

IRONSTONE SOIL WITH CALCAREOUS LOWER SUBSOIL

(Vanilla soil – sodic variant)

General Description: *Sandy loam with a paler and ironstone gravelly subsurface layer over a brown clay, calcareous with depth*

Landform: Very gently undulating plain.

Substrate: Deeply weathered Tertiary clay.

Vegetation: Red gum.

Type Site:	Site No.:	EL001	1:50,000 mapsheet:	6029-3 (Cummins)
	Hundred:	Warrow	Easting:	549300
	Section:	264	Northing:	6186150
	Sampling date:	23/03/1992	Annual rainfall:	475 mm average

Lower slope on very gently undulating plain. Firm to hard surface with 2-10% quartz (5 cm).

Soil Description:

Depth (cm)	Description
0-10	Very dark greyish brown friable sandy loam with minor ironstone gravel. Clear to:
10-40	Brown firm massive loamy sand with more than 50% ironstone gravel. Abrupt to:
40-100	Yellowish brown hard medium clay with coarse prismatic breaking to fine angular blocky structure and minor ironstone gravel. Clear to:
100-185	Yellow friable massive highly calcareous medium clay with minor calcrete nodules.



Classification: Ferric, Mottled-Subnatric, Brown Sodosol; thick, slightly gravelly, loamy / clayey, very deep



Summary of Properties

Drainage:	Imperfectly drained. Water may perch on the clayey subsoil for some weeks following heavy or prolonged rainfall.
Fertility:	Inherent fertility is moderately low due to the low clay content of the surface layers and the phosphate fixing effects of the ironstone. Regular fertilizer applications are necessary. Levels of all tested elements are satisfactory at the sampling site.
pH:	Slightly acidic at the surface, alkaline with depth.
Rooting depth:	100 cm in pit, but root density decreases with depth.
Barriers to root growth:	
Physical:	The dense clayey subsoil prevents uniform root growth patterns, with roots being confined to aggregate faces. This results in decreased water use efficiency.
Chemical:	There are no chemical limitations.
Waterholding capacity:	Approximately 80 mm in the rootzone.
Seedling emergence:	Fair due to hard setting, sealing surface.
Workability:	Fair. Poor surface structure restricts the moisture range over which the soil can be effectively cultivated.
Erosion Potential:	
Water:	Low.
Wind:	Low.

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 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	6.3	6.4	0	0.24	1.57	1.58	51	-	18	1.1	0.67	86.0	4.86	1.50	8.5	4.3	0.9	0.12	0.42	1.4
10-40	6.0	5.7	0	0.08	0.68	0.67	28	-	7	0.4	0.27	52.9	1.10	0.53	1.9	1.2	0.3	0.02	0.28	na
40-100	6.7	6.2	0	0.33	1.50	-	-	-	96	3.4	0.06	5.5	0.11	0.47	19.0	9.4	6.6	2.73	1.63	14.4
100-185	8.1	7.2	48	0.65	3.20	-	-	-	62	6.3	0.09	8.5	0.42	0.35	14.3	4.3	4.9	4.20	0.98	29.4

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.

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

