## SANDY LOAM OVER POORLY STRUCTURED RED CLAY

General Description: Hard setting sandy loam abruptly overlying a coarsely structured red dispersive clay, calcareous with depth and grading to a gypseous clay

Landform: Level plain.

**Substrate:** Coarsely structured reddish

clay with segregations of gypsum and manganese.

Vegetation: Mallee.



**Type Site:** Site No.: CU068 1:50,000 mapsheet: 6531-3 (Crystal Brook)

> Hundred: Wandearah 225750 Easting: Section: Northing: 6303400 35E

22/01/2001 Sampling date: Annual rainfall: 360 mm average

Very slight depression in flat plain. Hard setting surface with no stones.

## **Soil Description:**

Depth (cm) Description

0 - 10Dark reddish brown hard massive sandy loam.

Sharp to:

10-30 Red very hard dispersive medium heavy clay with

strong coarse prismatic structure. Clear to:

30-45 Red hard medium clay with strong medium

angular blocky structure. Gradual to:

45-70 Red firm moderately calcareous medium clay

with strong medium angular blocky structure.

Gradual to:

70-150 Yellowish red very highly calcareous hard

> medium clay with strong coarse angular blocky structure and 2-10% fine carbonate segregations.

Diffuse to:

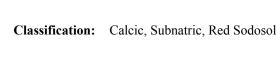
150-200 Yellowish red highly calcareous strongly

lenticular medium clay with 10-20% tubular and

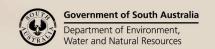
crystalline gypsum, and 2-10% soft manganese

segregations.

Calcic, Subnatric, Red Sodosol; medium, non-gravelly, loamy / clayey, deep







## Summary of Properties

**Drainage:** Imperfect. Water may perch on top of the dispersive clayey subsoil for several weeks

following heavy or prolonged rainfall.

**Fertility:** Inherent fertility is moderate, as indicated by the exchangeable cation data. The sandy

loam surface has sub-optimal nutrient retention capacity, but the capacity of the clayey subsoil is high. The test data indicate that sulphur concentration is marginal,

although subsoil reserves are high. Organic carbon levels are low.

**pH:** Neutral at the surface, strongly alkaline with depth.

**Rooting depth:** 70 cm in pit, but few roots below 45 cm.

Barriers to root growth:

**Physical:** The hard setting surface impedes roots during establishment, and the dispersive

clayey subsoil restricts root proliferation.

**Chemical:** High pH, high boron levels and high sodicity from 45 cm restrict deeper root growth.

Deep subsoil salinity is also moderately high.

**Waterholding capacity:** Approximately 60 mm in the rootzone.

**Seedling emergence:** Fair to poor due to hard setting sealing surface.

**Workability:** Fair to poor. Soil has a limited moisture range for effective working.

**Erosion Potential:** 

Water: Low.

Wind: Low.

## Laboratory Data

| Depth<br>cm | pH<br>H <sub>2</sub> O | pH<br>CaC1 <sub>2</sub> | CO <sub>3</sub> % | EC1:5<br>dS/m | Cl<br>mg/kg |      | P  | Avail.<br>K<br>mg/kg |     | Boron<br>mg/kg | 0 0  |    |      |      | cations        | Exchangeable Cations cmol(+)/kg |       |      |      | ESP  |
|-------------|------------------------|-------------------------|-------------------|---------------|-------------|------|----|----------------------|-----|----------------|------|----|------|------|----------------|---------------------------------|-------|------|------|------|
|             |                        |                         |                   |               |             |      |    |                      |     |                | Cu   | Fe | Mn   | Zn   | cmol<br>(+)/kg | Ca                              | Mg    | Na   | K    |      |
| Paddock     | 6.9                    | 5.7                     | -                 | 0.09          | 41          | 0.50 | 60 | 350                  | 4.8 | 1.3            | 1.17 | -  | 27.0 | 1.42 | 6.96           | 3.40                            | 2.17  | 0.57 | 0.77 | 8.2  |
|             |                        |                         |                   |               |             |      |    |                      |     |                |      |    |      |      |                |                                 |       |      |      |      |
| 0-10        | 6.7                    | 5.4                     | -                 | 0.06          | 21          | 0.43 | 64 | 300                  | 3.0 | 1.1            | 1.10 | -  | 27.0 | 1.51 | 5.49           | 2.90                            | 1.54  | 0.33 | 0.67 | 6.0  |
| 10-30       | 8.6                    | 7.0                     | -                 | 0.11          | 27          | 0.39 | 10 | 570                  | 2.0 | 5.2            | 1.87 | -  | 9.62 | 0.41 | 19.53          | 7.50                            | 8.00  | 2.70 | 1.28 | 13.8 |
| 30-45       | 9.3                    | 8.0                     | -                 | 0.22          | 56          | 0.25 | 5  | 510                  | 7.3 | 12.0           | 1.39 | -  | 2.92 | 0.22 | 23.22          | 6.50                            | 10.67 | 4.87 | 1.13 | 21.0 |
| 45-70       | 9.6                    | 8.6                     | -                 | 0.64          | 195         | 0.20 | 5  | 540                  | 31  | 23.0           | 1.79 | -  | 1.73 | 0.29 | 29.51          | 6.90                            | 13.00 | 8.35 | 1.21 | 28.3 |
| 70-150      | 9.7                    | 8.6                     | -                 | 0.81          | 440         | 0.20 | 6  | 440                  | 115 | 17.0           | 1.27 | ı  | 1.26 | 0.32 | 27.41          | 7.70                            | 10.33 | 8.35 | 0.97 | 30.5 |
| 150-200     | 9.2                    | 8.5                     | -                 | 1.47          | 1040        | 0.20 | 10 | 400                  | 480 | 16.0           | 0.98 | 1  | 0.84 | 0.21 | 28.67          | 8.10                            | 9.83  | 9.78 | 0.90 | 34.1 |

**Note**: Paddock sample bulked from cores (0-10 cm) taken around the pit.

Sum of cations is an estimate of 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 estimated CEC.

Further information: DEWNR Soil and Land Program



