

HARD SANDY LOAM OVER RED CLAY ON ROCK

General Description: *Hard setting massive sandy loam abruptly overlying a well structured red clay, calcareous with depth, grading to weathering basement rock*

Landform: Slopes of rises and low hills

Substrate: Weathering medium grained basement rock with fine carbonate leached into fissures

Vegetation:



Type Site: Site No.: CL003

1:50,000 sheet: 6629-1 (Riverton) Hundred: Gilbert
 Annual rainfall: 500 mm Sampling date: 03/09/92
 Landform: Upper slope of undulating low hills. 10% slope
 Surface: Hard setting with no stones

Soil Description:

| Depth (cm) | Description |
|------------|---|
| 0-17 | Hard massive brown fine sandy loam. Abrupt to: |
| 17-48 | Firm dark reddish brown medium clay with medium angular blocky structure. Abrupt to: |
| 48-83 | Orange very highly calcareous weakly structured light clay with 20-50% soft and nodular carbonate segregations. Gradual to: |
| 83-155 | Very pale brown highly calcareous massive clay loam (decomposing rock) with 10-20% soft carbonate segregations. Gradual to: |
| 155-170 | Weathering fine sandstone with minor fine carbonate in fissures. |



Classification: Sodic, Hypercalcic, Red Chromosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

- Drainage:** Moderately well to well drained. The clayey subsoil will perch water for a few days following heavy or prolonged rainfall.
- Fertility:** Natural fertility is moderately high, as indicated by the exchangeable cation data. The clayey subsoil has a very high nutrient retention capacity, but the sandier surface soil, despite a favourable organic carbon content, has a much lower capacity. All measured nutrient elements are well supplied, with the possible exception of zinc.
- pH:** Acidic at the surface, strongly alkaline in the deep subsoil.
- Rooting depth:** 90 cm in the pit, but few roots below 50 cm.
- Barriers to root growth:**
- Physical:** Apart from a slight restriction caused by the poorly structured surface soil, there are no physical barriers above the basement rock.
- Chemical:** High pH from 80 cm restricts root growth. Manganese may become toxic if soil acidifies. Boron and soluble salt levels are low. No indications as to why there is such poor root growth below 50 cm.
- Water holding capacity:** Approximately 70 mm (moderate) in the root zone.
- Seedling emergence:** Fair to good, depending on the organic matter levels at the surface.
- Workability:** Fair to good. Moisture range for effective working is good, but will reduce if organic matter levels are lost.

Erosion Potential

- Water:** Moderate to moderately high (depending on the amount of run-on). Soil is highly erodible, and slope is moderate.
- Wind:** Low.

Laboratory Data

| Depth cm | pH H ₂ O | pH CaCl ₂ | CO ₃ % | EC1:5 dS/m | ECe dS/m | Org.C % | Avail. P mg/kg | Avail. K mg/kg | SO ₄ -S mg/kg | Boron mg/kg | Trace Elements mg/kg (DTPA) | | | | CEC cmol (+)/kg | Exchangeable Cations cmol(+)/kg | | | | ESP |
|-------------|------------------------|-------------------------|----------------------|---------------|-------------|------------|----------------------|----------------------|-----------------------------|----------------|--------------------------------|-----|------|------|-----------------------|------------------------------------|------|------|------|-----|
| | | | | | | | | | | | Cu | Fe | Mn | Zn | | Ca | Mg | Na | K | |
| Paddock | 6.2 | 5.2 | 0 | 0.07 | - | 1.45 | 55 | 500 | - | - | 0.70 | 53 | 27.3 | 0.33 | 8.4 | 6.11 | 1.43 | 0.15 | 0.98 | 1.8 |
| 0-17 | 6.4 | 5.4 | 0 | 0.06 | 0.4 | 0.99 | 44 | 390 | - | - | 0.86 | 38 | 28.0 | 0.32 | 7.1 | 7.02 | 1.40 | 0.12 | 0.82 | 1.7 |
| 17-48 | 7.6 | 6.3 | 2.6 | 0.04 | 0.2 | 0.60 | 5 | 240 | - | 1.9 | 1.1 | 7.8 | 7.3 | 0.09 | 30.3 | 22.6 | 6.06 | 0.56 | 0.91 | 1.8 |
| 48-83 | 9.1 | 8.0 | 28.0 | 0.10 | 0.3 | 0.21 | 2 | 160 | - | 0.9 | 0.51 | 3.2 | 1.2 | 0.07 | 11.5 | 10.6 | 4.09 | 0.48 | 0.36 | 4.2 |
| 83-155 | 9.4 | 8.1 | 24.5 | 0.12 | 0.4 | 0.16 | 1 | 150 | - | 0.8 | 0.35 | 3.5 | 1.0 | 0.08 | 6.6 | 5.23 | 4.17 | 0.57 | 0.24 | 8.6 |

- Note:** Paddock sample bulked from 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.