THICK SAND OVER CLAY

General Description: *Thick sand with a bleached A2 layer overlying a coarsely structured red clay, calcareous with depth*

Landform: Gently undulating dunefield.

Substrate: Tertiary clay (clayey phase of Parilla Sand Formation).

Vegetation: -

Type Site:

Site No.:	MM151	1:50 000 mapsheet:	6927-3 (Jabuk)
Hundred:	Price	Easting:	427150
Section:	16	Northing:	6084150
Sampling date:	04/02/2002	Annual rainfall:	380 mm average

Dune slope with a loose surface and no stones.

Soil Description:

Depth (cm)	*Description*
0-12	Dark brown loose loamy sand. Clear to:
12-32	Bleached sand. Sharp to:
32-38	Yellowish red hard sandy clay loam with olive brown mottles and coarse columnar structure. Abrupt to:
38-58	Red hard medium clay with light olive brown mottles and coarse columnar structure breaking to weak subangular blocky. Clear to:
58-95	Red hard massive light medium clay with olive yellow mottles and a few fine carbonate segregations. Gradual to:
95-123	Red hard massive medium clay with light olive brown mottles and a few fine carbonate segregations. Clear to:
123-150	Light yellowish brown highly calcareous hard light medium clay with yellowish red mottles, weak subangular blocky structure, and a few small hard carbonate fragments.

Classification: Calcic, Mottled-Subnatric, Red Sodosol; thick, non-gravelly, sandy / clayey, moderate.

Summary of Properties

Drainage: The thick sandy topsoil is highly permeable, while the clayey subsoil is very slowly permeable, leading to imperfect drainage. The bleached sandy subsurface layer indicates the presence of lateral water flow along the top of the clayey subsoil during wet periods.

Fertility: The inherent fertility of the sandy topsoil is low. The clayey subsoil has moderate to high inherent fertility. Sulphur levels may be limiting. Concentrations of other tested nutrient elements are satisfactory.

pH: Slightly acidic to neutral at the surface, strongly alkaline with depth.

Rooting depth: Few roots occur below 38 cm in the pit.

Barriers to root growth:

Physical: The coarsely structured and dispersive upper subsoil is a barrier to roots.

Chemical: High pH (more than 9.2 in water) and low nutrient status, especially in the lower subsoil limit root growth.

Waterholding capacity:

Surface:	Approx. 100 mm/m over 0.12 m	= 12.0 mm
Subsurface:	Approx. 60 mm/m over 0.20 m	= 12.0 mm
Subsoil:	Approx. 160 mm/m over 0.06 m	= 9.6 mm
Total	Approx. 34 mm (low) in effective rootzone.	

Seedling emergence: Good.

Workability: Good.

Erosion potential:

Water: Low.

Wind: Moderately high. The loose sandy topsoil must be protected by vegetative cover to prevent soil and nutrient loss by wind erosion.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 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	6.1	6.0	0.1	0.05	0.44	0.61	22	104	3.0	0.8	0.12	35	2.84	0.81	2.8	2.01	0.47	0.06	0.26	2.1
0-12	6.9	6.4	0.1	0.05	0.59	0.90	21	101	3.2	0.9	0.13	31	6.54	2.30	3.7	2.75	0.60	0.05	0.26	1.4
12-32	8.1	7.4	0.1	0.05	0.25	0.08	6	52	1.5	0.2	0.06	19	0.83	0.59	1.7	1.26	0.27	0.05	0.15	2.9
32-38	7.9	7.0	0.1	0.11	0.82	0.18	2	400	2.1	1.3	0.08	20	0.57	0.07	12.5	5.90	4.53	1.03	1.01	8.3
38-58	8.6	7.7	0.4	0.20	0.84	0.15	2	521	2.2	2.5	0.09	18	0.61	0.07	18.7	8.91	6.83	1.68	1.32	8.7
58-95	9.3	8.2	6.1	0.24	1.28	0.16	2	539	2.2	5.0	0.14	7.3	0.51	0.25	22.1	10.06	7.82	2.79	1.39	12.6
95-123	9.5	8.4	3.5	0.31	1.08	0.07	2	525	2.0	6.7	0.09	9.3	0.27	0.22	20.3	7.87	7.61	3.55	1.31	17.5
123-150	9.4	8.3	9.7	0.38	1.13	0.11	2	488	6.6	8.3	0.20	9.8	0.52	0.36	21.1	8.32	7.40	4.14	1.23	19.6

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.

Further information: DEWNR Soil and Land Program