

SAND OVER RED SANDY CLAY

General Description: *Thick loamy sand over a thin red weakly structured sandy clay, grading to a calcareous sandy clay loam with variable nodular carbonate*

Landform: Flat plain.

Substrate: Medium textured alluvium

Vegetation:



Type Site: Site No.: CL035

1:50,000 sheet: 6628-4 (Gawler)

Hundred: Port Adelaide

Annual rainfall: 400 mm

Sampling date: 27/04/99

Landform: Flat plain

Surface: Firm with no stones. Water table at 180 cm.

Soil Description:

| Depth (cm) | Description |
|------------|--|
| 0-24 | Dark reddish brown soft loamy sand. Abrupt to: |
| 24-30 | Reddish brown firm massive loamy sand. Abrupt to: |
| 30-45 | Dark red firm sandy light clay with weak coarse prismatic structure and minor nodular carbonate. Clear to: |
| 45-80 | Yellowish red very highly calcareous sandy clay loam with weak subangular blocky structure and minor nodular carbonate. Diffuse to: |
| 80-110 | Red and brown mottled highly calcareous clay loam with moderate subangular blocky structure. Diffuse to: |
| 110-170 | Dark brown and orange mottled moderately calcareous fine sandy clay loam with weak subangular blocky structure and 10-20% nodular carbonate. |



Classification: Hypercalic, Mesonatric, Red Sodosol; thick, non-gravelly, sandy / clayey, moderate

Summary of Properties

- Drainage:** Moderately well drained. Parts of the profile may remain wet for periods of up to a week. The water table prevents deep percolation.
- Fertility:** Inherent fertility is moderately low, as indicated by the exchangeable cation data. Calcium, magnesium and copper levels are all low, although high magnesium levels in the subsoil compensate for surface soil deficiencies. Organic carbon concentrations are low.
- pH:** Alkaline throughout.
- Rooting depth:** Good root growth can be expected to 30 cm, and some root growth to 110 cm.

Barriers to root growth

- Physical:** The sodic clayey subsoil has some adverse effect, but is not severely limiting.
- Chemical:** High boron and salinity from 30 cm restrict root growth, even in hardy crops.

Water holding capacity: Approximate values of total and readily available water are:
75 mm and 40 mm for hardy crops (eg vines), with a potential root depth of 50 cm.
30 mm and 20 mm for more sensitive crops (eg almonds) with a potential root depth of 30 cm.

Seedling emergence: No limitation.

Workability: Firm sandy surface is easily worked over a wide range of moisture conditions.

Erosion Potential

- Water:** Low.
- Wind:** Moderately low.

Laboratory Data

| Depth cm | pH H ₂ O | pH CaCl ₂ | CO ₃ % | EC1:5 dS/m | Cl mg/kg | 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 | |
| 0-24 | 9.1 | 8.1 | 0 | 0.55 | 286 | 0.93 | 122 | 655 | 64 | 5.2 | 1.6 | 90 | 54 | 4.8 | 6.7 | 4.04 | 0.89 | 1.74 | 1.32 | 21.8 |
| 30-45 | 8.4 | 7.9 | 1.6 | 2.53 | 1882 | 0.44 | 16 | 1031 | 389 | 14.9 | 1.6 | 31 | 35 | 4.2 | 11.0 | 3.88 | 4.09 | 2.59 | 2.27 | 20.2 |
| 45-80 | 9.3 | 8.5 | 25.8 | 2.61 | 1945 | 0.23 | 11 | 512 | 372 | 21.4 | 0.92 | 16 | 5.8 | 4.7 | 7.6 | 1.78 | 2.95 | 4.08 | 0.98 | 41.6 |
| 80-110 | 9.9 | 9.0 | 8.3 | 1.73 | - | 0.18 | 3 | 409 | 333 | 13.9 | - | - | - | - | 7.3 | 0.65 | 1.41 | 6.71 | 0.75 | 70.6 |
| 110-170 | 9.6 | 8.6 | 0.6 | 0.55 | - | 0.14 | 2 | 278 | 75 | 24.9 | - | - | - | - | 5.6 | 0.42 | 1.23 | 3.83 | 0.47 | 63.8 |

Note: 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.