THICK ACIDIC SAND OVER MOTTLED BROWN CLAY

General Description: *Thick bleached coarse sand over mottled and poorly structured brown clay*

Landform: Slightly undulating plain at the foot of Mt Muirhead.

Substrate: Clayey Padthaway sediments, possibly with influence from nearby Bridgewater Formation (sands).

Vegetation: Originally brown stringy bark (Eucalyptus baxteri) woodland.

Type Site:

Site No.:	SE107A	1:50,000 mapsheet:	6922-1 (Millicent)
Hundred:	Mt. Muirhead	Easting:	446870
Section:	115	Northing:	5843760
Sampling date:	28/04/2009	Annual rainfall:	750 mm average

Very slight rise on gently undulating plain

Soil Description:

Depth (cm)	*Description*
0-15	Very dark grey soft, loose single grained organic sand. Many roots. Clear change to:
15-60	Bleached grey brown sand, loose to massive in structure. Roots few to common. Sharp change to:
60-80	Firm to hard brown sandy medium heavy clay with a yellow brown mottle. Strong very coarsely columnar, breaking to weak medium sub-angular blocky structure. Roots common.

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

Summary of Properties

Drainage: Imperfectly drained. Excessively drained in the surface horizons, leading to rapid nutrient leaching. Water perches on the surface of the subsoil clay, saturating the lower topsoil and upper subsoil for periods of up to several weeks following heavy or prolonged rainfall. Coarse columnar structure in the subsoil results in very slow, strongly preferential and uneven drainage.

Fertility: The soil surface has low inherent fertility (as indicated by the sum of cations), and the bleached subsurface is significantly less fertile again. Contrastingly, the clayey subsoil has high nutrient retention capacity. Test results indicate copper may be low. Regular phosphorus and nitrogen applications are essential.

pH: Strongly acidic to 60 cm, moderately acidic in the subsoil.

Rooting depth: 150 cm.

Barriers to root growth:

Physical: Dense and infertile bleached subsurface restricts root abundance. The hard, coarsely structured, dispersive subsoil confines most root growth to the surfaces of the aggregates, resulting in poor root distribution patterns.

Chemical: Low pH, high aluminium, very low fertility and sodicity may impede root growth in sensitive species.

Waterholding capacity: Approximately 120 mm in the rootzone, but not all available due to poor root distribution in clay subsoil.

Seedling emergence: Fair. Water repellence may be a problem in some seasons.

Workability: Satisfactory.

Erosion Potential:

Water: Low.

Wind: Moderate if surface vegetative cover is removed.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	CO_3 %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	NO_3 + NH_4 mg/kg	React Fe mg/kg	Cl mg/kg	SO_4-S mg/kg	Ext Al mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est ESP
															Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-15	5.2	4.2	0	0.12	0.95	3.07	12	161	32	310	82	7.4	2.3	0.4	0.48	71.4	2.31	8.94	4.9	3.33	0.78	0.34	0.4	6.9
15-60	5.2	4.2	0	0.02	0.16	0.23	24	40	2	191	6	1.5	5.9	0.2	0.27	57.2	0.39	0.44	0.8	0.38	0.09	0.04	0.06	na
60-80	5.8	4.8	0	0.07	0.37	0.35	9	137	4	2282	16	5.6	1.4	0.6	0.07	132	0.39	0.53	14.4	7.27	5.59	0.95	0.35	6.6

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

Soil test results are from a single point sample and are indicative only. They may not reflect the general condition of the rest of the paddock. Also, plant responses relating to nutrition measurements can vary between soil types and plant species, so values are indicative only.

Further information: DEWNR Soil and Land Program