

SANDY LOAM OVER DARK CLAY

General Description: *Brown sandy loam to clay loam overlying a dark brown silty clay to medium clay with strong blocky structure, becoming yellowish mottled and usually weakly calcareous with depth*

Landform: Alluvial plains associated with relatively recent flooding

Substrate: Alluvial clay

Vegetation:



Type Site: Site No.: CL012

1:50,000 sheet: 6628-4 (Gawler)

Hundred: Munno Para

Annual rainfall: 425 mm

Sampling date: 08/07/94

Landform: Level plain

Surface: Firm surface with no stones. Almond orchard, some trees affected by salinity.

Soil Description:

This site is near the boundary between the younger dark soils nearer the river, and older red soils. As a result, the soil is thin over a buried red soil profile.

Depth (cm)	Description
0-10	Dark brown fine sandy loam with weak granular structure. Clear to:
10-25	Brown massive fine sandy loam. Clear to:
25-50	Dark brown light medium clay with weak very coarse prismatic structure, breaking to strong subangular blocky. Diffuse to:
50-90	Dark greyish brown weakly calcareous medium clay with weak very coarse prismatic structure, breaking to strong subangular blocky. Clear to:
90-140	Reddish brown and dark brown mottled slightly calcareous medium clay with strong coarse blocky structure (subsoil of an older buried soil profile). Diffuse to:
140-180	Orange and light brown weakly structured clayey sand.



Classification: Hypocalcic, Subnatric, Black Sodosol; medium, non-gravelly, loamy / clayey, moderate

Summary of Properties

Drainage	Moderate. The sodic clay subsoil is only slowly permeable, and will hold water in the topsoil for a week or so following excessive irrigation or heavy rain.
Fertility	The natural fertility of the soil is moderate to high, as indicated by the exchangeable cation data. Organic carbon levels are low. Build up would help maintain fertility and retain nutrients. All major nutrients appear to be in adequate supply, although calcium levels are marginal - this could be corrected by gypsum application.
pH	Slightly alkaline at the surface, strongly alkaline at the base.
Rooting depth	90 cm in the pit, but very few roots below 50 cm.
Barriers to root growth	
Physical:	Tough deep subsoil clay (below 90 cm) will limit root growth.
Chemical:	Marginal salinity from 25 cm, high sodicity from 50 cm.
Water holding capacity	120 mm in rootzone, but almost half of this is only partially available due to poor root densities.
Seedling emergence	Fair, due to tendency for surface sealing. Smooth hard surface an advantage however for harvest of almonds.
Workability	Fair. Narrow moisture range between being too wet and sloppy and too hard and cloddy.
Erosion Potential	Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S 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	
Tree line	7.5	6.8	0.2	0.14	0.84	0.9	67	353	9.3	1.4	-	-	-	-	8.2	4.75	1.71	0.52	0.52	6.3
0-10	7.7	7.0	0.4	0.13	0.99	1.2	86	459	8.6	1.7	-	-	-	-	7.5	5.11	1.64	0.43	0.90	5.7
10-25	7.4	6.8	0.0	0.12	1.09	0.7	26	276	11.7	1.0	-	-	-	-	7.6	5.28	1.47	0.38	0.35	5.0
25-50	7.8	7.2	0.0	0.34	3.12	0.8	5	226	29.0	1.6	-	-	-	-	17.2	9.97	5.07	1.82	0.48	10.6
50-90	8.6	7.8	0.1	0.33	2.50	1.2	6	301	36.3	1.8	-	-	-	-	25.4	12.9	9.35	4.80	0.70	18.9
90-140	8.7	7.8	0.2	0.26	1.88	0.1	9	281	39.9	2.7	-	-	-	-	16.6	5.59	6.29	3.59	0.80	21.6
140-180	9.1	8.1	0.3	0.19	1.61	<0.1	4	146	27.7	0.9	-	-	-	-	6.4	2.25	2.53	1.68	0.26	26.3

Note: Tree line sample bulked from cores (0-15 cm) taken from along tree lines 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.