

CALCAREOUS CLAY LOAM

General Description: *Calcareous well structured reddish brown clay loam, becoming more clayey and calcareous (Class I carbonate layer) with depth, overlying heavy clay within a metre of the surface*

- Landform:** Level to very gently undulating plains
- Substrate:** Reddish clay with strong coarse blocky structure (Hindmarsh Clay equivalent).
- Vegetation:** Mallee scrub



- Type Site:**
- | | | | |
|----------------|----------|--------------------|-------------------|
| Site No.: | CM020 | 1:50,000 mapsheet: | 6530-1 (Koolunga) |
| Hundred: | Boucaut | Easting: | 249850 |
| Section: | 101 | Northing: | 6262800 |
| Sampling date: | 04/12/91 | Annual rainfall: | 380 mm average |

Flat plain with a slope of 0.5% and a firm surface.

Soil Description:

| <i>Depth (cm)</i> | <i>Description</i> |
|-------------------|---|
| 0-18 | Red brown highly calcareous clay loam with strong granular structure. Clear to: |
| 18-40 | Red brown highly calcareous light clay with strong prismatic structure. Gradual to: |
| 40-60 | Orange very highly calcareous light clay with weak prismatic structure. Gradual to: |
| 60-85 | Orange very highly calcareous clay with weak prismatic structure. Gradual to: |
| 85-115 | Yellowish red highly calcareous medium heavy clay with strong prismatic structure and up to 10% soft calcareous and gypseous segregations. Diffuse to: |
| 115-145 | Yellowish red moderately calcareous medium clay with strong prismatic structure and up to 10% soft calcareous segregations and gypsum crystals. Diffuse to: |
| 145-175 | Red moderately calcareous medium clay with strong prismatic structure and up to 10% gypsum crystals. |



Classification: Epihypersodic, Pedal, Hypercalcic Calcarosol; thick, non-gravelly, clay loamy/clayey, moderate



Summary of Properties

- Drainage:** The soil is moderately well drained. No part of the profile is likely to remain wet for more than a week in most years. High exchangeable sodium causes clay dispersion and reduced permeability. In a wetter situation, drainage would be imperfect.
- Fertility:** The soil has an inherently high level of fertility as indicated by the exchangeable cation data. Phosphorus concentrations are low at type site, as is the organic carbon, although given the low rainfall, 1.4% organic carbon is about the maximum achievable level.
- pH:** The soil is alkaline throughout.
- Rooting depth:** There are roots to 175 cm, but there are few below 60 cm, and they are only in biopores from 85 cm.
- Barriers to root growth:**
- Physical:** There are no physical barriers to root growth above 85 cm. Below this, root growth will be limited by the high strength of the Hindmarsh Clay.
 - Chemical:** Toxic concentrations of boron from 40 cm and moderate salt levels from 60 cm limit root growth.
- Waterholding capacity:** Approximately 100 mm in the main rootzone (upper 85 cm), but not all is available due to poor root distribution.
- Seedling emergence:** Good.
- Workability:** Good, although may tend to be sticky 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 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 | |
| 0-18 | 8.3 | 7.9 | 7.0 | 0.17 | 0.7 | 1.14 | 13 | 744 | - | 3.5 | 1.1 | 3.1 | 7.6 | 0.8 | 24.5 | 21.8 | 4.0 | 0.52 | 2.63 | 2.1 |
| 18-40 | 8.9 | 8.1 | 18.5 | 0.36 | 0.8 | 0.46 | <4 | 149 | - | 6.0 | 1.5 | 6.2 | 6.6 | 0.2 | 26.5 | 18.0 | 6.9 | 3.36 | 0.79 | 12.7 |
| 40-60 | 8.8 | 8.3 | 43.4 | 0.94 | 5.6 | 0.67 | <4 | 128 | - | 22.1 | 1.1 | 2.4 | 1.8 | 0.1 | 18.2 | 8.3 | 7.7 | 3.89 | 0.58 | 21.4 |
| 60-85 | 8.7 | 8.3 | 33.2 | 1.52 | 8.0 | 0.08 | <4 | 274 | - | 46.5 | 1.3 | 2.7 | 1.2 | 0.1 | 21.2 | 6.9 | 10.8 | 5.74 | 1.11 | 27.1 |
| 85-115 | 8.8 | 8.4 | 18.7 | 1.71 | 9.3 | 0.05 | <4 | 359 | - | 58.7 | 0.6 | 2.5 | 0.9 | 0.1 | 23.6 | 6.7 | 12.9 | 7.15 | 1.51 | 30.3 |
| 115-145 | 8.3 | 8.2 | 16.7 | 4.03 | 12.0 | 0.02 | <4 | 347 | - | 58.6 | 0.5 | 2.7 | 0.9 | 0.1 | 23.4 | 8.2 | 12.8 | 7.51 | 1.34 | 32.1 |
| 145-175 | 8.3 | 8.2 | 15.8 | 3.97 | 10.4 | <0.02 | <4 | 342 | - | 55.4 | 0.4 | 2.1 | 0.7 | 0.1 | 23.7 | 7.8 | 12.9 | 7.53 | 1.35 | 31.8 |

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.

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

