

SO3 Hypocalcic, Subnatric, Red Sodosol

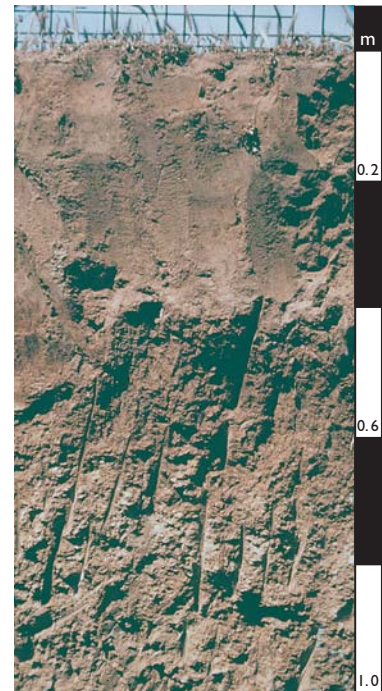
General description of the soil

A texture-contrast soil which is moderately sodic and not strongly acid in the upper 0.2 m of the red clayey B2 horizon. The soil has small amounts of carbonate in the clayey subsoil (i.e. Hypocalcic).

Distribution:	A common soil on prior stream levees on the Riverine Plain of New South Wales and Victoria.
Typical land use:	Grazing, dryland cropping, and irrigated agriculture.
Common variants:	A horizon thickness and texture may vary.
World Reference Base:	Abrupt Luvisol.
Other names:	Usually known as Solodic Soils and (sodic) Red-Brown Earths.

Environment and location of the example profile

Landform:	Prior stream levee on flat plain.
Parent material or substrate:	Quaternary alluvium.
Drainage class:	Imperfectly drained.
Surface condition:	Soft.
Site disturbance:	Trampled by stock.
Native vegetation:	<i>Eucalyptus microcarpa</i> and <i>Callitris glaucophylla</i> woodland.

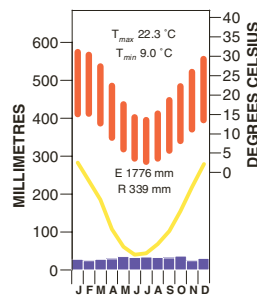


Deniliquin district, south-western New South Wales

Site location



Site climate



Soil morphology

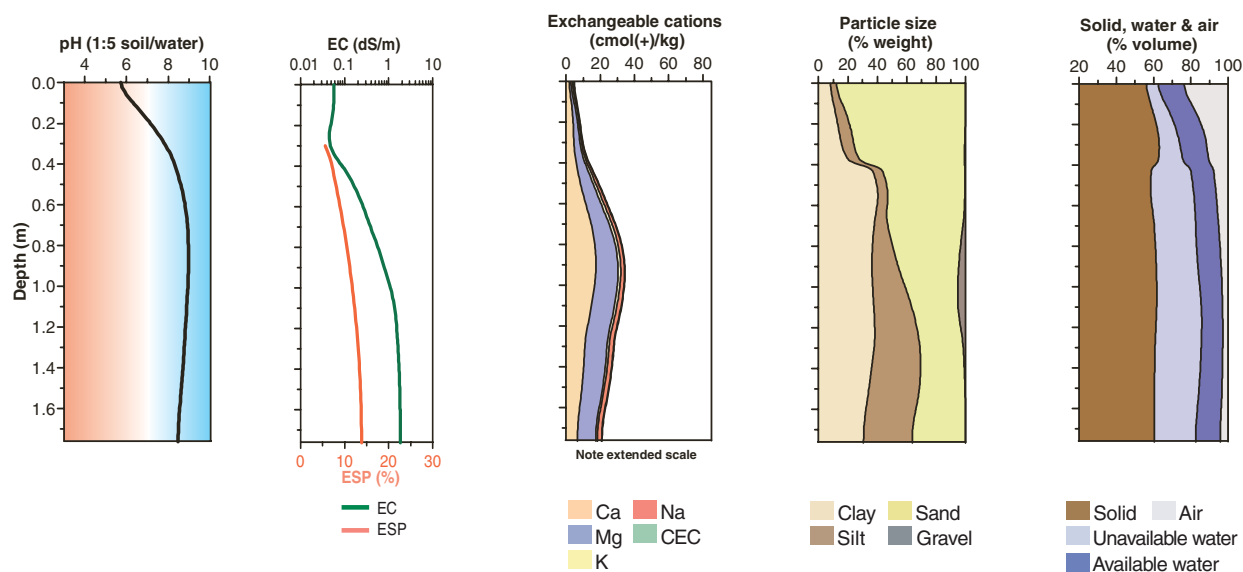
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
very recent overlie	0.00–0.10	yellowish red (SYR 5/6)	–	loamy sand	massive	–	–	soft	–	–	abrupt
A11	0.10–0.20	dark reddish brown (SYR 3/2)	termite cavities	sandy loam	massive	–	–	hard	–	–	clear
A12	0.20–0.30	dark reddish brown (SYR 3/4)	–	sandy loam	massive	–	–	slightly hard	–	–	clear
A2e	0.30–0.40	light grey (SYR 6/2)	reddish brown (SYR 4/4)	sandy loam	massive	–	–	hard to very hard	–	–	abrupt
B21	0.40–0.60	dark reddish brown (SYR 3/3)	–	medium clay	moderate	angular blocky	10–20 mm	slightly hard	–	–	clear
B22	0.60–0.70	reddish brown (SYR 3/4)	–	medium clay	moderate	angular blocky	10–20 mm	slightly hard	–	<2 % carbonate nodules	clear
B23	0.70–1.00	yellowish brown (10YR 5/4)	–	light clay	massive	–	–	slightly hard	–	<2% soft carbonate (<2 mm) and 2–10% carbonate nodules	gradual
B3	1.00–1.20	greyish brown (2.5Y 5/2)	dark reddish brown (SYR 3/4) and reddish brown coatings on channels	light silty clay	massive	–	–	slightly hard to hard	–	<2% soft carbonate and <2% concretionary carbonate	abrupt
BC	1.20–1.76+	greyish brown (2.5Y 5/2)	dark brown (7.5YR 3/4) coatings	light silty clay	massive vesicular	–	–	hard	–	2–10% carbonate nodules	

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H ₂ O ^A	pH CaCl ₂ ^E	Elect. Cond. dS/m ^C	CaCO ₃ % ^C	Org. C % ^E	Extr. P mg/kg ^A	Tot. P % ^A	Tot. K % ^A	Cation exchange properties ^D							ESP % ^A	Bulk dens. Mg/m ³	Particle size % ^F					
										cmol(+)/kg									CEC	ECEC	CS	FS	Silt	Clay
										Ca	Mg	K	Na	H+Al	CEC	ECEC								
	0.00–0.10	5.5	4.4	0.06		0.6	34	0.03	1.2	1.4	0.7	0.9			4		–		37	50	4	8		
A11	0.10–0.20	6.9	5.5	0.06		1.0	19	0.04	1.4	5.1	1.9	1.0	0.2		7		–	1.6	35	43	8	12		
A12	0.20–0.30	7.7	6.6	0.03		0.4	16	0.04	1.5	4.3	3.1	0.5	0.3		7		–	1.7	30	46	10	14		

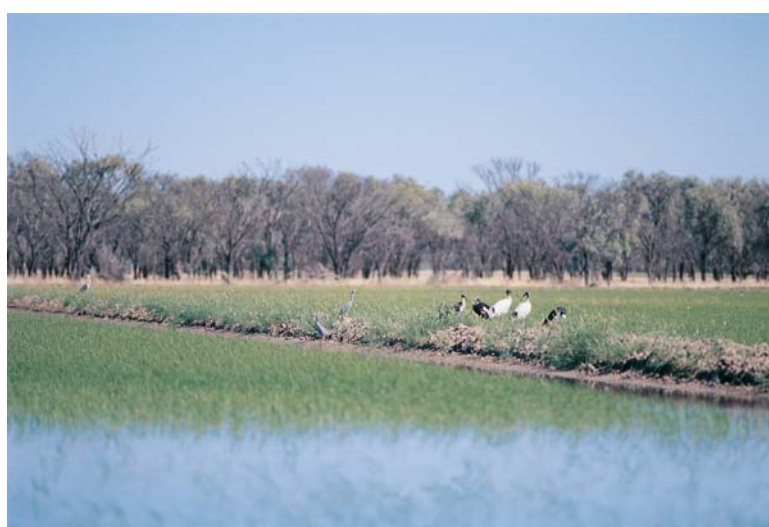
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										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
A2e	0.30-0.40	8.4	6.9	0.03	<1	0.2	12	0.03	1.5	3.1	2.7	0.6	0.5		7		7	1.7	32	46	8	13
B21	0.40-0.60	8.8	7.2	0.15	<1	0.3	50	0.05	1.9	6.9	8.4	2.1	2.2		18		12	1.5	18	29	6	44
B22	0.60-0.70	9.0	7.6	0.30	<1	0.2	97	0.07	2.8	14.0	9.4	1.8	1.5					1.6	17	38	5	37
B23	0.70-1.00	9.1	7.8	0.59	2	0.2	101	0.08	2.1	22.0	14.0	1.6	2.1						9	35	16	35
B3	1.00-1.20	8.9	7.9	1.48	2	0.2	106	0.07	2.4	16.0	14.0	1.6	2.5						5	24	28	39
BC	1.20-1.30	8.8	7.9	1.57	2	0.2	77	0.06	2.4	8.9	13.0	1.3	2.9						4	25	29	39
BC	1.30-1.60	8.7	7.8	1.81	1	0.2	56	0.05	2.6	11.0	13.0	1.1	2.3						2	26	36	35
BC	1.60-1.76	8.4	7.6	1.84	<1	0.2	55	0.06	2.6	5.1	10.0	0.8	2.6						1	37	33	30

Key profile properties



General qualities of the soil

Infiltration:	Moderate but easily reduced by cultivation and compaction.
Available water store:	Moderate
Permeability:	Moderate to very low in the B horizon.
Physical root limitations:	Poor aeration and excessive soil strength in the sodic B horizon.
Erosion hazard:	Low.
Nutrient availability:	Moderate levels of most nutrients except nitrogen.
Toxicities:	Medium salinity in the B horizon increasing to extreme with depth.



The soil is commonly used for irrigated agriculture on the Riverine Plain of New South Wales and Victoria.

Acknowledgements: Soil image, soil description and laboratory data: CSIRO Land and Water. Stace et al. (1968), page 214, profile A. Landscape image: Arthur Mostead.