

RUBBLY CALCAREOUS SANDY LOAM ON CLAY

General Description: *Calcareous sandy loam over a very highly calcareous sandy clay loam with abundant rubble from shallow depth, overlying clayey substrate within 120 cm*

Landform: Gently undulating dunefield of low to moderate parallel sandhills.

Substrate: Coarsely structured red clay (Hindmarsh Clay).

Vegetation: Mallee.



Type Site: Site No.: CM002

1:50,000 sheet: 6530-4 (Mundoora)

Hundred: Wokurna

Annual rainfall: 350mm

Sampling date: 11/02/92

Landform: Swale between low sandhills

Surface: Firm with no stones

Soil Description:

| Depth (cm) | Description |
|------------|---|
| 0-12 | Dark reddish brown friable highly calcareous light sandy loam with platy structure. Abrupt to: |
| 12-20 | Dark reddish brown firm massive very highly calcareous fine sandy loam. Abrupt to: |
| 20-30 | Yellowish red friable massive very highly calcareous fine sandy loam. Gradual to: |
| 30-58 | Yellowish red very highly calcareous friable fine sandy clay loam with more than 50% carbonate nodules (6-20 mm). Clear to: |
| 58-74 | Weak laminar calcrete pan. Clear to: |
| 74-120 | Pink friable massive very highly calcareous light clay with more than 50% soft carbonate segregations. Diffuse to: |
| 120-160 | Red and reddish yellow firm very highly calcareous medium clay with weak blocky structure and 20-50% soft carbonate. |



Classification: Endohypersodic, Regolithic, Lithocalcic Calcarosol; thick, non-gravelly, loamy / clay loamy, moderate

Summary of Properties

- Drainage** Well to moderately well drained. Soil rarely remains wet for more than a week following heavy or prolonged rainfall.
- Fertility** Surface fertility relies on organic matter levels which are adequate, and on phosphorus levels which are high at this site. Inherent surface soil fertility is moderate, although free lime to soil surface may cause marginal trace element deficiencies. Nutrient retention capacity of the subsoil is moderate. Possible response to applied zinc.
- pH** Alkaline at the surface, strongly alkaline with depth.
- Rooting depth** 65 cm in pit.
- Barriers to root growth**
- Physical:** Hard carbonate nodules and fragments limit soil volume available for root growth and in places rubbly pans impede root growth.
 - Chemical:** High pH and sodicity prevent root growth below 74 cm. Boron levels nearing toxic concentrations in substrate. Probable nutrient availability problems due to high carbonate content in subsoil.
- Water holding capacity** Approximately 50 mm in rootzone.
- Seedling emergence:** Good.
- Workability:** Good.
- 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 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 | 8.6 | 7.6 | 5.4 | 0.13 | 0.9 | 1.47 | 41 | 450 | - | - | 0.58 | 3.5 | 3.6 | 0.38 | 11.8 | 13.19 | 1.35 | 0.06 | 1.04 | 0.5 |
| 0-12 | 8.4 | 7.5 | 5.1 | 0.13 | 0.9 | 1.45 | 39 | 380 | - | - | 0.45 | 3.9 | 4.5 | 0.41 | 12.7 | 14.40 | 1.39 | 0.04 | 0.98 | 0.3 |
| 12-30 | 8.8 | 7.8 | 19.1 | 0.10 | 0.3 | 0.65 | 5 | 110 | - | 1.5 | 0.51 | 3.7 | 1.5 | 0.07 | 13.7 | 13.59 | 1.43 | 0.08 | 0.29 | 0.6 |
| 30-58 | 8.9 | 7.9 | 32.9 | 0.14 | 0.3 | 0.49 | 5 | 70 | - | 1.6 | 0.61 | 3.2 | 1.2 | 0.14 | 10.7 | 11.62 | 2.29 | 0.16 | 0.16 | 1.5 |
| 58-74 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 74-120 | 9.9 | 8.3 | 67.0 | 0.28 | 1.1 | 0.21 | 2 | 60 | - | 3.1 | 0.37 | 1.4 | 0.4 | 0.05 | 7.1 | 2.56 | 5.44 | 1.97 | 0.11 | 27.7 |
| 120-160 | 9.9 | 8.3 | 26.3 | 0.53 | 1.9 | 0.10 | 1 | 120 | - | 12.5 | 0.39 | 2.9 | 1.2 | 0.09 | 14.4 | 4.01 | 6.35 | 6.65 | 0.36 | 46.2 |

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.