

SHALLOW SANDY LOAM OVER CALCRETE

General Description: *Non calcareous sandy loam with variable rubble and a weakly developed more clayey subsoil over sheet or rubbly calcrete at shallow depth*

Landform: Flat to gently undulating plains.

Substrate: Lagoonal limestone (Bungunna Limestone equivalent)

Vegetation: *Melaleuca acuminata* scrub



Type Site: Site No.: MM072

| | | | |
|------------------|--|----------------|-------|
| 1:50,000 sheet: | 6827-2 (Buccleuch) | Hundred: | Peake |
| Annual rainfall: | 410 mm | Sampling date: | 1992 |
| Landform: | Flat | | |
| Surface: | Firm with 20-50% calcrete stones (60-200 mm) | | |

Soil Description:

| Depth (cm) | Description |
|------------|---|
| 0-7 | Dark brown soft heavy sandy loam with 2-10% calcrete nodules (20-60 mm). Abrupt to: |
| 7-13 | Reddish brown friable light sandy clay loam with 2-10% calcrete nodules (20-60 mm). Sharp to: |
| 13-65 | Calcrete pan. Clear to: |
| 65-100 | Reddish yellow very highly calcareous massive sandy clay loam with 20-50% calcrete nodules (20-60 mm). Clear to: |
| 100-125 | Limestone. Clear to: |
| 125-170 | Light olive grey very highly calcareous firm sandy clay with 10-20% calcrete nodules and 10-20% clay pockets. Clear to: |
| 170-200 | Pale yellow very highly calcareous sandy clay with 20-50% calcrete nodules and 20-50% light olive grey clay pockets. |



Classification: Basic, Petrocalcic, Leptic Tenosol; thin, moderately gravelly, loamy / clay loamy, very shallow

Summary of Properties

| | |
|--------------------------------|--|
| Drainage | Well drained. Soil is never saturated for more than a few days. |
| Fertility | Inherent fertility is moderate, as indicated by the exchangeable cation data. Regular phosphorus and nitrogen applications are essential; zinc and copper deficiencies can be expected, and manganese may be required for cereals. Organic carbon levels are satisfactory. |
| pH | Neutral to slightly alkaline at the surface, strongly alkaline with depth. |
| Rooting depth | 13 cm in pit, although a few roots penetrate deeper into the calcrete. |
| Barriers to root growth | |
| Physical: | The calcrete severely restricts deeper root growth. |
| Chemical: | No chemical limitations above the calcrete. |
| Water holding capacity | 15 mm in root zone. |
| Seedling emergence: | Slight limitation due to stoniness. |
| Workability: | Soft / firm surface is easily worked, but stones interfere with and abrade equipment. |
| Erosion Potential | |
| Water: | Low. |
| 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 | 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 | 7.4 | 7.0 | <1 | 0.10 | 0.47 | 1.0 | 24 | 540 | 1.3 | - | - | - | - | 8.4 | 6.58 | 1.06 | 0.08 | 1.05 | 1.0 |
| 0-7 | 7.6 | 7.2 | <1 | 0.10 | 0.46 | 1.4 | 24 | 560 | 1.5 | - | - | - | - | 10.4 | 8.57 | 1.11 | 0.12 | 0.97 | 1.2 |
| 7-13 | 8.0 | 7.6 | 1 | 0.12 | 0.46 | 0.85 | 9.7 | 290 | 1.6 | - | - | - | - | 10.4 | 9.40 | 1.56 | 0.12 | 0.69 | 1.2 |
| 13-65 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 65-100 | 9.3 | 8.5 | 34 | 0.85 | 5.66 | 0.09 | 3.6 | 530 | 4.3 | - | - | - | - | 12.0 | 4.92 | 4.99 | 4.83 | 1.31 | 40.3 |
| 100-125 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 125-170 | 9.5 | 8.7 | 31 | 1.18 | 3.43 | 0.04 | <2.0 | 1100 | 11.6 | - | - | - | - | 29.1 | 4.06 | 12.33 | 11.77 | 2.99 | 40.4 |
| 170-210 | 9.6 | 8.4 | 46 | 0.99 | 3.82 | 0.02 | <2.0 | 1000 | 7.4 | - | - | - | - | 17.8 | 3.16 | 7.93 | 7.91 | 2.05 | 44.4 |

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.