

BLEACHED IRONSTONE GRAVELLY SAND OVER CLAY

General Description: *Ironstone gravelly brown sandy loam grading to a yellowish brown and red mottled clayey subsoil, with variable iron cementation at depth (lateritic mottled zone)*

Landform: Rolling low hills with flat topped summit surfaces

Substrate: Ironstone (ferricrete) capped deeply weathered and kaolinised metamorphosed sandstone of the Kanmantoo Group.

Vegetation:

Type Site:	Site No.:	CH178	1:50,000 mapsheet:	6526-1 (Torrens Vale)
	Hundred:	Yankalilla	Easting:	259820
	Section:		Northing:	6061720
	Sampling date:	15/01/13	Annual rainfall:	890 mm average

Summit surface (plateau) of low hill, 2% slope. Firm surface with scattered ironstone nodules.

Soil Description:

Depth (cm)	Description
0-10	Dark brown firm sandy loam with moderate granular structure and 5-10% ironstone nodules. Clear to:
10-25	Brown firm massive light sandy clay loam with 15-20% ironstone nodules. Clear to:
25-50	Strong brown firm sandy light clay with moderate subangular blocky structure and 20-50% ironstone nodules. Clear to:
50-60	Partially indurated (iron cementation) sandy light clay with brown, red and grey colours (upper layer of lateritic mottled zone).



Classification: Ferric, Mesotrophic, Brown Dermosol; medium, slightly gravelly, loamy / clayey, moderate



Summary of Properties

Drainage: Moderately well drained. The soil is unlikely to remain saturated for more than a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low (as indicated by low CEC values – less than 10cmol(+)/kg). Although high surface organic matter levels may be a result of high acidity, they increase nutrient retention capacity. High PBI suggests that phosphorus fixation capacity is high (due to ironstone). At the sampling site, data indicate marginal deficiencies of sulphur, zinc and manganese.

pH: Acidic throughout.

Rooting depth: Most root growth is in the upper two layers, with moderate growth to 50 cm.

Barriers to root growth:

Physical: The strength of the underlying iron-cemented layer presents a significant barrier to roots, at least of annual plants.

Chemical: Aluminium levels are toxic.

Waterholding capacity: Approximately 50 mm in the rootzone.

Seedling emergence: Fair to satisfactory.

Workability: Sandy loam surface is easily worked, although ironstone gravel, where common, is highly abrasive.

Erosion Potential

Water: Moderately low.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	Ext. Al mg/kg	EC 1:5 dS/m	Org.C %	NO ₃ mg/kg	Avail. P mg/kg	PBI	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	5.3	4.5	6.1	0.117	5.61	39	42	297	142	7.7	0.7	1.01	273	3.30	0.69	6	4.16	1.2	0.36	0.31	5
0-10	5.3	4.5	5.72	0.12	5.52	44	40	292	201	9.6	0.7	1.15	282	2.85	0.73	6	4.06	1.2	0.52	0.34	6
10-25	5.5	4.6	3.38	0.04	4.19	11	12	289	48	7.4	0.5	0.32	144	1.19	0.23	4	2.57	0.9	0.12	0.17	5
25-50	5.5	4.7	1.03	0.027	0.97	3	< 2	444	37	25.5	0.6	0.04	186	2.35	0.12	5	2.82	1.7	0.09	0.12	3
50-60	5.6	4.9	0.46	0.031	0.48	3	< 2	409	42	41.3	0.5	0.09	121	3.07	0.13	3	1.74	1.3	0.11	0.09	3

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

Trace elements in paddock sample and 0-10 cm layer (shaded) analysed using EDTA.

CEC (exchangeable cation 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.

Further information: [DEWNR Soil and Land Program](#)

