

CALCAREOUS CLAY ON MARL

General Description: *Calcareous dark coloured clay loam to clay, becoming more clayey and calcareous at depth with variable rubble, over marl*

Landform: Level plain.

Substrate: Calcreted calcareous clay (marl) of the Padthaway Formation

Vegetation:



Type Site: Site No.: SE054

| | |
|---|-------------------------|
| 1:50,000 sheet: 6923-2 (Kennion) | Hundred: Mt. Muirhead |
| Annual rainfall: 750 mm | Sampling date: 15/04/96 |
| Landform: Flat, 0% slope | |
| Surface: Firm with no stones. 2-10% shell fragments throughout profile. | |

Soil Description:

| Depth (cm) | Description |
|------------|---|
| 0-17 | Black firm calcareous medium heavy clay with strong polyhedral structure and 2-10% carbonate concretions (2-6 mm). Clear to: |
| 17-26 | Very dark grey firm moderately calcareous medium heavy clay with strong fine polyhedral structure. Abrupt to: |
| 26-39 | Very dark grey firm highly calcareous light medium clay with strong polyhedral structure and 20-50% carbonate nodules (6-60 mm). Gradual to |
| 39-64 | Dark grey firm highly calcareous light medium clay with strong fine polyhedral structure and 10-20% carbonate nodules (6-60 mm). Abrupt to: |
| 64-81 | Dark grey firm highly calcareous medium clay with strong fine polyhedral structure and 20-50% carbonate nodules (pan-like in places). Clear to: |
| 81-102 | Grey friable (wet) highly calcareous massive light clay with 10-20% carbonate nodules (20-60 mm). Clear to: |
| 102-136 | Very dark grey soft (wet) calcareous light clay with 10-20% carbonate nodules (6-20 mm). Diffuse to: |
| 136-160 | Black firm (wet) massive light clay with 2-10% carbonate nodules (2-6 mm). |



Classification: Melanic, Pedal, Supracalcic Calcarosol; medium, slightly gravelly, clayey / clayey, deep

Summary of Properties

Drainage: Imperfectly drained. The clayey texture restricts water movement - parts of the profile may remain saturated for several weeks at a time.

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data. High clay content and very high organic matter levels provide ample nutrient retention capacity. There are no apparent deficiencies (nitrogen not measured).

pH: Alkaline throughout.

Rooting depth: 80 cm in pit, but few roots below 26 cm.

Barriers to root growth:

Physical: There are no physical barriers.

Chemical: Highly calcareous clay restricts root growth from 26 cm at sampling site.

Water holding capacity: Approximately 70 mm in the root zone.

Seedling emergence: Fair. The clayey surface can seal over and reduce establishment percentages.

Workability: Fair. The clayey surface is hard when dry and sticky and intractable when wet, restricting time available for effective working.

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 | |
| Paddock | 7.7 | 7.5 | 0 | 0.35 | 1.20 | 10.4 | 65 | 772 | 55 | 3.3 | 1.68 | 10 | 2.28 | 1.11 | 50.7 | 42.12 | 4.25 | 0.36 | 2.31 | 0.7 |
| 0-17 | 7.9 | 7.6 | 15.6 | 0.30 | 1.12 | 6.8 | 49 | 576 | 47 | 2.7 | - | - | - | - | 48.0 | 40.07 | 5.51 | 0.53 | 1.65 | 1.1 |
| 17-26 | 8.2 | 7.8 | 37.2 | 0.21 | 0.64 | 2.3 | 12 | 235 | 23 | 2.1 | - | - | - | - | 24.6 | 20.11 | 3.79 | 0.52 | 0.53 | 2.1 |
| 26-39 | 8.5 | 7.9 | 46.0 | 0.22 | 0.53 | 0.7 | 8 | 196 | 19 | 1.2 | - | - | - | - | 17.6 | 12.88 | 5.20 | 0.68 | 0.54 | 3.9 |
| 39-64 | 8.6 | 7.9 | 45.1 | 0.24 | 0.74 | 0.5 | 5 | 217 | 31 | 1.0 | - | - | - | - | 15.1 | 10.57 | 5.90 | 0.94 | 0.61 | 6.2 |
| 64-81 | 8.9 | 8.0 | 55.2 | 0.21 | 0.79 | 0.1 | <4 | 213 | 25 | 0.6 | - | - | - | - | 8.7 | 5.72 | 4.09 | 0.70 | 0.54 | 8.0 |
| 81-102 | 8.7 | 8.0 | 42.2 | 0.28 | 0.93 | 0.1 | <4 | 298 | 34 | 0.7 | - | - | - | - | 13.9 | 8.10 | 6.15 | 1.12 | 0.73 | 8.0 |
| 102-136 | 8.6 | 8.1 | 24.5 | 0.37 | 1.05 | 0.3 | <4 | 395 | 63 | 0.7 | - | - | - | - | 23.4 | 11.33 | 8.23 | 1.50 | 1.04 | 6.4 |
| 136-160 | 8.6 | 8.1 | 30.5 | 0.34 | 0.88 | 0.1 | <4 | 451 | 55 | 0.8 | - | - | - | - | 21.6 | 13.58 | 8.33 | 1.42 | 1.21 | 6.6 |

Note: Paddock sample bulked from 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.