

ACIDIC IRONSTONE SOIL

General Description: *Ironstone gravelly sandy loam to clay loam, overlying a yellowish brown gravelly sandy clay loam to light clay becoming more clayey with depth, over kaolinitic weathering rock*

Landform: Flat to gently sloping crests and upper slopes

Substrate: Highly weathered and kaolinized metamorphosed sandstones of the Backstairs Passage Formation

Vegetation: Euc. Baxteri forest



Type Site: Site No.: CH104

1:50,000 sheet	6526-4 (Cape Jervis)	Hundred:	Waitpinga
Annual rainfall:	725 mm	Sampling date:	17/10/96
Landform:	Flat narrow crest of rolling low hills, 1% slope		
Surface:	Hard setting with 2-10% ironstone gravel		

Soil Description:

Depth (cm)	Description
0-10	Dark brown fine sandy loam with 20-50% ironstone gravel and weak granular structure. Clear to:
10-25	Orange fine sandy clay loam with 20-50% ironstone gravel and weak polyhedral structure. Clear to:
25-45	Brownish yellow, brown and orange medium clay with moderate blocky structure and 10-20% ironstone gravel. Gradual to:
45-65	Brown, olive and red medium clay with moderate blocky structure and 10-20% ironstone gravel. Diffuse to:
65-90	Olive brown, light grey and red silty clay with weak blocky structure and 10-20% laminar ironstone segregations. Diffuse to:
90-140	Light grey, brown and red silty clay with weak blocky structure and 10-20% laminar ironstone segregations.



Classification: Ferric, Eutrophic, Yellow Dermosol; medium, gravelly, loamy / clayey, deep

Summary of Properties

Drainage Moderately well to imperfectly drained. The soil is likely to be saturated for a week or two at a time following prolonged rain.

Fertility Natural fertility is low, due to the degree of weathering of the profile and the high ironstone content (ironstone "fixes" phosphate). Note that although paddock surface soil has high phosphorus levels, there is no detectable phosphorus below 10 cm. Calcium, magnesium, potassium and copper levels are marginal to low.

pH Acidic throughout. Dolomitic lime is required to correct problem.

Rooting depth 90 cm in pit but few roots below 65 cm.

Barriers to root growth

Physical: There are no apparent physical barriers to root growth.

Chemical: Toxic levels of aluminium can be expected in these soils if they become too acidic.

Water holding capacity Approximately 90 mm in root zone.

Seedling emergence: Fair to good depending on the degree of hard setting and surface sealing.

Workability: Fair. Ironstone gravel is highly abrasive.

Erosion Potential

Water: Low on flat crests.

Wind: Low, although exposure is high.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	5.5	4.9	0	0.06	0.33	4.1	47	144	20	0.9	1.0	340	15	2.1	9.2	4.30	1.37	0.21	0.31	2.3
0-10	5.7	5.1	0	0.05	0.21	5.9	17	173	17	1.2	-	-	-	-	14.7	9.77	2.39	0.27	0.50	1.9
10-25	5.7	4.9	0	0.03	0.10	1.1	<4	87	13	1.2	-	-	-	-	7.8	3.07	1.70	0.23	0.22	3.0
25-45	5.8	5.0	0	0.04	0.09	0.9	<4	44	30	2.3	-	-	-	-	12.2	3.23	5.06	0.30	0.14	2.5
45-65	5.9	5.5	0	0.04	0.11	0.4	<4	23	59	2.5	-	-	-	-	10.8	2.63	6.44	0.34	0.09	3.1
65-90	5.7	5.3	0	0.05	0.11	0.2	<4	20	112	2.5	-	-	-	-	8.9	1.95	5.93	0.34	0.03	3.8
90-140	5.3	4.7	0	0.06	0.14	0.1	<4	9	134	3.2	-	-	-	-	8.2	1.59	5.35	0.45	0.04	5.4

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

CEC (cation exchange capacity) is 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.