

BLEACHED SAND OVER CLAY

General Description: *Delved, bleached sand over poorly structured mottled orange clay, calcareous with depth.*

Landform: Level plain.

Substrate: Clay of the Padthaway Formation

Vegetation:



| | | | | |
|-------------------|----------------|-----------|--------------------|----------------------|
| Type Site: | Site No.: | SE121 | 1:50,000 mapsheet: | 7025-4 (Cannawigara) |
| | Hundred: | Pendleton | Easting: | 460460 |
| | Section: | 49 | Northing: | 6001450 |
| | Sampling date: | 06/11/06 | Annual rainfall: | 480 mm average |

Flat plain. Soft surface with no stones. Paddock delved to 50 cm.

Soil Description:

| Depth (cm) | Description |
|------------|--|
| 0-10 | Dark brown weakly granular clayey sand with 10-20% small (delved) clay fragments. Abundant roots. Clear to: |
| 10-18 | Brown single grain sand. Many roots. Clear to: |
| 18-32 | Bleached single grain sand. Roots few to common. Sharp to: |
| 32-70 | Brownish yellow, reddish brown and dark brown mottled hard medium heavy clay with coarse columnar, breaking to medium subangular blocky, structure. Roots few to common. Diffuse to: |
| 70-120 | Brownish yellow, strong brown and light grey mottled hard medium clay with coarse prismatic, breaking to medium angular blocky, structure, and more than 50% soft carbonate. Very few roots. Diffuse to: |
| 120-150 | Light grey and brownish yellow mottled hard massive light clay with 20-50% soft carbonate segregations. No roots. |



Note: Clay delving has caused mixing of the top four horizons along the line of delve tine.

Classification: Hypercalcic, Mottled-Subnatric, Yellow Sodosol; thick, non-gravelly, sandy/clayey, deep



Summary of Properties

- Drainage:** Imperfectly drained. Water is likely to perch on top of the poorly structured clay for several weeks. The pedogenic carbonate below 70 cm indicates that water rarely passes below this point.
- Fertility:** Clay delving may have slightly improved the fertility of the soil surface, with the exchangeable cation data indicating low to moderate inherent fertility. Fertility has been improved in the second horizon along the delve line. Phosphorus levels are very low, and sulphur is also low. Potassium is adequate for pastures.
- pH:** Neutral to slightly acidic at the surface, strongly alkaline in the subsoil (indicating presence of sodium bicarbonate), and becoming acidic with depth.
- Rooting depth:** 70 cm in sampling pit, with a very few roots to 120 cm.
- Barriers to root growth:**
- Physical:** The coarsely structured clay restricts root growth with low root densities inside the clay columns.
- Chemical:** The very high pH and high carbonate below 70 cm prevent most roots from accessing horizons below this point. The soil is moderately sodic in the clay horizons.
- Waterholding capacity:** Approximately 35 mm readily available water (RAW) in irrigable rootzone. Approximately 70 mm total available water in potential rootzone.
- Seedling emergence:** Good. The clay spread at the surface through the delving process has improved the surface condition and reduced water repellence.
- Workability:** Good.
- Erosion Potential:**
- Water:** Low.
- Wind:** Moderate if surface vegetation cover is removed and the surface is allowed to dry out.

Laboratory Data

| Depth cm | pH H ₂ O | pH CaCl ₂ | CO ₃ % | EC1:5 dS/m | ECe dS/m | Cl mg/kg | Org.C % | NO ₃ + NH ₄ mg/kg | Avail. P mg/kg | Avail. K mg/kg | SO ₄ -S mg/kg | React Fe mg/kg | Ext Al mg/kg | Boron mg/kg | Trace Elements mg/kg (EDTA) | | | | Sum cations cmol (+)/kg | Exchangeable Cations cmol(+)/kg | | | | Est. ESP |
|-------------|------------------------|-------------------------|----------------------|---------------|-------------|-------------|------------|--|----------------------|----------------------|-----------------------------|----------------------|--------------------|----------------|--------------------------------|----|------|------|----------------------------------|------------------------------------|------|------|------|-------------|
| | | | | | | | | | | | | | | | Cu | Fe | Mn | Zn | | Ca | Mg | Na | K | |
| 0-10 | 6.9 | 6.1 | 0 | 0.06 | 0.48 | 24 | 1.32 | 2 | 4 | 234 | 2.6 | 445 | 0 | 0.6 | 0.60 | 74 | 7.11 | 1.25 | 7.8 | 6.18 | 0.96 | 0.17 | 0.52 | 2.2 |
| 10-18 | 6.1 | 4.9 | 0 | 0.03 | 0.2 | 9 | 0.6 | 2 | 2 | 47 | 1.7 | 203 | 0.6 | 0.3 | 0.29 | 46 | 1.9 | 0.72 | 2.5 | 1.98 | 0.31 | 0.09 | 0.1 | 3.6 |
| 18-32 | 6.5 | 5.4 | 0 | 0.02 | 0.14 | 6 | 0.23 | 2 | 2 | 39 | 1.5 | 135 | 0.4 | 0.5 | 0.13 | 30 | 0.61 | 0.41 | 1.2 | 0.83 | 0.15 | 0.08 | 0.08 | 6.9 |
| 32-70 | 7.4 | 6.6 | 0 | 0.21 | 0.97 | 43 | 0.76 | 2 | 2 | 476 | 8.5 | 1002 | 0 | 1.7 | 0.22 | 49 | 3.76 | 0.48 | 23.1 | 10.1 | 8.68 | 3.05 | 1.31 | 13.2 |
| 70-120 | 9.5 | 8.3 | 23 | 0.32 | 1.31 | 64 | 0.24 | 8 | 2 | 404 | 16.4 | 664 | 0 | 2.7 | 0.11 | 17 | 1.82 | 0.49 | 24.2 | 11.2 | 7.71 | 4.18 | 1.05 | 17.3 |
| 120-150 | 9.6 | 8.5 | 2 | 0.32 | 1.58 | 81 | 0.10 | 5 | 2 | 316 | 27.4 | 495 | 0 | 1.9 | 0.12 | 17 | 0.82 | 0.5 | 18.8 | 7.77 | 6.11 | 4.02 | 0.87 | 21.4 |
| 10-50* | 6.6 | 5.8 | 0 | 0.12 | 0.79 | 44 | 1.02 | 2 | 2 | 431 | 5.4 | 1015 | 0 | 1.8 | 1.26 | 79 | 1.77 | 0.45 | 16.4 | 5.92 | 7.81 | 1.42 | 1.25 | 8.7 |
| 10-50** | 6.5 | 5.2 | 0 | 0.03 | 0.29 | 9 | 0.50 | 2 | 2 | 63 | 2.8 | 250 | 0.5 | 0.5 | 1.86 | 58 | 2.71 | 1.04 | 3.7 | 2.60 | 0.71 | 0.21 | 0.15 | 5.7 |

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

* Clay lumps sampled from within the zone altered by delving.

** Sand sampled from within the zone altered by delving.

Further information: [DEWNR Soil and Land Program](#)

