

BLACK WELL STRUCTURED CLAY

General Description: *Black well structured clay loam to clay, grading to a dark strongly structured clayey subsoil with fine to rubbly carbonate at shallow to moderate depth*

Landform: Level plains (corridors between ancient coastal ridges).

Substrate: Interbedded limestones and clays (Padthaway Formation), capped by carbonate rubble.

Vegetation:



Type Site: Site No.: SE008

1:50,000 sheet: 7023-2 (Penola)

Hundred: Comaum

Annual rainfall: 625 mm

Sampling date: 12/10/92

Landform: Flat

Surface: Firm with no stones

Soil Description:

Depth (cm)	Description
0-15	Black firm medium clay with strong coarse lenticular breaking to polyhedral structure. Diffuse to:
15-30	Black and very dark greyish brown hard medium clay with strong medium polyhedral structure. Gradual to:
30-42	Very dark grey and olive brown friable (wet) light medium clay with strong medium polyhedral structure. Gradual to:
42-51	Very dark grey, olive grey and dark yellowish brown friable (wet) light medium clay with strong medium polyhedral structure. Abrupt to:
51-80	Olive brown, yellowish brown and yellowish red friable highly calcareous light clay with strong polyhedral structure and more than 50% carbonate nodules (6-60 mm) forming a weak rubbly pan.



Classification: Melanic-Mottled, Lithocalcic, Black Dermosol; medium, non-gravelly, clayey / clayey, moderate

Summary of Properties

Drainage Imperfectly drained. Clayey profile and substrate impede water movement. Seasonal water table at moderately shallow depth exacerbates the problem. Profile may remain wet for several weeks following heavy or prolonged rainfall.

Fertility Inherent fertility is very high. The exchangeable cation data indicate very high nutrient retention capacity which is augmented by favourable organic matter levels. Calcium saturation is high. There are no apparent nutrient deficiencies (nitrogen not measured).

pH Slightly alkaline at the surface, alkaline in the calcareous rubble layer.

Rooting depth 51 cm in pit.

Barriers to root growth

Physical: The rubbly carbonate pan restricts deeper root growth.

Chemical: There are no chemical barriers to root growth.

Water holding capacity Approximately 80 mm in the root zone.

Seedling emergence: Fair to good provided surface structure is maintained.

Workability: Fair. Soil becomes sticky and intractable when wet.

Erosion Potential

Water: Low.

Wind: Low.

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 (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-15	7.6	6.9	3.3	0.09	-	2.3	32	850	-	3.9	8.1	52	1.7	1.1	33.8	27.6	2.9	0.23	2.58	0.7
15-30	7.2	6.6	1.9	0.06	-	1.6	8.4	730	-	4.6	1.9	55	1.4	0.57	36.3	26.0	3.0	0.29	2.46	0.8
30-42	7.4	6.7	1.4	0.05	-	0.9	4.1	550	-	5.2	0.29	10	0.50	0.33	32.0	24.5	3.0	0.31	2.19	1.3
42-51	7.6	7.0	2.1	0.09	-	0.7	5.0	530	-	4.4	0.25	11	0.75	0.39	32.5	24.5	3.0	0.33	2.01	1.3
51-80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: 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