

SAND OVER POORLY STRUCTURED BROWN CLAY

General Description: *Medium thickness sandy surface sharply overlying a brown mottled coarsely columnar sandy clay to clay, calcareous with depth, grading to heavy clay*

Landform: Flat plains

Substrate: Heavy clay (Blanchetown Clay equivalent)

Vegetation: Mallee woodland
(*E. dumosa*, *E. fasciculosa*,
E. odorata)



Type Site:

| | | | |
|----------------|----------|--------------------|-----------------|
| Site No.: | CH057 | 1:50,000 mapsheet: | 6627-2 (Milang) |
| Hundred: | Bremer | Easting: | 303500 |
| Section: | 86 | Northing: | 6085850 |
| Sampling date: | 30/08/93 | Annual rainfall: | 500 mm average |

Level plain, slope 0%. Soft surface.

Soil Description:

| <i>Depth (cm)</i> | <i>Description</i> |
|-------------------|--|
| 0-17 | Soft dark brown loamy sand. Abrupt to: |
| 17-20 | Soft bleached light loamy sand. Sharp to: |
| 20-30 | Yellowish brown and pale brown mottled firm sandy medium clay with extremely coarse columnar structure. Clear to: |
| 30-43 | Yellowish brown, grey and orange mottled medium clay with strong prismatic structure. Clear to: |
| 43-70 | Yellowish brown, yellow and orange mottled very highly calcareous light clay with 20-50% soft carbonate. Gradual to: |
| 70-115 | Light grey and orange mottled calcareous coarsely prismatic light clay with 20-50% soft carbonate. Gradual to: |
| 115-150 | Olive, orange and brown mottled medium clay with strong coarse blocky structure. |



Classification: Hypercalcic, Mottled-Mesonatric, Brown Sodosol; medium, non-gravelly, sandy / clayey, deep



Summary of Properties

- Drainage:** Imperfect. The dispersive sodic subsoil clay perches water so that the upper part of the profile may remain saturated for weeks at a time.
- Fertility:** Natural fertility is low as indicated by the exchangeable cation data. The sandy surface is unable to retain nutrients, and there is evidence of phosphate leaching. Levels of major elements (with the possible exception of surface magnesium) are adequate, but zinc, manganese and copper are all deficient. Boron levels are marginal (although toxic at depth).
- pH:** Acidic at the surface, strongly alkaline from 43 cm.
- Rooting depth:** 70 cm in pit, but few roots below 43 cm.
- Barriers to root growth:**
- Physical:** The hard dispersive clay subsoil restricts good root proliferation.
 - Chemical:** High pH and sodicity from 43 effectively limit the root zone.
- Waterholding capacity:** Approximately 50 mm in rootzone.
- Seedling emergence:** Fair to good, although water repellence may be a problem in some years.
- Workability:** Good.
- Erosion Potential:**
- Water:** Low.
 - Wind:** Moderately 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 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 | 5.5 | 5.2 | 0 | 0.29 | 2.00 | 1.4 | 34 | 303 | 150 | 0.6 | 0.33 | 115 | 5.27 | 1.10 | 6.3 | 5.06 | 0.61 | 0.09 | 0.31 | 1.4 |
| 0-17 | 5.3 | 4.8 | 0 | 0.13 | 1.31 | 1.2 | 35 | 213 | 65 | 0.4 | - | - | - | - | 4.7 | 3.78 | 0.49 | 0.09 | 0.23 | 1.9 |
| 17-20 | 7.8 | 7.4 | 0 | 0.08 | 0.67 | 0.1 | 5 | 50 | 17 | 0.1 | - | - | - | - | 1.6 | 0.78 | 0.24 | 0.15 | 0.09 | na |
| 20-30 | 6.8 | 5.7 | 0 | 0.14 | 0.83 | 0.3 | 10 | 188 | 32 | 1.4 | - | - | - | - | 11.1 | 4.43 | 4.45 | 1.70 | 0.49 | 15.3 |
| 30-43 | 8.3 | 7.3 | 0 | 0.27 | 1.36 | 0.2 | <4 | 327 | 45 | 4.4 | - | - | - | - | 18.5 | 4.54 | 8.03 | 3.94 | 0.77 | 21.3 |
| 43-70 | 9.7 | 8.5 | 23.7 | 0.59 | 2.39 | 0.3 | <4 | 405 | 101 | 9.6 | - | - | - | - | 18.1 | 4.05 | 8.83 | 6.47 | 1.06 | 35.7 |
| 70-115 | 9.9 | 8.6 | 16.4 | 0.56 | 1.47 | 0.3 | <4 | 424 | 24 | 11.0 | - | - | - | - | 16.1 | 2.62 | 7.85 | 6.91 | 1.03 | 43.0 |
| 115-150 | 9.7 | 8.9 | 1.1 | 0.67 | 1.73 | 0 | <4 | 525 | 62 | 21.6 | - | - | - | - | 23.4 | 2.49 | 10.0 | 8.97 | 1.40 | 38.3 |

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.

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

