SANDY LOAM OVER RED CLAY

General Description: *Hard setting red brown loamy sand to clay loam overlying a well structured red clay subsoil, highly calcareous with depth.*

Landform: Gently to very gently sloping outwash fans.

Substrate: Pleistocene age sandy to heavy clays, with soft carbonate segregations

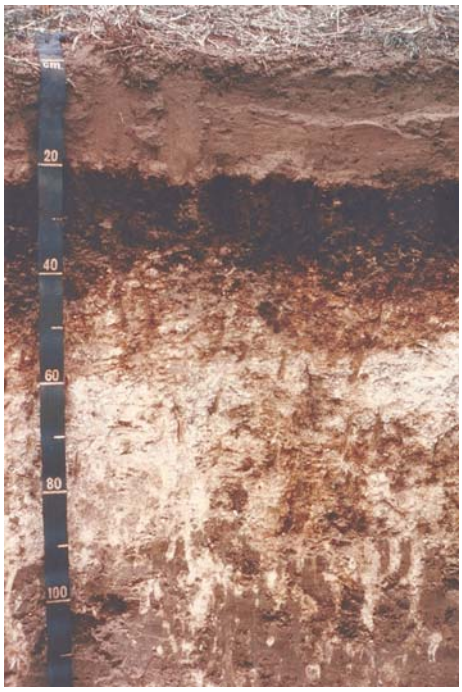
Vegetation:

Type Site: Site No.: CH009

1:50,000 sheet:	6627-2 (Milang)	Hundred:	Bremer
Annual rainfall:	475 mm	Sampling date:	22/03/91
Landform:	Midslope of alluvial fan, 1% slope		
Surface:	Hard setting with no stones		

Soil Description:

Depth (cm)	***Description***
0-18	Dark reddish brown hard massive light sandy loam. Clear to:
18-23	Pink hard massive light sandy loam. Sharp to:
23-36	Dark red well structured light medium clay. Clear to:
36-55	Dark reddish brown light clay with more than 50% soft calcareous segregations. Gradual to:
55-90	Very pale brown very highly calcareous, massive medium clay (Class I carbonate). Diffuse to:
90-120	Dark brown and yellowish brown mottled medium clay with strong blocky structure and less than 10% soft calcareous segregations, decreasing with depth.



Classification: Bleached-Sodic, Hypercalcic, Red Chromosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage Moderately well drained. Soil may remain wet for up to one week.

Fertility High natural fertility, as indicated by the cation exchange capacity of the clay subsoil. However, acidification and cation leaching have reduced the fertility of the surface soil. Magnesium in particular, and calcium are low, as is zinc. Phosphorus levels are marginal.

pH Acidic in surface, grading to alkaline in deeper subsoil. This alkalinity reduces the availability of trace elements, especially zinc.

Rooting depth 55 cm at type site, but low density below 36 cm.

Barriers to root growth

Physical: Hard massive surface soil and firm, coarsely structured subsoil clay prevent optimal root distribution.

Chemical: Class I carbonate layer from 36 cm typically restricts root growth. There is no significant salinity and boron levels are not toxic.

Water holding capacity 75 mm in root zone (moderately high). Dependent on depth to Class I carbonate.

Seedling emergence Fair due to tendency for surface to seal after rain. Increased surface organic matter levels will help to overcome this problem, as will gypsum to some extent.

Workability Fair due to poor structure of surface. Will shatter when dry and puddle when wet.

Erosion potential

Water: Moderately low, due to flatness of the site. These soils are highly erodible on sloping ground due to the poorly structured surface.

Wind: Low to moderately low. Excessive working or trampling will pulverize soil, increasing erosion hazard.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	$CaCO_3$ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl 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	
0-18	5.3	5.3	-	0.12	-	1.0	26	540	65	0.5	0.5	83.7	6.0	0.1	5.2	3.6	0.6	0.1	0.7	2
18-23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23-36	7.3	7.3	0.3	0.18	-	0.6	4	700	14	2.0	1.1	15.9	0.3	<0.1	33.6	22.4	5.0	0.5	2.1	1
36-55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55-90	8.4	7.9	35.0	0.17	-	0.3	<2	370	79	2.0	4.9	5.9	0.8	<0.1	22.2	13.5	5.4	0.8	1.2	3
90-120	8.9	8.3	10.5	0.31	-	0.1	<2	590	69	5.0	0.4	4.5	0.5	<0.1	21.8	7.6	8.9	2.9	1.7	13

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.