

FE3 Acidic, Mesotrophic, Red Ferrosol

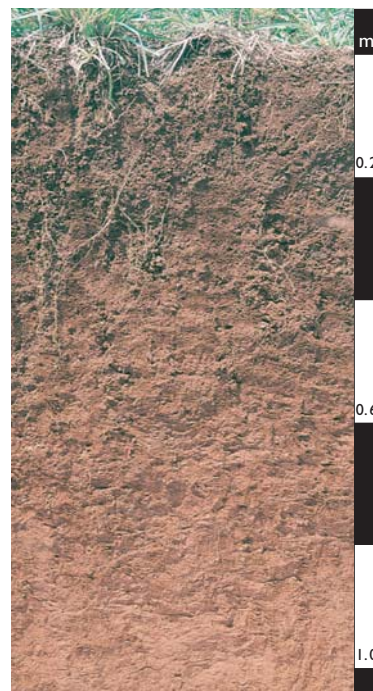
General description of the soil

A strongly structured Red Ferrosol with a medium base status (i.e. Mesotrophic) in the major part of the B2 horizon which is strongly acid.

Distribution:	A common soil on basalt in the medium rainfall zone of eastern Australia.
Typical land use:	These acidic soils are widespread and occurrences in north Queensland are used for sugar cane together with bananas and improved pastures for dairy and beef cattle. In the Lismore district of New South Wales intensive horticulture (mainly tree crops) is a feature. In the temperate subcoastal regions of south-east Australia and Tasmania, vegetables (particularly potatoes) and improved pastures for dairying are grown.
Common variants:	Depth to hard rock is variable.
World Reference Base:	Ferralsol Nitisol.
Other names:	Krasnozems.

Environment and location of the example profile

Landform:	Rolling low hills.
Parent material or substrate:	Basalt.
Drainage class:	Well-drained.
Surface condition:	Firm.
Site disturbance:	Cleared.
Native vegetation:	Rainforest and wet sclerophyll forest.

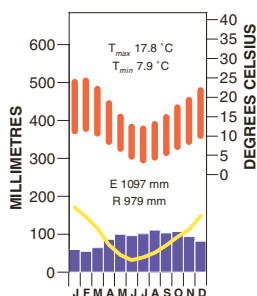


Near Warragul, West Gippsland, Victoria

Site location



Site climate



Soil morphology

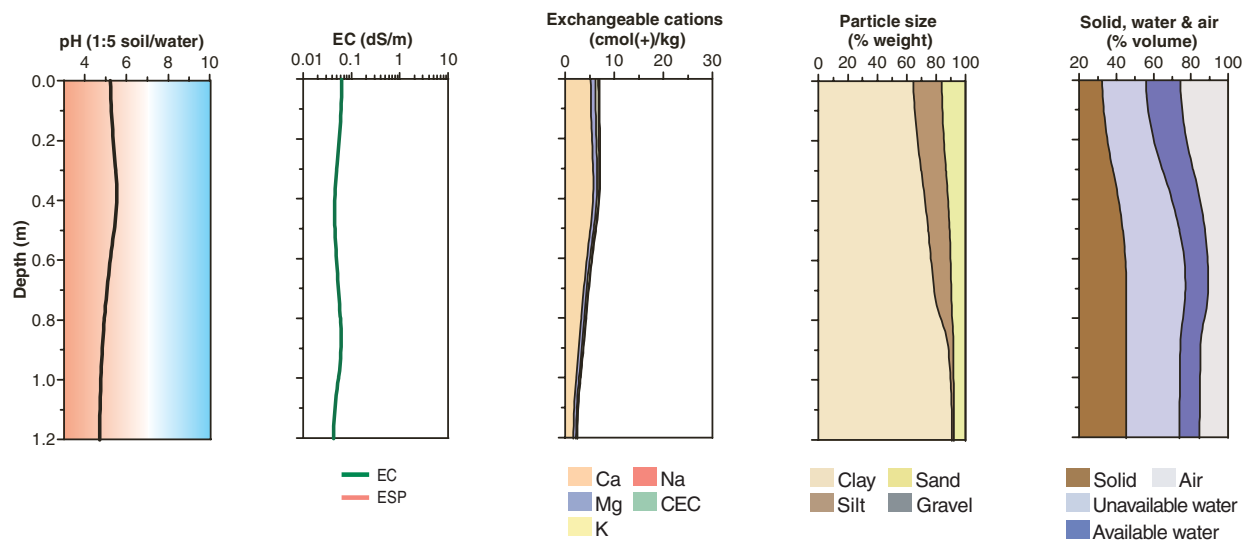
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.30	dark brown (7YR 3/4)	–	fine sandy clay loam (subplastic)	weak parting to strong	subangular blocky parting to polyhedral	20–50 mm parting to 2–5 mm	weak (moist)	–	2% manganese nodules	gradual
B21	0.30–0.50	yellowish red (5YR 4/6)	–	clay loam (subplastic)	moderate parting to strong	subangular blocky	10–20 mm parting to 5–10 mm	weak (moist)	–	–	gradual
B22	0.50–0.80	red (2.5YR 5/8)	–	light clay (subplastic)	moderate parting to strong	subangular blocky	10–20 mm parting to 5–10 mm	–	–	2% soft manganese	gradual
B23	0.80–1.00	yellowish red (5YR 5/8)	–	light clay (subplastic)	weak parting to strong	subangular blocky parting to polyhedral	20–50 mm parting to 5–10 mm	–	–	–	clear
B24	1.00+	yellowish red (5YR 5/8)	–	light clay (subplastic)	moderate parting to strong	polyhedral	20–50 mm parting to 5–10 mm	–	–	30% clay/iron oxide nodules (10–20 mm)	–

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H ₂ O ^A	pH CaCl ₂ ^B	Elect. Cond. dS/m ^A	CaCO ₃ %	Org. C % ^A	Extr. P mg/kg	Tot. P %	Tot. K %	Cation exchange properties ¹ cmol(+)/kg						ESP %	Bulk dens. Mg/m ³	Particle size % ^C										
																		Ca	Mg	K	Na	H+Al	CEC	ECEC	CS	FS	Silt	Clay
A1	0.00–0.30	5.3	4.6	0.06		5				5.3	0.9	0.5	0.3							2	12	17	61					
B21	0.30–0.50	5.7	4.9	< 0.05						6.2	0.7	0.3	0.2							1	10	16	75					
B22	0.50–0.80	5.1	4.6	0.05						3.9	0.6	0.4	0.1							1	9	14	79					

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										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
B23	0.80-1.00	4.8	4.4	0.07						2.8	0.6	0.3	0.1					1	10	1	94	
B24	1.00+	4.7	4.3	< 0.05						1.5	0.5	0.2	0.1									

Key profile properties



General qualities of the soil

Infiltration:	Rapid unless degraded through excessive cultivation or compaction.
Available water store:	Large to very large.
Permeability:	Very high due to the strongly developed and stable structure.
Physical root limitations:	No serious limitation to root growth unless the soil is compacted.
Erosion hazard:	High under high-intensity rainfall. Compaction may lead to greater runoff and erosion particularly when vegetation cover is minimal.
Nutrient availability:	The nutrient status of these strongly leached soils is low below the surface horizon. Strong phosphorus sorption and high pH buffering capacity are a feature.
Toxicities:	May suffer from acidification induced by high nitrogen fertiliser application.



Rolling basalt hills in West Gippsland, Victoria

Acknowledgements: Soil image, soil description and laboratory data: Department of Primary Industries, Victoria. Site GP 15, West Gippsland. Landscape image: Department of Primary Industries, Victoria.