physical:	The subsurface plough pan is the only physical restriction on root growth.
Chemical:	There are no chemical barriers - salt, boron, pH and exchangeable sodium are all within acceptable limits in the upper 120 cm (although sodium and pH are very high below this depth).
Water holding capacity	Approximately 150 mm in root zone (very high), although rainfall is generally too low to achieve this storage.
Seedling emergence:	Good
Workability:	Good
Erosion Potential	
Water:	Low
Wind:	Moderate, due to the sandy surface texture.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 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 (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.1	6.8	0	0.11	0.93	0.6	23	434	9	1.0	0.50	8	16.8	1.17	6.7	4.97	1.26	0.11	1.29	1.6
0-8	7.1	6.9	0	0.12	1.01	0.6	26	403	7	0.7	-	-	-	-	6.2	4.66	1.15	0.08	1.06	1.3
8-25	7.2	6.7	0	0.06	0.51	0.3	5	372	4	0.9	-	-	-	-	8.9	6.02	1.84	0.16	1.10	1.8
25-40	8.3	7.8	0.3	0.09	0.38	0.2	<4	160	3	1.0	-	-	-	-	8.4	6.51	1.30	0.12	0.42	1.4
40-60	8.6	8.0	1.3	0.08	0.39	0.1	<4	103	5	1.2	-	-	-	-	8.1	6.95	1.52	0.14	0.39	1.7
60-80	8.7	8.0	7.3	0.12	0.73	0.1	5	122	8	1.5	-	-	-	-	9.1	6.78	2.98	0.57	0.55	6.3
80-120	8.9	8.1	11.2	0.14	0.76	0.1	5	152	9	2.0	-	-	-	-	9.1	5.03	3.98	0.62	0.42	6.8
120-170	9.6	8.3	7.6	0.34	1.09	0.1	4	230	10	8.5	-	-	-	-	10.2	3.03	4.49	2.88	0.56	28

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

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.