

BLACK CLAY OVER BURIED LAKE BED SEDIMENTS

General Description: *Up to 30 cm dark grey to black cracking clay over buried soil profiles and lake bed sediments*

Landform: Lake shore

Substrate: Buried lake bed sediments and sections of associated older soil profiles.

Vegetation:



| | | | | |
|-------------------|----------------|-------------|--------------------|-----------------|
| Type Site: | Site No.: | CH171 | 1:50,000 mapsheet: | 6627-2 (Milang) |
| | Hundred: | Alexandrina | Easting: | 314930 |
| | Section: | 43 | Northing: | 6069890 |
| | Sampling date: | 30/03/2009 | Annual rainfall: | 445 mm average |

Narrow flat between old coastal dune and lake shore. Hard, seasonally cracking surface, with no stones. Watertable at 170 cm. Water EC = 12dS/m (12,000 EC units).

Soil Description:

| Depth (cm) | Description |
|------------|--|
| 0-10 | Very dark grey hard highly calcareous light clay with strong coarse angular blocky structure. Clear to: |
| 10-20 | Greyish brown hard slightly calcareous sandy light medium clay with strong coarse angular blocky structure. Clear to: |
| 20-45 | Light yellowish brown, light olive brown and pale yellow friable massive sandy clay loam with minor soft carbonate segregations. Clear to: |
| 45-60 | Dark grey, olive brown and pale yellow friable massive clay loam. Clear to: |
| 60-78 | Pale yellow and yellowish brown soft light loamy sand. Abrupt to: |
| 78-90 | Yellowish brown and olive grey friable massive sandy light clay. Gradual to: |
| 90-125 | Greenish grey friable massive highly calcareous fine sandy clay loam. Diffuse to: |
| 125-170 | Dark greenish grey friable massive highly calcareous sandy loam with 10-20% soft and nodular carbonate. |



Classification: Dermosolic, Redoxic Hydrosol; medium, non-gravelly, clayey / clayey, shallow



Summary of Properties

Drainage: Poorly drained. In the majority of seasons, the water table rises into the potential root zone, saturating it for extended periods.

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data. The clayey surface has a very high capacity to hold and supply nutrients. Test data indicate that levels of all nutrients are adequate, with the possible exception of phosphorus.

pH: Alkaline at the surface, slightly acidic from 60 cm, and alkaline with depth.

Rooting depth: 90 cm in test pit, but few roots below 75 cm.

Barriers to root growth:

Physical: There are no significant physical barriers.

Chemical: Salinity is high at the surface, a result of extended dry conditions and 'wicking' of saline ground water to the surface, where salt concentrates. Levels lower in the profile are moderate, and should not impose restrictions on plants with medium to high levels of salt tolerance.

Waterholding capacity: Approximately 115 cm in the potential rootzone.

Seedling emergence: Fair. Significant opening rain is required to fill the clayey surface soil with sufficient moisture to allow germination. Post-germination dry periods cause the clay to crack open, damaging young root systems.

Workability: Fair to poor. The clayey surface is sticky when wet.

Erosion Potential:

Water: Low.

Wind: Low.

Laboratory Data

| Depth cm | pH H ₂ O | pH CaCl ₂ | CO ₃ % | EC 1:5 dS/m | ECe dS/m | Cl mg/kg | Org.C % | NO ₃ + NH ₄ mg/kg | Avail. P mg/kg | Avail. K mg/kg | SO ₄ -S mg/kg | Boron mg/kg | Trace Elements mg/kg (DTPA) | | | | Sum cations cmol (+)/kg | Exchangeable Cations cmol(+)/kg | | | | Est. ESP |
|-------------|------------------------|-------------------------|----------------------|-------------------|-------------|-------------|------------|--|----------------------|----------------------|-----------------------------|----------------|--------------------------------|----|------|------|----------------------------------|------------------------------------|------|------|------|-------------|
| | | | | | | | | | | | | | Cu | Fe | Mn | Zn | | Ca | Mg | Na | K | |
| 0-10 | 8.1 | 7.9 | 8 | 6.25 | 56.1 | 7453 | 5.32 | 26 | 26 | 2410 | 149 | 11.9 | 3.10 | 18 | 21.8 | 1.49 | 69.9 | 14.3 | 17.6 | 34.1 | 3.88 | 48.8 |
| 10-20 | 8.5 | 8.0 | 2 | 2.91 | 28.2 | 3274 | 1.84 | 13 | 8 | 1222 | 154 | 8.5 | 2.60 | 8 | 13.5 | 1.25 | 39.9 | 9.73 | 9.01 | 18.5 | 2.57 | 46.5 |
| 20-45 | 9.0 | 8.2 | 1 | 1.23 | 12.3 | 1343 | 0.18 | 5 | 2 | 360 | 153 | 2.4 | 1.05 | 12 | 7.17 | 0.49 | 15.3 | 4.18 | 3.73 | 6.39 | 0.95 | 41.9 |
| 45-60 | 7.9 | 7.6 | 0 | 1.66 | 18.9 | 1742 | 0.29 | 9 | 6 | 493 | 140 | 3.4 | 1.60 | 31 | 2.64 | 0.63 | 18.1 | 2.70 | 5.13 | 9.19 | 1.13 | 50.7 |
| 60-78 | 6.3 | 5.8 | 0 | 0.43 | 6.00 | 391 | 0.16 | 4 | 2 | 143 | 134 | 1.0 | 0.55 | 39 | 0.60 | 0.31 | 3.5 | 0.73 | 1.03 | 1.51 | 0.27 | 42.7 |
| 78-90 | 7.5 | 6.9 | 0 | 1.64 | 16.8 | 1552 | 0.20 | 5 | 14 | 902 | 144 | 5.4 | 0.71 | 95 | 3.78 | 1.00 | 25.8 | 6.21 | 8.71 | 8.65 | 2.25 | 33.5 |
| 90-125 | 8.5 | 8.0 | 14 | 1.17 | 11.6 | 906 | 0.52 | 4 | 22 | 682 | 155 | 4.3 | 0.32 | 40 | 18.3 | 0.30 | 22.2 | 9.97 | 5.35 | 5.10 | 1.78 | 23.0 |
| 125-170 | 9.2 | 8.3 | 8 | 0.74 | 6.97 | 523 | 0.34 | 7 | 18 | 529 | 145 | 3.5 | 0.29 | 38 | 8.37 | 0.44 | 16.7 | 7.00 | 4.59 | 3.69 | 1.38 | 22.1 |

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.

Further information: [DEWNR Soil and Land Program](#)

