

SO2: Hypercalcic, Pedaric, Red Sodosol

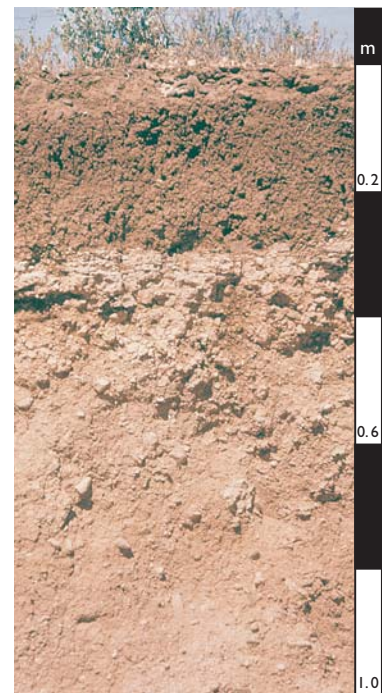
General description of the soil

A texture-contrast soil which is highly sodic in the upper 0.2 m of the red clayey B2 horizon which has a strong, fine, angular blocky structure. Much soft carbonate occurs in all the horizons below the B21 horizon (i.e. Hypercalcic).

Distribution:	Virtually restricted to the arid regions of the continent with about 250 mm or less mean annual rainfall, where the soils are widespread.
Typical land use:	Occasional sparse grazing by livestock.
Common variants:	A common feature of the A horizons is the presence of a band of vesicular pores near the surface or on the underside of any surface flake. The base of the A horizon may have a thin conspicuous bleach.
World Reference Base:	Endosalic Calcisol.
Other names:	These soils are widely known as Desert Loams.

Environment and location of the example profile

Landform:	Gently undulating surface of a dissected low plateau.
Parent material or substrate:	Mainly aeolian, calcareous silty sediment.
Drainage class:	Imperfectly drained. The surface seals following rainfall.
Surface condition:	Soft with 2–10% angular and subangular quartzite (200–600 mm).
Site disturbance:	Grazing.
Native vegetation:	Low open shrubland of <i>Maireana sedifolia</i> (Pearl Bluebush) and <i>Atriplex vesicaria</i> (Bladder Saltbush).
Microrelief:	Occasional shallow gilgai depressions with Vertosols.

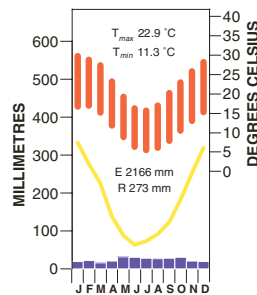


Whyalla district, South Australia

Site location



Site climate



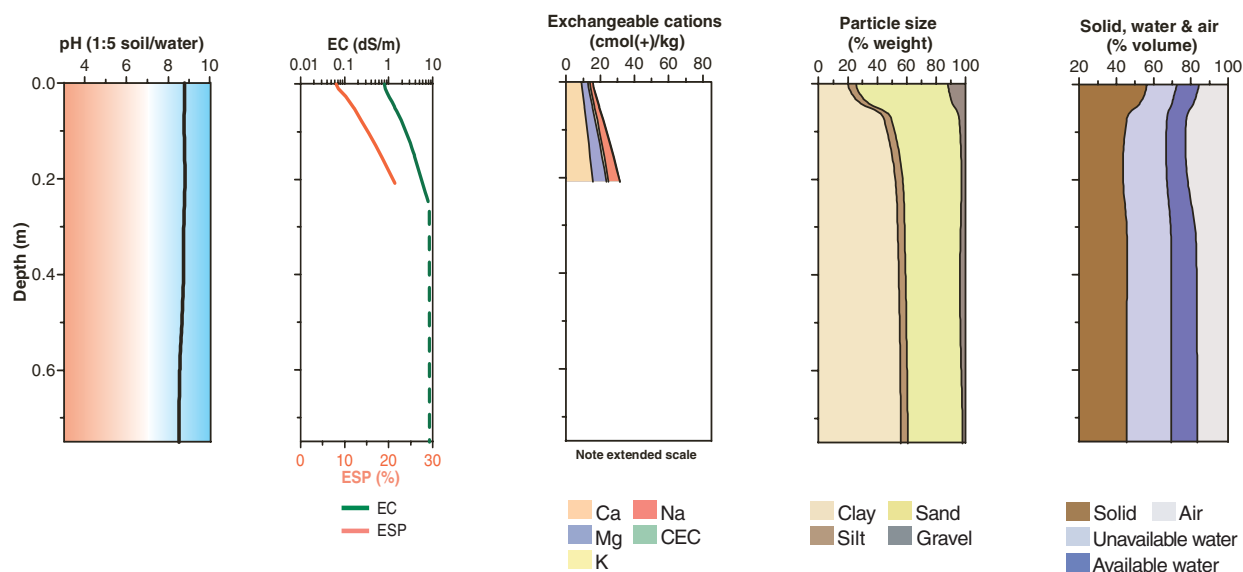
Soil morphology

Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.05	reddish brown (5YR 5/4 d)	–	loam	massive	–	–	slightly hard (dry)	2–10% quartzite	20–50% soft carbonate	sharp
B21	0.05–0.15	red (2.5YR 3/4 d)	–	clay	strong	angular blocky	3–5 mm	slightly hard (dry)	<2% quartzite	–	diffuse
B22k	0.15–0.25	red (2.5YR 5/6 d)	–	light clay	massive	–	–	slightly hard (dry)	<2% quartzite	20–50% soft carbonate	diffuse
B23k	0.25–0.35	light reddish brown (5YR 6/4 d)	–	light clay	–	–	–	–	<2% quartzite	20–50% soft weakly indurated carbonate	diffuse
Bck	0.35–0.60	reddish yellow (5YR 7/8 d)	–	silty clay loam	massive	–	–	soft (dry)	<2% quartzite	20–50% soft carbonate	diffuse
Bcky	0.60–0.75+	reddish yellow (5YR 7/8 d)	–	silty clay loam	massive	–	–	soft (dry)	<2% quartzite	20–50% soft carbonate and 20–50% mycelial gypsum	–

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			
										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
A1	0.00–0.05	8.8	7.2	0.27	–	0.7	6	0.02	1.10	9.9	4.1	1.3	1.9	–	16	–	12	1.4	11	58	6	23
B21	0.05–0.15	8.7	7.2	1.72	–	0.7	4	0.02	1.40	20.0	11.0	1.1	10.0	–	34	–	29	1.1	6	34	5	52
B22k	0.15–0.25	8.9	7.8	3.56	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
B23k	0.25–0.35	8.7	7.9	13.1	38	0.9	17	0.06	0.84	–	–	–	–	–	–	–	–	–	–	–	–	–
Bck	0.35–0.55	8.8	7.9	13.1	39	0.4	16	0.04	0.49	–	–	–	–	–	–	–	–	–	–	–	–	–
Bck	0.55–0.60	8.5	7.9	21.0	–	–	–	–	–	–	–	–	–	–	–	–	–	1.2	–	–	–	–
Bcky	0.60–0.75	8.5	8.0	21.1	31	0.3	12	0.03	0.73	–	–	–	–	–	–	–	–	–	4	20	3	36

Key profile properties



General qualities of the soil

Infiltration:	Slow due to surface soil dispersing and sealing.
Available water store:	Small to moderate but rarely filled due to the arid environment.
Permeability:	Imperfectly drained. Surface soil disperses, seals and ponds water.
Physical root limitations:	None apparent.
Erosion hazard:	Can be severe if the surface is disturbed.
Nutrient availability:	Little known but low organic matter.
Toxicities:	Extremely saline in the subsoil.



Gently undulating low plateau mantled by wind blown sediments near Whyalla, South Australia

Acknowledgements: Soil image, soil description and laboratory data: CSIRO Land and Water. Stace et al. (1968), p. 62, profile A. Landscape image: Arthur Mostead.