

FE4: Haplic, Mesotrophic, Red Ferrosol

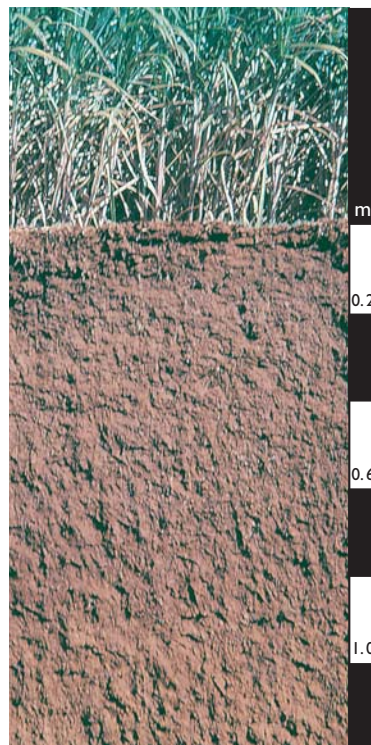
General description of the soil

A deep, strongly structured Red Ferrosol with a medium base status (i.e. Mesotrophic). No other diagnostic features are present, hence the term Haplic (simple).

Distribution:	A common soil occupying small areas on basalt in near-coastal areas of eastern Australia.
Typical land use:	Sugarcane in northern areas.
Common variants:	Depth of solum and base status are variable.
World Reference Base:	Hyperferralic Nitisol.
Other names:	Krasnozems and Euchrozems.

Environment and location of the example profile

Landform:	Gently undulating plain.
Parent material or substrate:	Quaternary basalt.
Drainage class:	Well-drained.
Surface condition:	Firm.
Site disturbance:	Cultivated previously, now a grassy verge.
Native vegetation:	Originally rainforest.

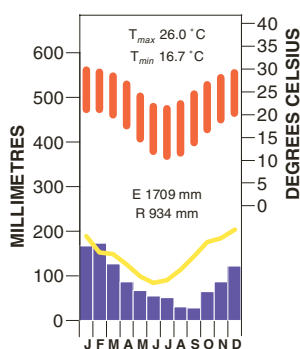


Bundaberg district, Queensland

Site location



Site climate



Soil morphology

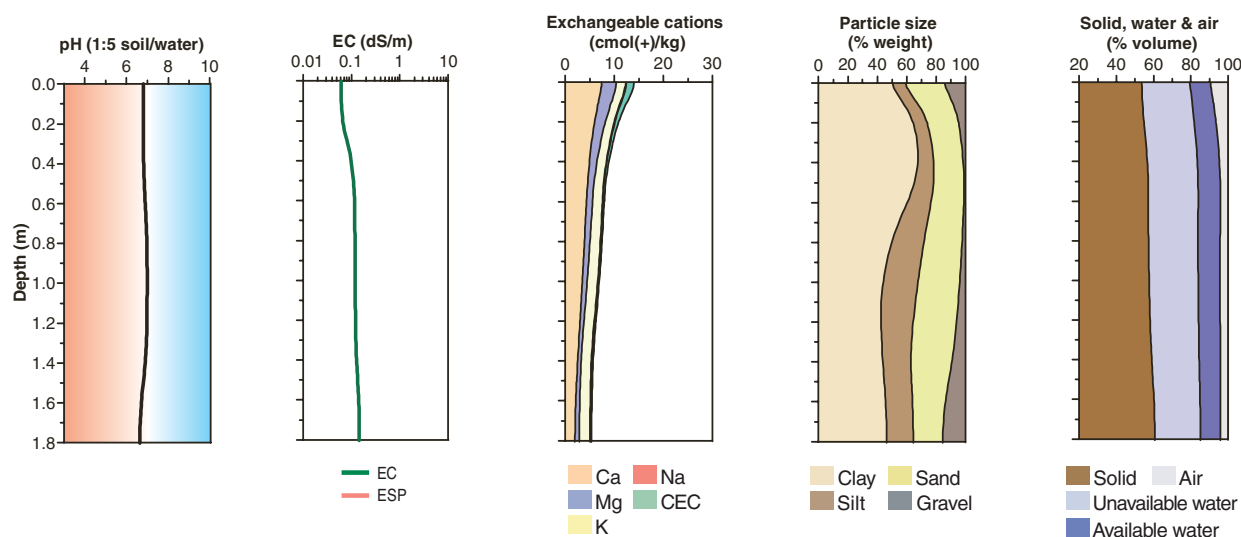
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.20	dark reddish brown (SYR 3/3)	–	light clay	moderate	polyhedral parting to subangular blocky	2–5 mm parting to <2 mm	firm (dry)	2–10% basalt gravels	2–10 % manganiferous concretions	diffuse
B21	0.20–0.90	reddish brown (2.5YR 3/4)	–	light clay	strong	polyhedral parting to subangular blocky	5–10 mm parting to <2 mm	weak (moist)	<2% basalt gravels	20–50% manganiferous concretions (2–6 mm)	diffuse
B22	0.90–1.80	reddish brown (2.5YR 3/5)	–	light clay	moderate	subangular blocky	10–20 mm parting to 5–10 mm	weak (moist)	2–10% basalt gravels	2–10 % manganiferous concretions (6–20 mm)	diffuse
B23	1.80–2.10	yellowish red (5YR 4/6)	yellowish brown (10YR 5/6) and light brown (10YR 6/4) faint (5–15 mm)	light clay	moderate	subangular blocky	5–10 mm	very weak (moist)	2–10% basalt gravels	2–10 % manganiferous concretions	diffuse
BC	2.10–2.43	light yellowish brown (10YR 6/4)	yellowish red (SYR 5/6) and light grey (2.5Y 7/1) prominent (15–30 mm)	light clay	moderate	subangular blocky	5–10 mm	weak (moist)	10–20% weathered basalt	–	

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 %	Org. C % ^E	Extr. P mg/kg ^A	Tot. P % ^A	Tot. K % ^A	Cation exchange properties ^D							ESP %	Bulk dens. Mg/m ³	Particle size % ^B			
										cmol(+)/kg									CS	FS	Silt	Clay
										Ca	Mg	K	Na	H+Al	CEC	ECEC						
A1	0.00–0.10	6.8	5.2	0.06		2.3	160	0.37	0.20	7.4	3.0	1.9	0.2		14		–	1.4	19	9	10	58
A1	0.10–0.20	6.8	5.3	0.06		1.9	69	0.26	0.19	6.1	2.3	1.6	0.2		11		–		14	8	10	64
B21	0.20–0.30	6.8	5.4	0.06		1.6	49	0.23	0.20	5.5	2.0	1.9	0.1		10		–		11	8	10	68
B21	0.30–0.60	6.8	5.6	0.12		1.9				4.5	1.2	1.9	0.1		8		–	1.5				

Horizon	Sample Depth (m)	pH H ₂ O ^A	pH CaCl ₂ ^E	Elect. Cond. dS/m ^C	CaCO ₃ %	Org. C % ^E	Extr. P mg/kg ^A	Tot. P % ^A	Tot. K % ^A	Cation exchange properties ^D cmol(+)/kg							ESP %	Bulk dens. Mg/m ³	Particle size % ^B			
										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
B21	0.60–0.90	7.0	5.9	0.12				0.19	0.19	3.7	1.1	2.2			6			11	18	25	48	
B22	0.90–1.20	7.0	6.0	0.12																		
B22	1.20–1.50	7.0	5.8	0.12				0.23	0.20	2.6	0.6	2.0	0.2		5		–		18	14	21	47
B22	1.50–1.80	6.6	5.7	0.15				0.21	0.22	1.9	0.9	2.2	0.2		5		–		14	11	22	56

Key profile properties



General qualities of the soil

Infiltration:	Rapid unless compacted.
Available water store:	Large.
Permeability:	High, although runoff may occur under high intensity rainfall.
Physical root limitations:	No serious limitation to root growth unless the soil is compacted.
Erosion hazard:	Often serious on slopes where compaction of surface soil layers leads to low infiltration.
Nutrient availability:	Cultivated or eroded forms show deficiencies in nitrogen and phosphorus. Most show high phosphorus sorption.
Toxicities:	Aluminium toxicity may be induced by high nitrogen fertiliser application causing strong acidity.



Gently undulating basalt plains sloping towards the coast, Bundaberg district, Queensland

Acknowledgements: Soil image, soil description and laboratory data: CSIRO Land and Water. Stace et al. (1968), page 305, Profile B. Landscape image: Department of Natural Resources and Mines, Queensland.