

THICK SAND OVER CLAY

General Description: *Thick sand with a bleached A2 layer over a brown or yellow clay*

Landform: Gently undulating rises.

Substrate: Calcarenite (Bridgewater Formation) of ancient coastal dunes.

Vegetation:



Type Site: Site No.: MM154

1:50,000 sheet: 6827-2 (Buccleuch) Hundred: Roby
Annual rainfall: 375 mm Sampling date: 22/07/02
Landform: Crest of low dune superimposed on a gently undulating rise, 2% slope
Surface: Loose with no stones

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-15	Dark brown soft single grain light loamy sand. Clear to:
15-44	Very pale brown (bleached) soft single grain sand. Sharp to:
44-60	Yellowish brown, yellowish red and yellow mottled firm sandy light medium clay with weak subangular blocky structure. Gradual to:
60-80	Yellowish brown, yellowish red and yellow mottled firm sandy light medium clay with weak subangular blocky structure. Gradual to:
80-120	Very pale brown and yellow hard massive very highly calcareous light sandy clay loam with 20-50% soft carbonate segregations.



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

Summary of Properties

- Drainage:** Well drained. Water may perch on the subsoil clay for a few days after heavy or prolonged rainfall, but the thickness of overlying sand minimizes risk of rootzone waterlogging. Lateral seepage is likely in wet years.
- Fertility:** Inherent fertility is low due to the low clay content and thickness of the surface soil. Phosphorus and zinc levels are low, copper is marginal. Organic carbon levels are satisfactory for this rainfall zone.
- pH:** Slightly alkaline at the surface, alkaline with depth.
- Rooting depth:** 80 cm in pit, but few roots below 44 cm.
- Barriers to root growth:**
- Physical:** The clayey subsoil is a minor limitation.
- Chemical:** There are no toxic element limitations. Poor nutrient status and availability limit root growth.
- Water holding capacity:** Approximately 90 mm in the potential rootzone, but only about 50 mm is effectively available on observed root distribution patterns.
- Seedling emergence:** Satisfactory except in seasons when water repellence is a problem.
- Workability:** The sandy surface is easily worked, although prone to compaction.
- Erosion Potential**
- Water:** Low, except where water repellence causes run-off.
- Wind:** Moderately high due to loose sandy surface and exposed position.

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)				Sum of cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	8.1	7.5	0	0.16	2.22	0.91	16	150	35.0	0.9	0.27	27	1.90	0.31	5.5	4.27	0.67	0.19	0.39	3.4
0-15	7.8	7.2	0	0.21	2.77	0.88	14	164	38.5	0.6	0.42	32	1.63	0.32	5.5	4.37	0.58	0.18	0.38	3.3
15-44	8.6	7.8	0	0.14	2.08	0.20	4	77	73.7	0.5	0.01	7.5	0.04	0.14	4.3	3.32	0.57	0.23	0.17	5.3
44-60	8.7	7.9	0	0.28	2.85	0.22	2	267	142	1.5	0.07	7.0	0.22	0.21	12.3	7.43	2.76	1.44	0.65	11.7
60-80	9.0	8.2	0	0.36	3.83	0.15	3	309	138	2.5	0.12	6.4	0.19	0.33	14.9	8.30	3.46	2.30	0.80	15.5
80-120	8.8	8.1	11	0.72	6.53	0.31	4	240	505	2.5	0.24	3.6	0.03	0.21	18.0	12.78	2.53	2.09	0.57	11.6

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

Sum of cations is a measure of the soil's capacity to store and release major nutrient elements. In neutral to alkaline soils the sum is approximately equivalent to CEC (cation exchange capacity).

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC, which at this site is estimated from the sum of cations.