

HARD GRADATIONAL RED CLAY LOAM

General Description: *Hard sandy clay loam over a coarsely structured sandy clay, calcareous with depth.*

Landform: Very gently undulating plain.

Substrate: Red and brown strongly structured clay (buried subsoil of older soil)

Vegetation:



Type Site: Site No.: CL034

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

Hundred: Port Adelaide

Annual rainfall: 400 mm

Sampling date: 27/04/99

Landform: Flat plain (laser levelled), 0% slope

Surface: Firm with no stones

Soil Description:

| Depth (cm) | Description |
|------------|--|
| 0-11 | Reddish brown massive sandy clay loam. Clear to: |
| 11-30 | Red firm sandy light clay with coarse moderate subangular blocky structure. Gradual to: |
| 30-55 | Red highly calcareous hard massive clay loam with 10-20% soft carbonate. Diffuse to: |
| 55-90 | Red and brown mottled light medium clay with moderate angular blocky structure and 2-10% semi hard carbonate in tubules. Diffuse to: |
| 90-160 | Red and brown mottled light medium clay with moderate angular blocky structure and 2-10% semi hard carbonate in tubules. |



Classification: Sodic, Calcic, Red Dermosol; medium, non-gravelly, clay loamy / clayey, moderate

Summary of Properties

Drainage: Moderately well drained. The sodic clay subsoil prevents free drainage so the upper subsoil may remain wet for up to a week.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. Nutrient retention capacity is adequate, but the data indicate marginally low calcium levels (in relation to magnesium), and possibly low copper concentrations due to high pH.

pH: Alkaline throughout.

Rooting depth: Strong root growth to 30 cm, moderate to 90 cm and a few to 160 cm.

Barriers to root growth

Physical: The hard sodic subsoil restricts root growth to some degree, depending on tolerance of crop. Vines are unlikely to be significantly affected, but roots of more sensitive species will be restricted.

Chemical: Moderately high levels of boron and salinity at shallow depth affect sensitive crops.

Water holding capacity: Approximate values of total and readily available water are: 160 mm and 75 mm for hardy crops (eg vines), with a potential root depth of 110 cm 85 mm and 45 mm for more sensitive crops (eg almonds) with a potential root depth of 50 cm.

Seedling emergence: Fair. Surface soil is prone to surface sealing.

Workability: Fair. Surface soil shatters if worked too dry and puddles if worked too wet.

Erosion Potential

Water: Low.

Wind: 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 -S 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 | |
| Paddock | 8.6 | 7.8 | 0 | 0.38 | - | 0.66 | 115 | 872 | 60 | 6.0 | - | - | - | - | 10.8 | 5.90 | 2.32 | 1.54 | 1.76 | 14.3 |
| 0-11 | 8.8 | 7.8 | 0 | 0.36 | 156 | 0.55 | 164 | 1080 | 32 | 4.9 | 2.6 | 58 | 44 | 5.0 | 13.2 | 6.88 | 2.99 | 1.66 | 2.34 | 12.6 |
| 11-30 | 8.8 | 7.9 | 0 | 0.56 | 390 | 0.24 | 13 | 676 | 74 | 12.3 | 2.2 | 36 | 42 | 3.5 | 16.2 | 8.12 | 4.09 | 2.42 | 1.59 | 14.9 |
| 30-55 | 8.7 | 8.2 | 17.7 | 0.89 | 452 | 0.24 | 8 | 529 | 280 | 11.2 | 1.4 | 15 | 3.8 | 4.8 | 12.8 | 7.10 | 4.71 | 2.56 | 1.19 | 20.0 |
| 55-90 | 8.5 | 8.1 | 6.7 | 1.03 | - | 0.19 | 5 | 826 | 377 | 11.4 | - | - | - | - | 16.2 | 6.14 | 6.63 | 2.83 | 1.87 | 17.5 |
| 90-160 | 9.0 | 8.2 | 1.4 | 0.63 | - | 0.13 | 2 | 747 | 127 | 13.7 | - | - | - | - | 14.0 | 3.35 | 5.14 | 3.04 | 1.55 | 21.7 |

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.