

KA11: Humose, Magnesian, Yellow Kandosol

General description of the soil

A loamy Yellow Kandosol with a very dark humose A1 horizon and a very low Ca/Mg ratio in the B2 horizon.

Distribution:	This soil is probably most common on acidic parent materials in the high-rainfall, hilly to mountainous lands of subcoastal eastern Australia.
Typical land use:	Conservation reserves and very sparse grazing by beef cattle.
Common variants:	Variation occurs in the thickness of the humose horizon and in the texture of the profile.
World Reference Base:	Vetic Ferralsol.
Other names:	Have been called Yellow Earths or Yellow Podzolic Soils.

Environment and location of the example profile

Landform:	Gently inclined alluvial fan.
Parent material or substrate:	Detrital material from granite weathering.
Drainage class:	Moderately well-drained.
Surface condition:	Hardsetting surface seal.
Site disturbance:	None.
Native vegetation:	Open forest (includes <i>Corymbia intermedia</i> and <i>Tristania suaveolons</i>).

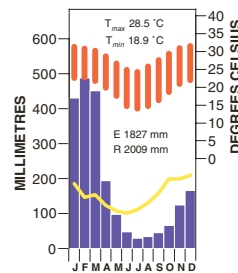


Tully district, north Queensland

Site location



Site climate



Soil morphology

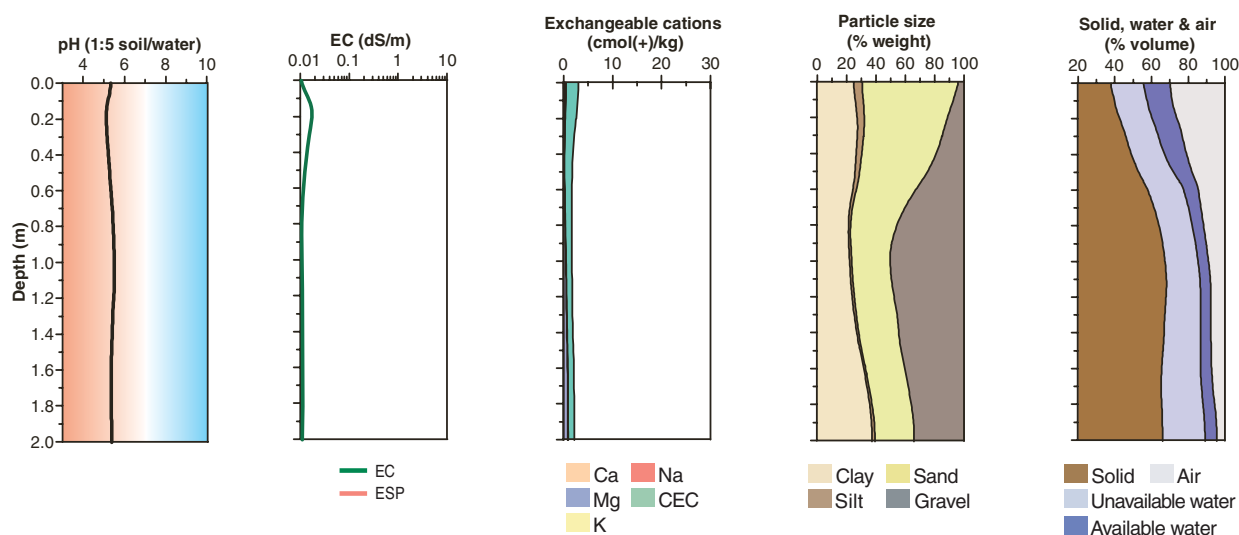
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A11	0.00–0.10	black (10YR 2/1)	–	sapric sandy clay loam	massive	–	–	very weak (dry)	–	–	
A12	0.10–0.30	very dark grey (10YR 3/1)	–	sandy clay loam	massive	–	–	very weak (dry)	–	–	diffuse broken
A3/B1	0.30–0.55	dark yellowish brown (10YR 4/4)	10–20% brownish yellow (10YR 6/8) faint (5–15 mm)	sandy clay loam	massive	–	–	moderately weak	2–10% angular quartz gravel (2–6 mm)	–	gradual irregular
B21	0.55–1.00	yellow (10YR 7/8)	–	sandy light clay	massive	–	–	moderately weak	20–50% subangular quartz gravel (2–6 mm)	–	diffuse broken
B22	1.00–1.40	yellow (10YR 7/8)	10–20% red (2.5YR 4/8) prominent (5–15 mm)	sandy light clay	massive	–	–	moderately firm	20–50% subangular quartz gravel (2–6 mm)	–	diffuse broken
BC	1.40–2.00	red (2.5YR 4/8)	10–20% yellow (10YR 7/8) distinct (5–15 mm)	sandy light clay	massive	–	–	moderately firm	20–50% subangular quartz gravel (2–6 mm)	–	

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H ₂ O ^A	pH CaCl ₂	Elect. Cond. dS/m ^A	CaCO ₃ %	Org. C % ^D	Extr. P mg/kg ^B	Tot. P % ^A	Tot. K % ^A	Cation exchange properties ¹ cmol(+)/kg						ESP %	Bulk dens. Mg/m ³	Particle size % ^A				
										Ca	Mg	K	Na	H+Al ^B	CEC			ECEC ^A	CS	FS	Silt	Clay
A11	0.00–0.10	5.4		0.01		5.5	7	0.020	0.150	0.2	0.2	<0.1	<0.1	2.9	3	3	–		56	12	6	26
A12	0.10–0.20	4.8		0.03			4												47	17	6	30
A12	0.20–0.30	5.1		0.02		2.9	3	0.012	0.060	<0.1	0.1	<0.1	<0.1	1.9	2	2	–		46	16	5	33
A3	0.30–0.45	5.2		0.02			2												48	15	5	32
B1	0.45–0.55	5.3		0.01			2												46	16	4	34
B21	0.55–0.60	5.3		0.01			2												43	16	4	37
B21	0.60–0.90	5.5		0.01		0.2	2	0.010	0.060	<0.1	0.5	<0.1	<0.1	0.3	2	1	–		47	14	2	37

Horizon	Sample Depth (m)	pH H ₂ O ^A	pH CaCl ₂	Elect. Cond. dS/m ^A	CaCO ₃ %	Org. C % ^B	Extr. P mg/kg ^B	Tot. P % ^A	Tot. K % ^A	Cation exchange properties ^J						ESP %	Bulk dens. Mg/m ³	Particle size % ^A			
										Ca	Mg	K	Na	H+Al ^B	CEC			ECEC ^A	CS	FS	Silt
B21	0.90–1.00	5.5		0.01													38	13	3	46	
B22	1.00–1.20	5.6		0.01		0.1											40	12	3	45	
B22	1.20–1.40	5.4		0.01													43	9	3	45	
B/C	1.40–1.50	5.4		0.01													40	8	2	50	
B/C	1.50–1.80	5.3		0.01		0.1		0.015	0.050	<0.1	0.9	<0.1	<0.1	0.1	2	1	–	36	8	2	55
B/C	1.80–2.00	5.4		0.01													32	8	3	57	

Key profile properties



General qualities of the soil

Infiltration:	Rapid unless compacted and sealed.
Available water store:	Large to very large depending on profile depth.
Permeability:	High.
Physical root limitations:	None.
Erosion hazard:	Moderate on slopes.
Nutrient availability:	Generally low. The humose A1 horizons are likely to have high P-sorption properties.
Toxicities:	Possible problems with aluminium in the strongly acid soils.



Open forest on a gently undulating alluvial fan – Tully district, north Queensland

Acknowledgements: Soil image, soil description and laboratory data: CSIRO Land and Water, Profile T362. Landscape image: CSIRO.