

## GRADATIONAL RED SANDY LOAM

**General Description:** *Red sandy loam becoming more clayey with depth over rubbly carbonate at shallow depth*

**Landform:** Slopes, flats and depressions in a gently undulating landscape.

**Substrate:** Sandy Tertiary sediments capped by rubbly carbonate.

**Vegetation:** Mallee



**Type Site:** Site No.: MM024

1:50,000 sheet: 6828-2 (Bandon)

Hundred: Bowhill

Annual rainfall: 300 mm

Sampling date: 28/10/91

Landform: Depression

Surface: Firm with no stones

### Soil Description:

| Depth (cm) | Description   |
|------------|---|
| 0-9        | Reddish brown firm massive light sandy loam. Sharp to:  |
| 9-32       | Red firm massive light sandy loam. Clear to:  |
| 32-40      | Red firm massive light sandy clay loam. Clear to:   |
| 40-55      | Orange very highly calcareous sandy clay loam with more than 50% carbonate nodules, 60-200 mm. Clear to:      |
| 55-100     | Reddish yellow very highly calcareous sandy clay loam with 10-20% carbonate nodules, 20-60 mm. Diffuse to:    |
| 100-220    | Yellowish brown moderately calcareous sandy loam with minor fine carbonate segregations and ironstone gravel. |



**Classification:** Sodic, Lithocalcic, Red Kandosol; thick, non-gravelly, loamy / clay loamy, deep

## Summary of Properties

|                                |  |
|--------------------------------|--|
| <b>Drainage</b>                | Well drained. Soil never remains wet for more than a few days.   |
| <b>Fertility</b>               | Inherent fertility is low as indicated by the exchangeable cation data. Organic carbon levels are low, and phosphorus, nitrogen, copper and zinc deficiencies are likely. The data suggest that all of these are deficient at the sampling site. |
| <b>pH</b>                      | Slightly alkaline at the surface, strongly alkaline with depth.  |
| <b>Rooting depth</b>           | 55 cm in pit, but few roots below 40 cm.   |
| <b>Barriers to root growth</b> |  |
| <b>Physical:</b>               | Calcrete rubble restricts root growth in places.   |
| <b>Chemical:</b>               | High pH from 55 cm inhibits further root growth. At the sampling site, low fertility probably determines root depth.   |
| <b>Water holding capacity</b>  | 50 mm in root zone.  |
| <b>Seedling emergence:</b>     | Satisfactory.  |
| <b>Workability:</b>            | Soft to firm surface is easily worked.   |
| <b>Erosion Potential</b>       |  |
| <b>Water:</b>                  | Low.   |
| <b>Wind:</b>                   | Low to moderately 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 | Org.C<br>% | Avail.<br>P<br>mg/kg | Avail.<br>K<br>mg/kg | Boron<br>mg/kg | Trace Elements mg/kg<br>(DTPA) |     |      |       | CEC<br>cmol<br>(+)/kg | Exchangeable Cations<br>cmol(+)/kg |      |      |      | ESP  |
|-------------|------------------------|-------------------------|----------------------|---------------|-------------|------------|----------------------|----------------------|----------------|--------------------------------|-----|------|-------|-----------------------|------------------------------------|------|------|------|------|
|             |                        |                         |                      |               |             |            |                      |                      |                | Cu                             | Fe  | Mn   | Zn    |                       | Ca                                 | Mg   | Na   | K    |      |
|             |                        |                         |                      |               |             |            |                      |                      |                |                                |     |      |       |                       |                                    |      |      |      |      |
| Paddock     | 7.2                    | 6.9                     | 1                    | 0.06          | 0.54        | 0.5        | 10                   | 160                  | 2.1            | 0.08                           | 4.9 | 7.0  | 0.36  | 4.1                   | 2.68                               | 0.70 | 0.10 | 0.31 | 2.4  |
| 0-9         | 7.4                    | 7.0                     | 1                    | 0.03          | 0.27        | 0.4        | 10                   | 140                  | <0.50          | 0.06                           | 4.8 | 4.8  | 0.15  | 3.8                   | 2.50                               | 0.75 | 0.16 | 0.23 | 4.2  |
| 9-32        | 7.8                    | 7.1                     | 2                    | 0.02          | 0.10        | 0.1        | 2                    | 62                   | <0.50          | <0.05                          | 3.1 | 2.1  | <0.06 | 3.8                   | 2.91                               | 0.78 | 0.19 | 0.14 | 5.0  |
| 32-40       | 8.3                    | 7.3                     | 2                    | 0.03          | 0.22        | 0.1        | <2                   | 68                   | <0.50          | <0.05                          | 3.6 | 1.4  | <0.06 | 5.4                   | 4.15                               | 1.04 | 0.21 | 0.14 | 3.9  |
| 40-55       | 9.0                    | 8.1                     | 17                   | 0.10          | 0.38        | 0.3        | 3                    | 45                   | <0.50          | 0.25                           | 4.0 | 0.54 | <0.06 | 5.2                   | 6.26                               | 1.70 | 0.20 | 0.11 | 3.8  |
| 55-100      | 9.3                    | 8.2                     | 19                   | 0.08          | 0.29        | 0.2        | 2                    | 44                   | <0.50          | 0.21                           | 1.4 | 0.19 | <0.06 | 2.7                   | 3.46                               | 1.77 | 0.18 | 0.08 | 6.7  |
| 100-140     | 9.3                    | 8.3                     | 12                   | 0.08          | 0.27        | 0.1        | <2                   | 48                   | 0.58           | 0.20                           | 1.7 | 0.34 | <0.06 | 2.5                   | 2.94                               | 2.06 | 0.22 | 0.09 | 8.8  |
| 140-180     | 9.4                    | 8.3                     | 8                    | 0.08          | 0.27        | <0.1       | <2                   | <40                  | 0.80           | 0.14                           | 1.5 | 0.40 | <0.06 | 2.0                   | 2.31                               | 1.75 | 0.21 | 0.16 | 10.5 |
| 180-220     | 9.5                    | 8.2                     | 4                    | 0.09          | 0.32        | <0.1       | <2                   | 45                   | 1.5            | 0.11                           | 1.6 | 0.47 | <0.06 | 2.2                   | 1.98                               | 1.53 | 0.32 | 0.07 | 14.5 |

**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.