

## SANDY LOAM OVER BROWN CLAY

**General Description:** *Sandy loam with variable ironstone gravel over a coarsely structured brown clay, calcareous with depth*

**Landform:** Plateau or summit surface of undulating low hills.

**Substrate:** Deeply weathered kaolinized sandstone.

**Vegetation:** Kangaroo Island mallee (*Eucalyptus cneorifolia*).



**Type Site:** Site No.: CK001

|                  |   |                |          |
|------------------|---|----------------|----------|
| 1:50,000 sheet:  | 6426-1 (Penneshaw)                              | Hundred:       | Dudley   |
| Annual rainfall: | 575 mm  | Sampling date: | 08/03/93 |
| Landform:        | Very gently undulating summit surface, 1% slope |                |          |
| Surface:         | Firm with no stones                             |                |          |

### Soil Description:

| Depth (cm) | Description  |
|------------|--|
| 0-9        | Dark brown soft massive sandy loam with 10-20% ironstone nodules (2-6 mm). Abrupt to:  |
| 9-14       | Pink friable massive sandy loam with 20-50% ironstone nodules (2-6 mm). Sharp to:  |
| 14-30      | Yellowish brown, brown and red hard medium heavy clay with strong very coarse prismatic, breaking to polyhedral structure. Diffuse to:   |
| 30-60      | Yellowish brown and red firm medium clay with strong very coarse prismatic, breaking to polyhedral structure. Diffuse to:  |
| 60-95      | Light olive brown, yellowish brown and red firm medium clay with strong very coarse prismatic structure (as above), and minor fine carbonate. Clear to:                                  |
| 95-140     | Grey, yellowish brown and red firm slightly calcareous medium clay with coarse prismatic structure (as above), 10-20% ironstone nodules and 2-10% fine carbonate segregations. Clear to: |
| 140-155    | Weathering sandstone.  |



**Classification:** Bleached-Mottled, Hypocalcic, Brown Chromosol; medium, gravelly, loamy / clayey, deep

## Summary of Properties

|                                |   |
|--------------------------------|---|
| <b>Drainage</b>                | Imperfectly drained, due to the tight clay subsoil at shallow depth. The soil may remain wet for several weeks following heavy or prolonged rainfall.   |
| <b>Fertility</b>               | Natural fertility is moderate to high, as indicated by the exchangeable cation data. Surface soil fertility relies on organic carbon being maintained above 2%. Ironstone gravel ties up phosphorus which is low at pit site. Trace element concentrations are adequate in surface. |
| <b>pH</b>                      | Acidic at surface, alkaline with depth.   |
| <b>Rooting depth</b>           | 95 cm in pit, but few roots below 60 cm.  |
| <b>Barriers to root growth</b> |   |
| <b>Physical:</b>               | The coarsely structured tight clay subsoil restricts root density.  |
| <b>Chemical:</b>               | Marginal surface soil acidity impedes near surface root growth. Low subsoil trace element concentrations restrict deeper root growth.   |
| <b>Water holding capacity</b>  | 120 mm in rootzone, but up to 40 mm effectively unavailable due to low root density.  |
| <b>Seedling emergence:</b>     | Good to fair. Organic matter levels need to be maintained to preserve surface structure.  |
| <b>Workability:</b>            | Fair. Ironstone gravel causes excessive implement wear.   |
| <b>Erosion Potential</b>       |   |
| <b>Water:</b>                  | Low.  |
| <b>Wind:</b>                   | 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 | SO <sub>4</sub> -S<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     | 4.8                    | 4.4                     | 0                    | 0.11          | 0.64        | 2.2        | 7                    | 190                  | -                           | 0.9            | 0.7                            | 230 | 1.7  | 0.7  | 8.3                   | 4.59                               | 0.62 | 0.10 | 0.44 | 1.2 |
| 0-9         | 5.1                    | 4.6                     | 0                    | 0.07          | 0.27        | 2.6        | 23                   | 240                  | -                           | 1.0            | 0.6                            | 160 | 1.3  | 0.6  | 11.5                  | 5.84                               | 1.51 | 0.18 | 0.59 | 1.6 |
| 9-14        | 5.3                    | 4.8                     | 0                    | 0.06          | 0.14        | 0.51       | 11                   | 110                  | -                           | 0.4            | 0.1                            | 120 | 0.2  | 0.4  | 4.1                   | 2.10                               | 0.41 | 0.12 | 0.21 | 2.9 |
| 14-30       | 6.3                    | 5.8                     | 1                    | 0.09          | 0.15        | 0.63       | <2                   | 520                  | -                           | 4.9            | 0.8                            | 18  | 0.1  | 0.2  | 22.7                  | 12.6                               | 5.80 | 0.55 | 1.73 | 2.4 |
| 30-60       | 7.5                    | 7.1                     | 1                    | 0.12          | 0.28        | 0.11       | <2                   | 680                  | -                           | 8.2            | 0.1                            | 4   | <0.1 | <0.1 | 22.5                  | 11.4                               | 4.07 | 0.57 | 1.73 | 2.5 |
| 60-95       | 7.8                    | 7.5                     | 1                    | 0.14          | 0.32        | 0.07       | <2                   | 670                  | -                           | 8.6            | 0.1                            | 3   | 0.1  | 0.1  | 19.5                  | 11.3                               | 3.89 | 0.56 | 1.72 | 2.9 |
| 95-140      | 8.0                    | 7.6                     | 1                    | 0.14          | 0.39        | 0.03       | <2                   | 590                  | -                           | 8.4            | 0.1                            | 2   | <0.1 | 0.1  | 16.0                  | 8.85                               | 3.29 | 0.53 | 1.36 | 3.3 |

**Note:** Paddock sample bulked from 20 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