SANDY LOAM OVER BROWN CLAY

General Description: *Thick, massive loamy surface soil overlying a deep brown and yellow mottled clayey subsoil developing in deeply weathered fine grained metamorphosed sandstone.*

Landform: Lower and mid slopes of undulating to rolling low hills.

Substrate: Deeply weathered kaolinized fine grained metamorphosed sandstones of Precambrian age (Tarcowie Siltstone at type site).

Vegetation: Blue gum woodland.

Type Site:

Site No.:	CH001		
1:50,000 sheet:	6627-1 (Echunga)	Hundred:	Macclesfield
Annual Rainfall:	800 mm	Sampling date:	19/12/91
Landform:	Lower slope of undulating rise, 7% slope		
Surface:	Hard setting with no stones		

Soil Description:

Depth (cm)	*Description*
0-10	Dark greyish brown moderately granular fine sandy loam. Clear to:
10-20	Dark greyish brown weakly structured fine sandy loam. Abrupt to:
20-35	Pale brown weakly structured fine sandy loam with 40% quartz and ferricrete gravels. Clear to:
35-45	Yellowish brown, yellowish red and brownish grey mottled medium clay with coarse prismatic structure. Clear to:
45-80	Yellowish brown and reddish brown mottled heavy clay with strong polyhedral structure. Gradual to:
80-120	Brownish yellow and pale brown medium heavy clay with coarse blocky structure. Diffuse to:
120-180	Massive soft white, brown and red silty clay loam (kaolinitic weathering rock).

Classification: Bleached-Mottled, Mesotrophic, Brown Kurosol; thick, non-gravelly, loamy/clayey, very deep

Summary of Properties

Drainage Imperfectly to moderately well drained. The soil may remain wet for a week to several weeks.

Fertility Moderately low, as indicated by the relatively low values for exchangeable cations. Magnesium and potassium are deficient. Other nutrient element levels are satisfactory. Organic carbon is high.

pH Strongly acid at the surface, grading to acid with depth. Dolomite is required for correction.

Rooting depth 120 cm at type site.

Barriers to root growth

Physical: Poor surface soil structure and high subsoil clay strength prevent optimal root proliferation. Waterlogging and temporary saturation of the 20-35 cm layer inhibit root growth.

Chemical: Acidity and possible aluminium toxicity in upper 50 cm may inhibit root growth.

Water holding capacity 140-180 mm in rootzone (very high). Not all of this is available to plants because of poor root distribution, particularly if subsurface waterlogging has prevented satisfactory downward extension of roots.

Seedling emergence Fair due to poorly structured surface.

Workability Fair, due to poorly structured surface with narrow moisture range for effective working.

Erosion potential

Water: Moderate, due to the slope and high soil erodibility caused by poorly structured surface and slowly permeable subsoil.

Wind: Low.

Laboratory Data

Depth cm	Sand %	Silt %	Clay %	pH H_2O	pH $CaCl_2$	EC1:5 dS/m	Cl mg/kg	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	
0-10	76	11	13	5.4	5.4	0.08	37	3.6	39	118	1.5	0.6	165	5.6	0.9	12.6	7.4	1.0	0.16	0.14	1
10-20	78	14	9	4.3	4.2	0.05	11	3.0	52	67	0.8	0.6	205	4.6	0.8	6.9	2.2	0.4	0.10	0.06	1
20-35	76	11	13	4.5	4.4	0.04	<5	-	-	-	0.6	0.3	52	2.3	0.3	3.9	1.3	0.2	0.08	0.05	2
35-45	42	9	49	4.8	4.4	0.04	6	-	-	-	2.2	0.3	30	1.2	0.3	7.3	3.3	1.4	0.13	0.09	2
45-80	21	7	72	5.2	5.2	0.07	18	-	-	-	3.7	0.1	3.5	<0.2	0.1	12.1	4.3	4.8	0.26	0.12	2
80-120	28	11	61	5.4	5.4	0.07	9	-	-	-	2.8	0.1	3.4	<0.2	0.1	10.0	2.9	5.3	0.31	0.09	3
120-180	53	19	28	5.3	5.3	0.06	19	-	-	-	2.2	0.5	2.8	<0.2	0.2	3.4	1.6	2.6	0.22	0.04	6

Note: 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.