

## BLEACHED IRONSTONE GRAVELLY SAND OVER CLAY

**General Description:** *Thick sand with a bleached subsurface layer and a band of ironstone gravel, overlying a yellow to brown light clay grading to weak sandstone*

**Landform:** Undulating rises and low hills

**Substrate:** Massive weakly cemented sandstone of Tertiary? age.

**Vegetation:**

|                   |                |           |                    |                    |
|-------------------|----------------|-----------|--------------------|--------------------|
| <b>Type Site:</b> | Site No.:      | CH176     | 1:50,000 mapsheet: | 6626-4 (Encounter) |
|                   | Hundred:       | Waitpinga | Easting:           | 276530             |
|                   | Section:       |           | Northing:          | 6056090            |
|                   | Sampling date: | 15/01/13  | Annual rainfall:   | 650 mm average     |

Midslope of low hill, 5% slope. Loose surface. Clay has been spread on surface.

### Soil Description:

| <i>Depth (cm)</i> | <i>Description</i>  |
|-------------------|---|
| 0-10              | Dark greyish brown loose single grain light loamy sand. Clear to:   |
| 10-30             | Light grey (bleached) loose single grain sand. Gradual to:  |
| 30-50             | Pale brownish grey (bleached) loose single grain sand with 20-50% ironstone gravel. Abrupt to:                        |
| 50-70             | Strong brown firm massive coarse sandy clay loam with abundant red mottles of highly weathered ironstone. Gradual to: |
| 70-90             | Strong brown firm massive coarse sandy light clay with abundant red mottles of highly weathered ironstone.            |

**Classification:** Bleached-Ferric, Mesotrophic, Brown Chromosol; thick, non gravelly, sandy / clayey, moderate



## Summary of Properties

- Drainage:** Well drained. The soil is unlikely to remain saturated for more than a day or so following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is low due to the low clay content of the surface soil, and low nutrient retention capacity of the clayey subsoil (as indicated by its low CEC). This is compounded by the presence of ironstone, which reduces the availability of phosphorus. At the sampling site, data indicates deficiencies of phosphorus and potassium, with marginal deficiencies of sulphur, copper, manganese and zinc.
- pH:** Acidic at the surface, neutral in subsurface ironstone layer (possibly due to leaching of previously applied lime), and acidic in the subsoil.
- Rooting depth:** Most root growth is in the sandy surface layers (i.e. to 50 cm), with occasional roots in subsoil clay.
- Barriers to root growth:**
- Physical:** The strength of the underlying sandstone presents a significant barrier to roots, at least of annual plants.
  - Chemical:** The only chemical barrier is low nutrient availability.
- Waterholding capacity:** Approximately 40 mm in the rootzone.
- Seedling emergence:** Fair to satisfactory, depending on severity of water repellence.
- Workability:** Loose sandy surface is easily worked.
- Erosion Potential:**
- Water:** Moderately low, but susceptible due to slope and loose topsoil.
  - Wind:** Moderately low to moderate due to loose sandy surface.

## Laboratory Data

| Depth<br>cm | pH<br>H <sub>2</sub> O | pH<br>CaCl <sub>2</sub> | Ext.<br>Al<br>mg/kg | EC 1:5<br>dS/m | Org.C<br>% | NO <sub>3</sub><br>mg/kg | Avail.<br>P<br>mg/kg | PBI  | Avail.<br>K<br>mg/kg | SO <sub>4</sub> -S<br>mg/kg | Boron<br>mg/kg | Trace Elements mg/kg<br>(DTPA) |     |      |      | CEC<br>cmol<br>(+)/kg | Exchangeable Cations<br>cmol(+)/kg |     |      |      | ESP |
|-------------|------------------------|-------------------------|---------------------|----------------|------------|--------------------------|----------------------|------|----------------------|-----------------------------|----------------|--------------------------------|-----|------|------|-----------------------|------------------------------------|-----|------|------|-----|
|             |                        |                         |                     |                |            |                          |                      |      |                      |                             |                | Cu                             | Fe  | Mn   | Zn   |                       | Ca                                 | Mg  | Na   | K    |     |
| Paddock     | 5.5                    | 4.6                     | 1.24                | 0.063          | 1.62       | 8                        | 8                    | 14.8 | 72                   | 6.8                         | 0.35           | 0.17                           | 56  | 2.22 | 0.37 | 3                     | 1.75                               | 0.7 | 0.17 | 0.1  | 4   |
| 0-10        | 5.8                    | 4.9                     | 0.94                | 0.071          | 1.83       | 12                       | 8                    | 7.2  | 101                  | 5.6                         | 0.37           | 0.21                           | 107 | 2.64 | 0.61 | 3                     | 2.0                                | 0.8 | 0.24 | 0.11 | 3   |
| 10-30       | 5.9                    | 4.9                     | 0.43                | 0.019          | 0.59       | 4                        | 2                    | 6.1  | 35                   | 2.1                         | 0.14           | 0.07                           | 47  | 0.40 | 0.08 | 1                     | 0.68                               | 0.2 | 0.09 | 0.03 | 3   |
| 30-50       | 7.2                    | 6.8                     | < 0.20              | 0.02           | 0.21       | 2                        | < 2                  | 10   | 23                   | 2.7                         | < 0.10         | 0.08                           | 39  | 0.26 | 0.03 | 1                     | 0.84                               | 0.2 | 0.06 | 0.03 | 3   |
| 50-70       | 6.1                    | 5.1                     | < 0.20              | 0.03           | 0.36       | 4                        | < 2                  | 89.4 | 111                  | 10.5                        | 0.62           | 0.07                           | 14  | 0.19 | 0.05 | 4                     | 1.62                               | 2.3 | 0.29 | 0.13 | 3   |
| 70-90       | -                      | -                       | -                   | -              | -          | -                        | -                    | -    | -                    | -                           | -              | -                              | -   | -    | -    | -                     | -                                  | -   | -    | -    | -   |

- Note:** Paddock sample bulked from cores (0-10 cm) taken around the pit.  
Trace elements in paddock sample and 0-12 cm layer (shaded) analysed using EDTA.  
CEC (exchangeable cation 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.

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

