

SAND OVER RED CLAY

General Description: *Thin sandy surface soil sharply overlying a coarsely structured red clayey subsoil with abundant soft to rubbly carbonate at depth*

Landform: Gently undulating dunefield

Substrate: Coarsely structured red mottled Hindmarsh Clay

Vegetation: Mallee



| | | | | |
|-------------------|----------------|-------------|--------------------|-----------------|
| Type Site: | Site No.: | CL030 | 1:50,000 mapsheet: | 6628-4 (Gawler) |
| | Hundred: | Mudla Wirra | Easting: | 288100 |
| | Section: | 842 | Northing: | 6178750 |
| | Sampling date: | 23/12/96 | Annual rainfall: | 435 mm average |

Very low dune, 3% slope. Firm surface.

Soil Description:

| Depth (cm) | Description |
|------------|---|
| 0-10 | Reddish brown soft loamy sand with weak platy structure. Sharp to: |
| 10-23 | Red hard fine sandy medium clay with moderate coarse prismatic structure breaking to subangular blocky. Clear to: |
| 23-65 | Yellowish red firm very highly calcareous fine sandy light clay with 2-10% carbonate nodules. Diffuse to: |
| 65-110 | Reddish yellow hard very highly calcareous massive fine sandy clay loam with 10-20% carbonate nodules (20-50% between 80 and 100 cm). Diffuse to: |
| 110-170 | Yellowish red and greyish brown hard highly calcareous massive sandy clay. Diffuse to: |
| 170-200 | Yellowish red, red and light grey medium clay with strong blocky structure and 20-50% soft carbonate. |



Classification: Sodic, Supracalcic, Red Chromosol; medium, non-gravelly, sandy / clayey, deep



Summary of Properties

- Drainage:** Moderately well drained. Water will perch on the clayey subsoil for up to a week following prolonged rain.
- Fertility:** Natural fertility is moderately low due to the low clay content of the surface soil. Test results indicate that copper and zinc levels in plant tissue should be checked as soil levels are low. Values for other nutrient elements are satisfactory. Organic carbon levels are normal for a sandy soil.
- pH:** Surface pH in the pit is alkaline, but slightly acidic in the paddock sample. Soil is strongly alkaline with depth.
- Rooting depth:** 110 cm in pit, but few roots below 65 cm.
- Barriers to root growth:**
- Physical:** The hard, poorly structured clay subsoil prevents satisfactory root development. A weak plough pan in the surface layer will also restrict good early root growth.
 - Chemical:** Toxic levels of boron from 110 cm and very high pH and sodicity from 65 cm will severely retard root development.
- Waterholding capacity:** Approximately 80 mm in rootzone.
- Seedling emergence:** Good.
- Workability:** Good.
- Erosion Potential:**
- Water:** Moderately low - soil is highly erodible, but slope is short and gentle.
 - Wind:** Moderate due to the sandy surface.

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 (EDTA) | | | | CEC cmol (+)/kg | Exchangeable Cations cmol(+)/kg | | | | ESP |
|-------------|------------------------|-------------------------|----------------------|---------------|-------------|------------|----------------------|----------------------|--------------------------|----------------|--------------------------------|-----|-----|-----|-----------------------|------------------------------------|-----|------|------|------|
| | | | | | | | | | | | Cu | Fe | Mn | Zn | | Ca | Mg | Na | K | |
| Paddock | 6.4 | 5.5 | 0 | 0.07 | - | 0.91 | 54 | 364 | 4.6 | 0.8 | 0.70 | 87 | 27 | 1.6 | 6.7 | 3.8 | 1.1 | 0.10 | 0.75 | 1.5 |
| 0-10 | 8.0 | 7.0 | 0 | 0.08 | - | 0.75 | 51 | 323 | 5.0 | 1.0 | 1.1 | 56 | 22 | 2.1 | 6.8 | 3.1 | 1.0 | 0.10 | 0.73 | 1.5 |
| 10-23 | 7.3 | 6.7 | 0 | 0.09 | - | 0.48 | 10 | 370 | 4.4 | 1.1 | 1.4 | 31 | 50 | 1.3 | 20.8 | 11.9 | 3.6 | 0.31 | 1.1 | 1.5 |
| 23-65 | 8.8 | 7.9 | 22 | 0.14 | - | 0.29 | 4 | 184 | 5.1 | 2.2 | 0.92 | 3.2 | 2.0 | 2.1 | 13.6 | 10.1 | 4.7 | 0.38 | 0.51 | 2.8 |
| 65-110 | 9.5 | 8.1 | 31 | 0.52 | - | 0.16 | 1 | 368 | 17 | 8.8 | 0.36 | 1.8 | 1.2 | 2.1 | 12.9 | 3.3 | 5.7 | 4.2 | 0.92 | 32.5 |
| 110-170 | 9.5 | 8.2 | 30 | 1.26 | - | 0.14 | 1 | 406 | 130 | 16 | 0.31 | 2.9 | 1.3 | 1.9 | 10.7 | 1.8 | 4.3 | 5.6 | 0.97 | 52.2 |
| 170-200 | 9.1 | 8.4 | 20 | 1.65 | - | 0.11 | 1 | 547 | 181 | 20 | 0.28 | 6.1 | 3.0 | 2.0 | 16.9 | 1.7 | 7.2 | 7.7 | 1.4 | 45.3 |

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.

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

