

## SANDY LOAM OVER POORLY STRUCTURED BROWN CLAY

**General Description:** *Grey massive loamy sand to sandy loam sharply overlying a brown mottled columnar to prismatic clay with variable carbonate at depth*

**Landform:** Gently sloping alluvial fans and flats

**Substrate:** Alluvial heavy clay.

**Vegetation:** Blue gum - red gum woodland



**Type Site:** Site No.: CH092

|                  |  |                |          |
|------------------|--|----------------|----------|
| 1:50,000 sheet:  | 6627-4 (Noarlunga)                                   | Hundred:       | Willunga |
| Annual rainfall: | 650 mm   | Sampling date: | 29/04/96 |
| Landform:        | Very gently inclined alluvial fan with a slope of 2% |                |          |
| Surface:         | Firm with no stones                                  |                |          |

### Soil Description:

| Depth (cm) | Description  |
|------------|--|
| 0-19       | Dark greyish brown massive soft light sandy loam. Abrupt to:   |
| 19-37      | Pale brown (bleached when dry), with yellowish mottles, massive loamy sand. Abrupt to:   |
| 37-65      | Brown and orange mottled hard fine sandy medium heavy clay with coarse columnar structure. Clear to:   |
| 65-90      | Brown, olive brown and yellow mottled hard heavy clay with coarse prismatic structure and slickensides. Clear to:  |
| 90-120     | Olive brown, light brown and yellow mottled slightly calcareous heavy clay with coarse lenticular structure, slickensides and 2-10% soft carbonate segregations. Diffuse to: |
| 120-160    | Light brown, olive and yellow mottled slightly calcareous heavy clay with coarse lenticular structure and slickensides.  |



**Classification:** Vertic, Mottled-Subnatric, Brown Sodosol; thick, non-gravelly, loamy / clayey, very deep

## Summary of Properties

**Drainage** Imperfectly drained. Water will perch on top of the dispersive clay subsoil, saturating the bleached layer for up to several weeks after prolonged rain.

**Fertility** Natural fertility is moderate, the sandy surface relying on satisfactory organic matter levels for adequate nutrient retention capacity. All tested elements were in adequate supply, with the possible exception of calcium which is low relative to other cations.

**pH** Neutral to mildly acidic at the surface; alkaline with depth.

**Rooting depth** Few roots below 120 cm in pit.

### Barriers to root growth

**Physical:** The poorly structured dispersive clay subsoil retards uniform root growth. Most roots are confined to the cracks between the clay columns.

**Chemical:** High sodicity from 65 cm affects root growth.

**Water holding capacity** Approximately 120 mm in root zone, but a significant proportion is effectively unavailable due to poor root distribution patterns. Readily available water capacity in potential rootzone for irrigated crops (i.e. 60 cm) is about 35 mm.

**Seedling emergence:** Good, provided that organic matter levels are maintained.

**Workability:** Good, provided that organic matter levels are maintained.

### Erosion Potential

**Water:** Moderately low.

**Wind:** 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 | SO <sub>4</sub> -S<br>mg/kg | Boron<br>mg/kg | Trace Elements mg/kg<br>(EDTA) |     |    |    | CEC<br>cmol<br>(+)/kg | Exchangeable Cations<br>cmol(+)/kg |      |      |      | ESP  |
|-------------|------------------------|-------------------------|----------------------|---------------|-------------|------------|----------------------|----------------------|-----------------------------|----------------|--------------------------------|-----|----|----|-----------------------|------------------------------------|------|------|------|------|
|             |                        |                         |                      |               |             |            |                      |                      |                             |                | Cu                             | Fe  | Mn | Zn |                       | Ca                                 | Mg   | Na   | K    |      |
| Row         | 7.0                    | 6.6                     | 0                    | 0.18          | 2.08        | 1.1        | 86                   | 260                  | 14                          | 0.8            | 17                             | 245 | 92 | 12 | 6.2                   | 4.60                               | 2.15 | 0.29 | 0.56 | 4.6  |
| 0-19        | 6.1                    | 5.5                     | 0                    | 0.07          | 0.72        | 1.2        | 234                  | 231                  | 7                           | 0.6            | -                              | -   | -  | -  | 6.4                   | 4.79                               | 1.21 | 0.16 | 0.45 | 2.5  |
| 19-37       | 6.5                    | 6.1                     | 0                    | 0.12          | 2.28        | 0.2        | 80                   | 98                   | 16                          | 0.1            | -                              | -   | -  | -  | 2.3                   | 1.51                               | 0.62 | 0.12 | 0.11 | 5.1  |
| 37-65       | 6.4                    | 5.6                     | 0                    | 0.16          | 0.74        | 0.5        | 7                    | 195                  | 19                          | 1.6            | -                              | -   | -  | -  | 21.8                  | 10.1                               | 8.64 | 1.85 | 0.58 | 8.5  |
| 65-90       | 8.4                    | 7.7                     | 0.6                  | 0.37          | 1.44        | 0.3        | 4                    | 165                  | 25                          | 3.1            | -                              | -   | -  | -  | 24.7                  | 11.1                               | 9.51 | 3.48 | 0.42 | 14.1 |
| 90-120      | 9.0                    | 8.2                     | 3.2                  | 0.43          | 1.43        | 0.2        | 4                    | 165                  | 38                          | 4.0            | -                              | -   | -  | -  | 27.1                  | 12.2                               | 10.5 | 4.83 | 0.48 | 17.8 |
| 120-160     | 8.5                    | 7.7                     | 0.1                  | 0.47          | 1.65        | 0.1        | <4                   | 160                  | 32                          | 3.7            | -                              | -   | -  | -  | 31.7                  | 12.2                               | 11.5 | 7.06 | 0.44 | 22.3 |

**Note:** Row sample bulked from 20 cores (0-10 cm) taken along planting lines.

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.