SANDY LOAM OVER SODIC BROWN CLAY

General Description: *Massive grey sandy loam to sandy clay loam over a brown mottled coarsely structured clay, calcareous with depth*

Landform: Very gently undulating to level plains

Substrate: Tertiary age clay

Vegetation:

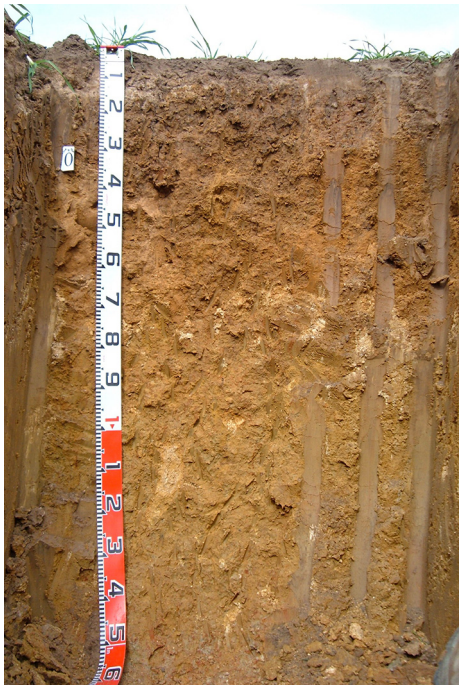
Type Site:

Site No.:	SE163B	1:50,000 mapsheet:	7124-4 (Goroke)
Hundred:	State of Victoria	Easting:	504760
Section:	-	Northing:	5936970
Sampling date:	28/08/2007	Annual rainfall:	540 mm average

Flat plain. Hard setting surface (when dry and undisturbed) with no stones. Irrigated barley.

Soil Description:

Depth (cm)	*Description*
0-6	Very dark greyish brown soft massive light sandy clay loam. Clear to:
6-16	Brown, dark greyish brown and strong brown friable massive light sandy clay loam. Abrupt to:
16-35	Yellowish brown, red and very pale brown mottled hard medium clay with strong very coarse columnar structure (with silicified cap), breaking to strong medium subangular blocky. Diffuse to:
35-60	Yellowish brown and reddish yellow firm light medium clay with strong very coarse prismatic structure, breaking to strong coarse angular blocky. Diffuse to:
60-110	Brownish yellow and reddish yellow friable medium clay with weak coarse subangular blocky structure and 10-20% nodular and soft carbonate segregations. Diffuse to:
110-145	Brownish yellow and red friable calcareous light medium clay with weak coarse prismatic structure and 2-10% nodular and tubular carbonate segregations. Clear to:
145-160	Yellowish brown, light grey and red firm medium clay. Minor ironstone nodules throughout.



Classification: Calcic, Mottled-Mesonatric, Brown Sodosol; medium, non gravelly, loamy / clayey, very deep

Summary of Properties

Drainage: Moderately well to imperfectly drained. Water perches on top of the subsoil clay for a week to several weeks following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low, as indicated by the exchangeable cation data. The effect of organic matter on nutrient retention capacity is illustrated by the large difference between the cation values of the surface and subsurface layers. Laboratory data indicate a possible copper deficiency.

pH: Neutral at the surface (irrigation water has neutralized natural acidity), alkaline in the subsoil, and strongly alkaline at depth.

Rooting depth: 110 cm in sampling pit, but few roots below 35 cm.

Barriers to root growth:

Physical: The subsoil clay layer imposes a moderate restriction on root growth, mainly by confining many roots to the faces of coarse aggregates. The silicified cap is an additional barrier requiring physical disruption.

Chemical: High pH and probably high sodicity from 60 cm limit deep root growth.

Waterholding capacity: (Estimates for potential rootzone of irrigated crops)
Total available: 65 mm
Readily available: 30 mm

Seedling emergence: Fair to satisfactory. Tendency to seal over can reduce establishment percentage.

Workability: Fair. Surface tends to shatter if worked too dry, and puddle if worked too wet.

Erosion Potential:

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Cl mg/kg	Org.C %	NO_3+ NH_4 mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO_4-S mg/kg	React Fe mg/kg	Ext Al mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
															Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-6	7.1	6.5	0	0.16	1.24	41	3.53	32	118	328	25.8	2397	0	1.4	0.38	570	8.14	2.49	13.1	8.28	3.59	0.53	0.66	4.1
6-16	6.5	5.5	0	0.08	1.21	31	0.83	-	20	110	10.5	1187	-	-	-	-	-	-	3.6	1.88	1.13	0.45	0.16	12.4
16-35	7.5	6.5	0	0.23	2.21	221	0.63	-	5	180	47.4	963	-	-	-	-	-	-	20.6	6.98	9.63	3.4	0.59	16.5
35-60	8.4	7.3	0	0.27	2.59	282	0.26	-	2	141	36.7	549	-	-	-	-	-	-	20.7	5.2	10.9	4.18	0.39	20.2
60-110	9.6	8.6	2	0.51	2.63	333	0.05	-	1	165	31.9	322	-	-	-	-	-	-	-	-	-	-	-	-
110-145	9.7	8.7	6	0.44	1.81	261	0.05	-	1	164	26.8	294	-	-	-	-	-	-	-	-	-	-	-	-
145-160	9.2	8.1	1	0.40	1.53	206	0.06	-	1	192	38.7	321	-	-	-	-	-	-	-	-	-	-	-	-

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.

Further information: DEWNR Soil and Land Program