

## SHALLOW RED CLAY ON CALCRETE

**General Description:** *Dark reddish brown well structured clay over calcrete shallower than 50 cm*

**Landform:** Very low rises (islands in ancient back lagoons) on flat plains

**Substrate:** Calcreted limestone of the Padthaway Formation.

**Vegetation:**

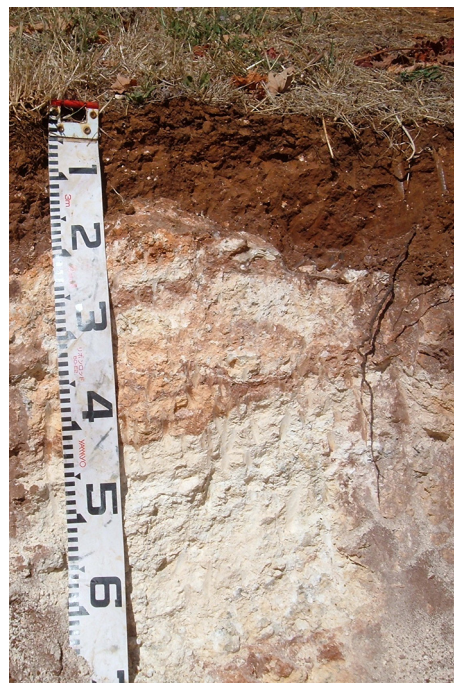


|                   |                |            |                    |                 |
|-------------------|----------------|------------|--------------------|-----------------|
| <b>Type Site:</b> | Site No.:      | SE161D     | 1:50,000 mapsheet: | 7023-2 (Penola) |
|                   | Hundred:       | Penola     | Easting:           | 485950          |
|                   | Section:       | 498        | Northing:          | 5869180         |
|                   | Sampling date: | 26/02/2008 | Annual rainfall:   | 655 mm average  |

Slight rise. Firm (inter-row) to hard (row) surface with no stones. Irrigated grape vines.

### Soil Description:

| <i>Depth (cm)</i> | <i>Description</i>  |
|-------------------|---|
| 0-10              | Dark brown firm subplastic light medium clay with weak to moderate fine polyhedral structure. Clear to:     |
| 10-20             | Dark reddish brown friable to firm subplastic light clay with moderate fine polyhedral structure. Sharp to: |
| 20-40             | Mainly hard calcrete, with some softer pockets and minor clay bands. Abrupt to:                             |
| 40-70             | Mainly soft carbonate (decomposing limestone).  |



**Classification:** Haplic, Petrocalcic, Red Dermosol; medium, non-gravelly, clayey / clayey, very shallow



## Summary of Properties

- Drainage:** Rapidly drained. The profile is rarely saturated for more than a couple of hours at a time.
- Fertility:** Inherent fertility is moderately high, as indicated by the exchangeable cation data. This is due to the high clay content of the surface layers. Laboratory data indicate satisfactory levels of all tested nutrients.
- pH:** Alkaline throughout. High surface pH probably due to effects of alkaline irrigation water.
- Rooting depth:** 20 cm in sampling pit (calcrete).
- Barriers to root growth:**
- Physical:** The calcrete is a significant barrier to root growth, although there is generally some fracturing, allowing limited exploration of deeper layers below the calcrete cap. These soils are usually ripped pre-establishment.
- Chemical:** There are no chemical limitations.
- Waterholding capacity:** (Estimates for potential rootzone of irrigated crops)  
 Total available: 35 mm (above calcrete)  
 Readily available: 15 mm (above calcrete)
- Seedling emergence:** Satisfactory.
- Workability:** Satisfactory.
- Erosion Potential:**
- Water:** Low.
- Wind:** Low.

## Laboratory Data

| Depth<br>cm | pH<br>H <sub>2</sub> O | pH<br>CaCl <sub>2</sub> | CO <sub>3</sub><br>% | EC1:5<br>dS/m | ECe<br>dS/m | Cl<br>mg/kg | Org.C<br>% | NO <sub>3</sub> +<br>NH <sub>4</sub><br>mg/kg | Avail.<br>P<br>mg/kg | Avail.<br>K<br>mg/kg | SO <sub>4</sub> -S<br>mg/kg | React<br>Fe<br>mg/kg | Boron<br>mg/kg | Trace Elements<br>mg/kg (DTPA) |    |      |      | Sum<br>cations<br>cmol<br>(+)/kg | Exchangeable<br>Cations cmol(+)/kg |      |      |      | Est.<br>ESP |
|-------------|------------------------|-------------------------|----------------------|---------------|-------------|-------------|------------|---|----------------------|----------------------|-----------------------------|----------------------|----------------|--------------------------------|----|------|------|----------------------------------|------------------------------------|------|------|------|-------------|
|             |                        |                         |                      |               |             |             |            |   |                      |                      |                             |                      |                | Cu                             | Fe | Mn   | Zn   |                                  | Ca                                 | Mg   | Na   | K    |             |
| 0-10        | 8.3                    | 7.6                     | 0                    | 0.21          | 0.87        | 22          | 1.68       | 30  | 43                   | 421                  | 13.8                        | -                    | 1.6            | 2.02                           | 65 | 16.3 | 1.58 | 20.5                             | 17.1                               | 2.11 | 0.33 | 1.01 | 1.6         |
| 10-20       | 8.4                    | 7.6                     | 0                    | 0.12          | 0.49        | 35          | 1.51       | -   | 6                    | 199                  | 6.5                         | 413                  | -              | -                              | -  | -    | -    | 19.6                             | 17.0                               | 1.59 | 0.42 | 0.53 | 2.1         |
| 20-40       | 8.9                    | 7.9                     | -                    | 0.09          | 0.37        | 14          | -          | -   | -                    | -                    | -                           | -                    | -              | -                              | -  | -    | -    | -                                | -                                  | -    | -    | -    | -           |
| 40-70       | 8.7                    | 7.7                     | -                    | 0.07          | 0.33        | 12          | -          | -   | -                    | -                    | -                           | -                    | -              | -                              | -  | -    | -    | -                                | -                                  | -    | -    | -    | -           |

**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](#)

