

## HY4: Melacic-Acidic, Sulfuric, Redoxic Hydrosol

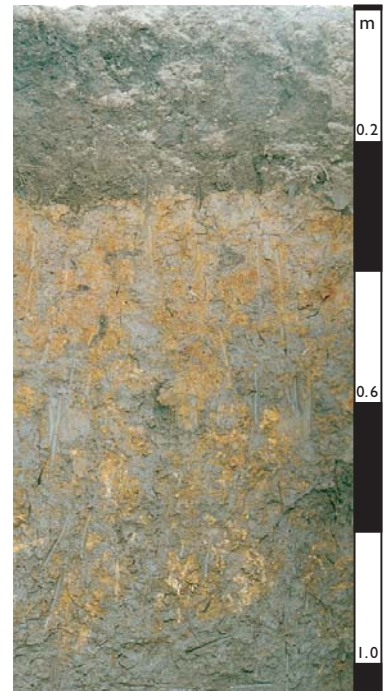
### General description of the soil

A seasonally saturated, non-cracking clay soil that has prominent yellow mottles that are probably jarosite. The soil has a thick, dark, strongly acid A1 horizon (i.e. Melacic-Acidic).

<b>Distribution:</b>	Recent surveys have shown these and similar soils to occur widely in a discontinuous, narrow coastal zone in eastern Australia, with lesser occurrences in northern and southern Australia.
<b>Typical land use:</b>	Coastal reserves. If cleared, pasture and sugar cane on the far north coast of New South Wales and in Queensland.
<b>Common variants:</b>	Other related soils may be less clayey and vary in the thickness of the A1 horizon.
<b>World Reference Base:</b>	Thionic Gleysol.
<b>Other names:</b>	Humic Gleys and Acid Sulfate Soils.

### Environment and location of the example profile

<b>Landform:</b>	Marine plain.
<b>Parent material or substrate:</b>	Marine clayey sediments.
<b>Drainage class:</b>	Poorly drained.
<b>Surface condition:</b>	Cultivated, firm.
<b>Site disturbance:</b>	Cultivated.
<b>Native vegetation:</b>	<i>Melaleuca dealbata</i> woodland.

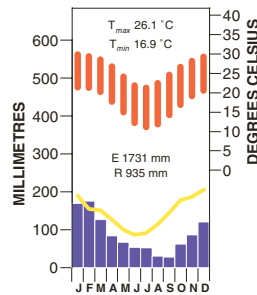


Moore Park near Bundaberg, south Queensland

### Site location



### Site climate



### Soil morphology

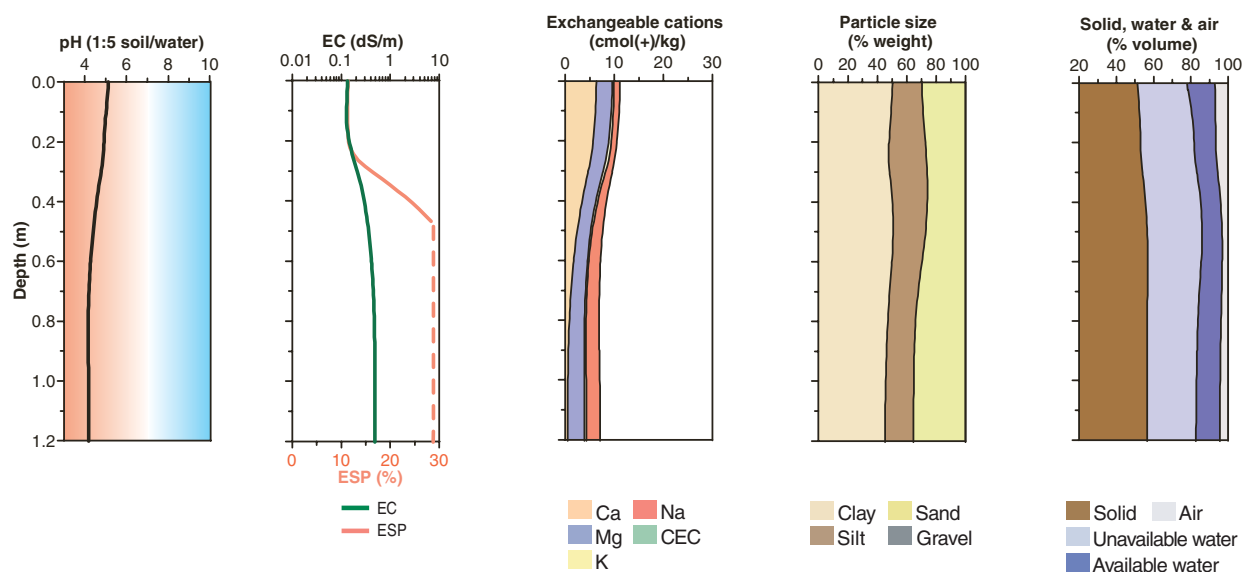
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
Ap	0.00–0.30	very dark grey brown (10YR 3/2)	–	medium clay	strong	subangular blocky	5–10 mm	firm (moderately moist)	–	–	clear
B21	0.30–0.55	greyish brown (10YR 5/2)	20–50% red and brown prominent (5–15 mm)	medium clay	strong	subangular blocky	5–10 mm	firm (moderately moist)	–	–	gradual
B22	0.55–0.90	brown (7.5YR 5/2)	20–50% yellow and brown (jarosite) prominent (5–15 mm)	medium clay	strong	subangular blocky	5–10 mm	firm (moist)	–	–	gradual
B23	0.90–1.40	brown (7.5YR 4/2)	–	medium clay	strong	subangular blocky	10–20 mm	firm (moist)	–	–	gradual
D1	1.40–1.50	–	–	sandy light clay	strong	subangular blocky	10–20 mm	–	–	–	–

### Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H <sub>2</sub> O <sup>A</sup>	pH CaCl <sub>2</sub> <sup>C</sup>	Elect. Cond. dS/m <sup>A</sup>	CaCO <sub>3</sub> %	Org. C % <sup>G+</sup>	Extr. P mg/kg <sup>B+</sup>	Tot. P % <sup>A</sup>	Tot. K % <sup>A</sup>	Cation exchange properties <sup>B</sup>								ESP % <sup>C</sup>	Bulk dens. Mg/m <sup>3</sup>	Particle size %			
										Ca	Mg	K	Na	H+Al	CEC	ECEC	CS			FS	Silt	Clay	
Ap	0.00–0.10	5.1	4.1	0.13		1.5	25	0.043	1.11	6.3	3.3	0.4	1.2				11		4	24	21	48	
Ap	0.10–0.20	4.9	4.0	0.10																			
Ap	0.20–0.30	5.0	4.0	0.14				0.050	1.13	5.7	3.2	0.9	0.9				8		3	23	27	46	
B22	0.50–0.60	4.4	3.6	0.36				0.020	1.28	2.5	2.6	0.2	2.1				30		3	23	23	52	
B22	0.80–0.90	4.1	3.4	0.49				0.022	1.53	0.8	3.0	0.3	2.7				39		3	31	19	48	
B23	1.10–1.20	4.2	3.5	0.48				0.018	1.24	0.4	3.5	0.4	2.8				40		1	34	19	45	

\* Bulk sample

## Key profile properties



## General qualities of the soil

<b>Infiltration:</b>	Slow or less when saturated.
<b>Available water store:</b>	Moderate.
<b>Permeability:</b>	Low or less in the B horizon.
<b>Physical root limitations:</b>	Poor aeration in the B horizon and below.
<b>Erosion hazard:</b>	Low.
<b>Nutrient availability:</b>	Mostly poor resulting from organic matter depletion.
<b>Toxicities:</b>	Probable acid sulfate soil. Medium salinity in the B horizon.



## Sugar cane growing on an acid sulfate soil in the Bundaberg district, south Queensland

*Acknowledgements:* Soil image, soil description and laboratory data: Department of Natural Resources and Mines, Queensland. Landscape image: CSIRO.