

CLAY LOAM OVER HEAVY CLAY ON SHALE

General Description: *Quartzite gravelly clay loam with a bleached and very stony A2 layer, over a brown, red and yellow mottled coarsely structured heavy clay, grading to quartzitic shale*

Landform: Undulating to rolling hillslopes.

Substrate: Quartzitic shale (ABC Range Quartzite at sampling site)

Vegetation:



Type Site: Site No.: CH138

1:50,000 sheet:	6527-2 (Yankalilla)	Hundred:	Myponga
Annual rainfall:	650 mm	Sampling date:	16/12/04
Landform:	Upper slope of rolling hills, 3% slope.		
Surface:	Hard setting surface with 2-10% quartzite stone (to 200 mm) and minor quartzite outcrop.		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-15	Very dark greyish brown firm weakly granular loam with 20-50% quartzite stone (6-60 mm). Clear to:
15-25	Very pale brown (bleached) with yellowish brown mottles very hard massive clay loam with more than 50% quartzite stone (20-200 mm). Abrupt to:
25-65	Dark yellowish brown, yellowish brown and red mottled very hard heavy clay with strong coarse angular blocky structure. Clear to:
65-100	Dark brown, very pale brown, yellowish brown and red mottled hard heavy clay with moderate coarse angular blocky structure and 20-50% shale fragments. Clear to:
100-110	Strong brown and pale yellow firm light clay with strong coarse platy structure (kaolinized weathering rock)



Classification: Bleached-Sodic, Eutrophic, Brown Chromosol; medium, moderately gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained. Water perches on the heavy clay subsoil for periods of up to a week following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. Phosphorus levels are very low (to be expected as site is outside paddock), but other tested nutrient levels are satisfactory. Low calcium:magnesium ratios could be a problem for plants with high calcium requirements.

pH: Neutral to slightly alkaline at the surface, strongly acidic with depth.

Rooting depth: 110 cm and continuing in sampling exposure, but few roots below 100 cm.

Barriers to root growth:

Physical: The hard, coarsely structured clay subsoil impedes root growth to some extent, and at least prevents even distribution patterns. Substrate shale can be very hard, and where shallow will restrict water availability.

Chemical: There are no apparent chemical barriers, although elevated sodicity at depth may affect sensitive crops (e.g. many horticultural species).

Water holding capacity: Approximately 110 mm in the potential root zone.

Seedling emergence: Fair. Surface soil tends to seal and set hard.

Workability: Fair. Surface is reasonably friable when moist. Surface quartzite is highly abrasive.

Erosion Potential

Water: Moderately low at this site, but is moderate to high downslope where gradients are steeper, and there is more run-on water.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-15	7.8	7.0	0	0.14	1.20	2.95	4	226	47	5.6	0.5	1.32	279	82.8	2.48	19.6	13.6	5.42	0.17	0.48	0.9
15-25	7.9	7.0	0	0.09	0.78	2.05	2	143	27	3.2	0.4	0.84	222	17.9	0.54	14.8	9.09	5.15	0.29	0.31	2.0
25-65	7.5	6.5	0	0.10	0.72	0.58	<1	198	38	3.3	1.1	0.50	80	4.38	0.36	17.1	5.88	9.74	0.94	0.50	5.5
65-100	5.6	4.8	0	0.09	0.70	0.32	<1	87	73	7.9	0.8	0.47	71	3.14	0.74	9.5	2.58	5.79	0.97	0.20	10.2
100-110	4.9	3.9	0	0.20	1.39	0.28	<1	89	125	50.9	0.6	0.69	69	2.50	0.25	6.2	1.27	3.66	1.07	0.20	17.3

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC, in this case estimated by the sum of cations.