# DEEP SAND

***General Description:*** *Deep non calcareous red sand overlying a red clayey subsoil with soft to hard carbonate at depth*

**Landform:** Upper slopes and crests of sand dunes

**Substrate:** Variable soft to hard dune core carbonate

**Vegetation:** Mallee scrub, commonly E. incrassata

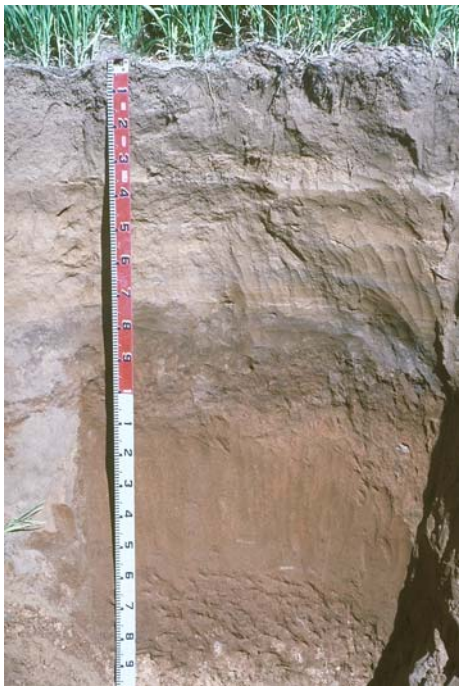
**Type Site:** Site No.: CM066

| | | | |
|---|---|---|---|
| 1:50,000 sheet: | 6529-1 (Riverton) | Hundred: | Hall |
| Annual rainfall: | 410 mm | Sampling date: | 23/08/95 |
| Landform: | Upper slope of moderate sand hill, 6% slope | | |
| Surface: | Loose with no stones | | |

**Soil Description:**

(110 cm of layered sand over a buried sand over clay soil)

| *Depth (cm)* | *Description* |
|---|---|
| 0-30 | Brown loose sand. Abrupt to: |
| 30-35 | Reddish yellow loose sand. Abrupt to: |
| 35-50 | Yellowish red loose sand. Clear to: |
| 50-75 | Orange loose sand. |
| 75-87 | Yellowish red soft loamy sand. Abrupt to: |
| 87-100 | Red soft loamy sand. Clear to: |
| 100-110 | Dark reddish brown firm massive clayey sand. Clear to: |
| ========== | ========== |
| 110-155 | Red soft loamy sand. Clear to: |
| 155-185 | Red and light brown mottled highly calcareous weakly blocky sandy light clay with 2-10% soft carbonate segregations. Clear to: |
| 185-205 | Orange massive very highly calcareous sandy clay loam with more than 50% soft carbonate segregations. |
| | Water table at 200 cm, EC 1,940 dS/m |



**Classification:** Calcareous, Arenic, Red-Orthic Tenosol; thick, non-gravelly, sandy / sandy, deep.

## *Summary of Properties*

**Drainage** Rapidly drained. The sandy soil is never saturated, but a deep clay layer prevents deep drainage (water table at 200 cm - August 1995).

**Fertility** Natural fertility is low due to the low clay and organic matter contents. Low nutrient retention capacity means that this soil must be fertilized "little but often". Phosphorus is high at sampling site, but tissue analyses are required to determine levels of other nutrients. Deficiencies of calcium, magnesium, sulphur and trace elements are possible.

**pH** Slightly alkaline at the surface, strongly alkaline with depth.

**Rooting depth** 85 cm in pit, but few roots below 50 cm.

**Barriers to root growth**

**Physical:** No physical barriers.

**Chemical:** Low fertility and high likelihood of root disease problems are the main barriers.

**Water holding capacity** Approximately 120 mm in potential root zone (i.e. the sandy layers above the clay), but nearer 50 mm in the actual root zone.

**Seedling emergence** Good, except in non wetting patches.

**Workability** Good

**Erosion Potential** High wind erosion potential.

## *Laboratory Data*

| Depth cm | pH $H_2O$ | pH $CaC1_2$ | $CO_3$ % | 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 | 7.7 | 7.4 | 0 | 0.08 | 0.43 | 0.4 | 33 | 195 | 5 | 0.8 | 0.21 | - | 3.06 | 0.54 | 3.4 | 2.79 | 0.59 | 0.10 | 0.32 | na |
| | | | | | | | | | | | | | | | | | | | | |
| 0-30 | 6.8 | 6.3 | 0 | 0.03 | 0.15 | 0.4 | 33 | 177 | 3 | 0.6 | - | - | - | - | 3.0 | 2.83 | 0.51 | 0.11 | 0.39 | na |
| 30-35 | 8.8 | 8.2 | 0 | 0.05 | 0.16 | 0.1 | 13 | 108 | 5 | 0.4 | - | - | - | - | 1.8 | 1.94 | 0.35 | 0.07 | 0.19 | na |
| 35-50 | 8.9 | 8.2 | 0 | 0.06 | 0.21 | 0.1 | 14 | 210 | 5 | 0.6 | - | - | - | - | 3.0 | 3.06 | 0.44 | 0.09 | 0.33 | na |
| 50-75 | 9.0 | 8.3 | 0.2 | 0.06 | 0.23 | 0.1 | 6 | 169 | 6 | 0.6 | - | - | - | - | 2.9 | 2.80 | 0.43 | 0.10 | 0.30 | na |
| 75-87 | 8.7 | 8.1 | 0 | 0.06 | 0.40 | 0.1 | 5 | 170 | 6 | 0.5 | - | - | - | - | 3.9 | 3.63 | 0.50 | 0.08 | 0.32 | na |
| 87-100 | 8.6 | 7.9 | 0 | 0.05 | 0.38 | 0.1 | <4 | 168 | 8 | 0.4 | - | - | - | - | 3.9 | 3.96 | 0.57 | 0.10 | 0.33 | na |
| 100-110 | 8.4 | 7.8 | 0 | 0.07 | 0.41 | 0.1 | <4 | 236 | 6 | 0.6 | - | - | - | - | 7.1 | 6.62 | 1.05 | 0.10 | 0.50 | 1.4 |
| 110-155 | 8.7 | 8.1 | 0.2 | 0.09 | 0.65 | 0.1 | <4 | 99 | 7 | 0.6 | - | - | - | - | 5.4 | 4.59 | 1.38 | 0.08 | 0.21 | 1.5 |
| 155-185 | 8.9 | 8.2 | 2.4 | 0.12 | 0.48 | <0.1 | <4 | 232 | 1 | 3.0 | - | - | - | - | 10.3 | 7.07 | 3.52 | 0.50 | 0.68 | 4.9 |
| 185-205 | 9.2 | 8.1 | 32.7 | 0.16 | 0.59 | 0.1 | <4 | 270 | 2 | 3.7 | - | - | - | - | 8.8 | 5.71 | 3.60 | 0.79 | 0.76 | 9.0 |

**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.