

CALCAREOUS LOAM OVER ROCK (scalded and non scalded)

General Description: *Highly calcareous loam becoming more clayey and calcareous with depth overlying soft basement rock within a metre*

Landform: Low rises between steeper rocky hills and outwash plains

Substrate: Highly weathered fine grained basement rock (Tapley Hill siltstone)

Vegetation: Bluebush shrubland



Type Site: Site No.: CU046

1:50,000 sheet: 6532-1 (Willowie) Hundred: Pinda
Annual rainfall: 280 mm Sampling date: 02/11/94
Landform: Lower slope of a gently undulating rise, 3% slope
Surface: Firm, sporadically scalded, with minor calcrete and siltstone fragments
CU046A is not scalded, CU046B is scalded

Summary of Properties

Drainage Well drained. The soil is never likely to remain wet for more than a day or so after rain.

Fertility Natural fertility is moderate as indicated by the exchangeable cation data. Much of the inherent nutrient retention capacity is attributable to surface organic matter. High carbonate content reduces nutrient availability in subsurface layers.

pH Alkaline at the surface, strongly alkaline with depth.

Rooting depth Good root growth to 90 cm in the natural soil. In scalded soil, the only roots are from a dead bluebush - there are few of these below 45 cm.

Barriers to root growth

Physical: Basement rock - depth is variable in these soils.

Chemical: In the natural soil, high pH, high sodicity and moderate salinity from 22 cm affect root growth. In the scalded soil, salinity is very high at the surface - this is the main apparent difference between the scalded and non scalded soil.

Water holding capacity Approximately 100 mm in root zone of natural soil.

Seedling emergence Good in natural soil. Very poor in scalded soil due to high surface salinity.

Erosion Potential

Water: Moderate due to the slope and high erodibility of the calcareous and sodic soil.

Wind: Moderate, due to the tendency of these soils to pulverize when overgrazed.

Soil Description: CU046A (non scalded site)

Depth (cm)	Description
0-10	Reddish brown very highly calcareous soft loam with moderate granular structure. Clear to:
10-22	Reddish brown very highly calcareous firm clay loam with moderate polyhedral structure and 2-10% carbonate nodules. Clear to:
22-40	Brown firm very highly calcareous weakly structured clay loam with 20-50% soft and 2-10% nodular carbonate. Gradual to:
40-60	Brown firm very highly calcareous weakly structured clay loam with 20-50% soft and 2-10% nodular carbonate, and 2-10% siltstone fragments. Gradual to:
60-90	Brown soft massive highly calcareous loam with more than 50% soft weathering siltstone fragments. Gradual to:
90-110	Soft weathering siltstone with soft carbonate in fissures.



Classification: Hypervescent, Paralithic, Hypercalcic Calcarosol; medium, slightly gravelly, loamy / clay loamy, moderate.

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	
0-10	8.7	8.1	8.6	0.26	-	1.3	-	-	87	2.9	-	-	-	-	12.3	12.29	2.98	1.24	0.87	10.1
10-22	8.8	8.1	9.1	0.55	-	1.0	-	-	80	4.7	-	-	-	-	14.5	11.36	4.70	2.16	1.05	14.9
22-40	8.7	8.4	45.8	2.65	-	0.5	-	-	359	10.3	-	-	-	-	8.7	4.96	4.12	3.61	0.50	41.5
40-60	9.9	8.5	39.8	0.56	-	0.2	-	-	51	6.9	-	-	-	-	5.0	2.15	2.36	2.95	0.28	59.0
60-90	9.9	8.8	27.6	0.26	-	0.2	-	-	29	2.8	-	-	-	-	2.6	1.41	1.13	1.30	0.13	na
90-110	9.2	8.6	25.9	0.41	-	0.2	-	-	41	1.4	-	-	-	-	1.2	1.36	0.62	0.44	0.08	na

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.

Soil Description: CU046B (scalded site)

Depth (cm)	Description
0-11	Reddish brown soft highly calcareous weakly structured loam. Abrupt to:
11-25	Reddish brown soft highly calcareous light clay with moderate prismatic structure and 2-10% carbonate nodules. Clear to:
25-45	Brown soft very highly calcareous weakly structured clay loam with 20-50% soft and 2-10% nodular carbonate. Clear to:
45-85	Brown soft very highly calcareous light clay with moderate polyhedral structure, 10-20% soft carbonate and 2-10% siltstone fragments. Abrupt to:
85-115	Soft weathering siltstone.



Classification: Hypercalic, Effervescent, Red Sodosol; medium, non-gravelly, loamy / clayey, moderate.

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	SAR	Cl mg/kg
											Cu	Mn	Zn		Ca	Mg	Na	K			
0-11	7.9	7.8	-	8.16	35.3	1.3	-	-	302	<1	-	-	-	11.9	11.0	2.4	0.8	0.7	6.7	9.5	4691
11-25	8.8	8.2	-	1.74	15.1	0.7	-	-	163	1.4	-	-	-	19.1	14.7	3.8	3.1	0.5	16.2	12.5	1668
25-45	8.9	8.3	-	2.27	12.4	0.4	-	-	165	6.0	-	-	-	11.2	8.8	3.6	2.2	0.4	19.6	20.1	1780
45-85	9.0	8.3	-	2.21	12.2	0.2	-	-	177	17.0	-	-	-	11.3	7.5	4.0	2.4	0.5	21.2	23.8	1605
85-115	8.8	8.3	-	0.98	10.2	0.1	-	-	79	3.5	-	-	-	1.1	1.6	0.6	0.2	0.1	na	7.5	1443

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. SAR is sodium adsorption ratio measured on the saturation extract.