KA2: Ferric, Petroferric, **Red Kandosol**

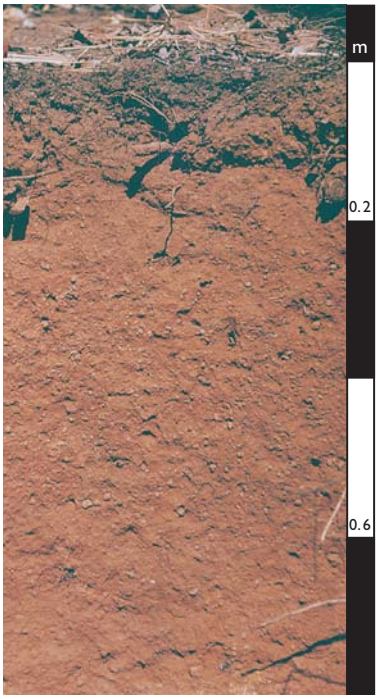
General description of the soil

A relatively shallow, loamy Red Kandosol underlain by an indurated and mottled ferricrete pan. Many (>20%) ferruginous concretions occur throughout the profile.

Distribution:	A widespread Kandosol, particularly in northern Australia; in many occurrences the soils may be a relict of past more humid environments.
Typical land use:	Reserved land, extensive grazing, with horticulture and hobby farming locally in the Darwin district.
Common variants:	The texture and depth of the solum may vary.
World Reference Base:	Affinities with Plinthosols and Ferralsols.
Other names:	Commonly referred to as lateritic Red Earths.

Environment and location of the example profile

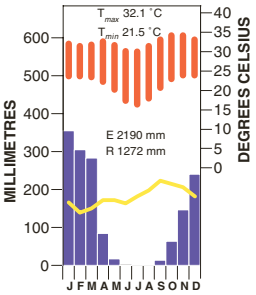
Landform:	Level to gently undulating plain.
Parent material or substrate:	Deeply weathered Cretaceous sediments.
Drainage class:	Well-drained above the pan.
Surface condition:	Soft.
Site disturbance:	Cleared.
Native vegetation:	Tall open woodland dominated by *Eucalyptus tetrodonta*, *Eucalyptus miniata* and *Erythrophleum chlorostachys*. The mid-stratum includes *Livistona humilis*.



Darwin district, Northern Territory

Site location

Site climate



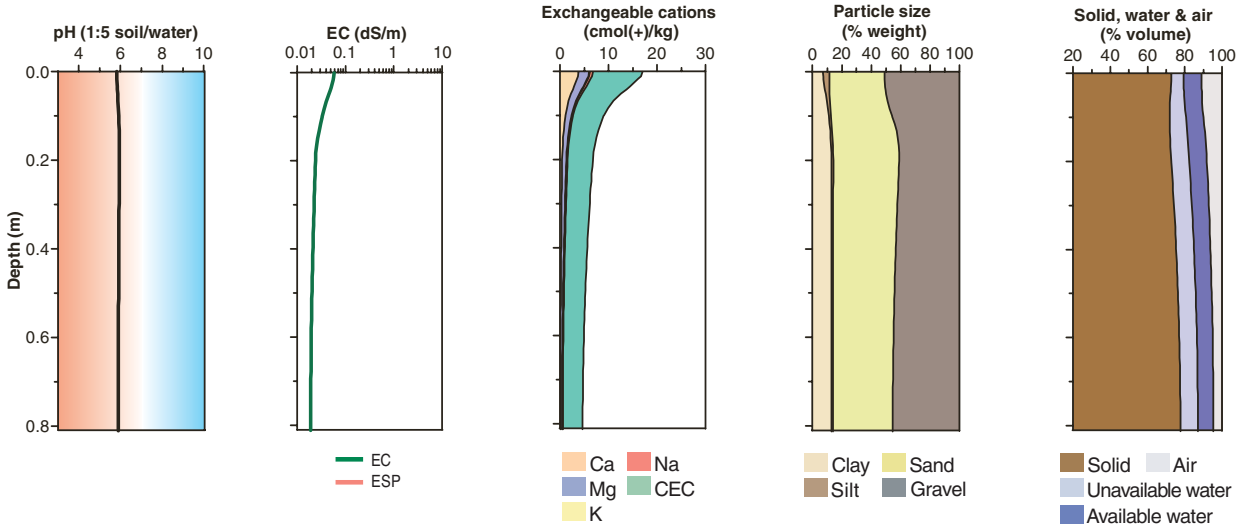
Soil morphology

Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A11	0.00–0.04	dark brown (10YR 3/3)	–	sandy loam	weak	granular	5–10 mm	soft (dry)	–	>20% ferruginous concretions (<20 mm)	abrupt wavy
A12	0.04–0.10	dark brown (7.5YR 3/3)	–	loam	weak	granular	5–10 mm	soft (dry)	–	>20% ferruginous concretions (<20 mm)	abrupt wavy
B1	0.10–0.20	dark reddish brown (5YR 3/4)	–	sandy clay loam	massive	–	–	soft (dry)	–	>20% ferruginous concretions (<20 mm)	clear wavy
B2	0.20–0.81	dark red (2.5YR 3/6)	–	clay loam	massive	–	–	soft (dry)	–	>20% ferruginous concretions (<20 mm)	abrupt wavy
D	0.81 +	dark red (2.5YR 3/6)	dusky red and brownish yellow mottling	vesicular channels of soil from above horizons	very hard ferricrete						

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H_2O [A]	pH $CaCl_2$ [C]	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 % [F]			
										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
A11	0.00–0.04	5.8	4.5	0.06		4.7	7	0.020	0.040	3.6	2.3	0.2	0.6		17		4		25	44	7	14
A12	0.04–0.10	5.9	4.5	0.03				0.020	0.050	0.4	1.1	0.1	0.1		7		–		24	47	3	18
B1	0.10–0.20	6.0	4.5	< 0.03						0.1	0.8	0.1	0.1		6		–					
B2	0.20–0.81	5.9	4.4	< 0.03				0.020	0.040	0.1	0.4	0.1	0.1		5		–		23	49	2	22

Key profile properties



General qualities of the soil

Infiltration:	Rapid but surface prone to degradation if cultivated.
Available water store:	Small to moderate above the pan.
Permeability:	Highly permeable above the pan and profile colour implies moderate to highly permeable throughout the deeply weathered profile.
Physical root limitations:	Root penetration restricted by the ferricrete pan with some short-term saturation.
Erosion hazard:	Moderate on slopes.
Nutrient availability:	Low throughout the profile.
Toxicities:	None apparent.

Ancient and strongly weathered landscape south-east of Darwin, Northern Territory

Acknowledgements: Soil image, soil description and laboratory data: CSIRO Land and Water. Stace et al. (1968), page 271, profile C. Landscape image: Alan Fox.