RUBBLY CALCAREOUS LOAM ON CLAY

General Description: *Calcareous loam to clay loam over rubbly calcrete, with decreasing rubble and increasing clay content at depth*

Landform: Gently undulating plains.

Substrate: Tertiary Hindmarsh Clay, capped by highly calcareous Woorinen Formation deposits.

Vegetation:

Type Site: Site No.: CY034

1:50,000 sheet:	6430-2 (Alford)	Hundred:	Wiltunga
Annual rainfall:	350 mm	Sampling date:	12/03/96
Landform:	Flat, 0% slope		
Surface:	Soft with 10-20% calcrete stone (20-60 mm)		

Soil Description:

Depth (cm)	*Description*
0-13	Dark brown firm moderately calcareous clay loam with weak angular blocky structure. Clear to:
13-42	Dark brown firm highly calcareous light clay loam with moderate angular blocky structure and more than 50% carbonate fragments and nodules (20-200 mm). Clear to:
42-80	Brown soft massive very highly calcareous light clay with 20-50% calcrete fragments (60-200 mm). Clear to:
80-120	Strong brown friable massive very highly calcareous light medium clay with 2-10% calcrete fragments (2-6 mm). Gradual to:
120-155	Strong brown firm massive highly calcareous medium clay.

Classification: Endohypersodic, Regolithic, Lithocalcic Calcarosol; medium, gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage Moderately well drained. The soil may remain wet for up to a week following heavy or prolonged rainfall.

Fertility Inherent fertility is moderate, as indicated by the exchangeable cation data. Relatively high clay and organic matter levels in the surface soil provide favourable nutrient retention capacity. However, fine carbonates to the surface reduce availability of trace elements. Phosphorus levels are adequate to low at the sampling site - regular applications are needed. Concentrations of other tested elements are satisfactory, although there is potential for trace element deficiencies.

pH Alkaline at the surface, strongly alkaline at depth.

Rooting depth 80 cm in pit; few below 42 cm.

Barriers to root growth

Physical Hard carbonate fragments and nodules impede root growth if sufficiently dense.

Chemical High pH, sodicity and boron concentrations from 48 cm restrict deeper root growth. Poor trace element availability in highly calcareous subsoil contributes to low root densities.

Water holding capacity Approximately 60 mm (moderately low) in rootzone.

Seedling emergence Good.

Workability Good.

Erosion Potential

Water Low.

Wind Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	
Paddock	8.2	7.7	8.6	0.18	0.99	1.8	24	639	5	3.3	0.88	10	7.94	2.31	24.0	21.17	2.50	0.22	2.05	0.9
0-13	8.2	7.7	8.5	0.20	1.16	1.9	23	900	5	3.9	-	-	-	-	25.5	22.73	2.75	0.27	1.97	1.1
13-42	8.6	8.1	30.3	0.31	1.63	1.0	5	179	53	5.7	-	-	-	-	23.0	16.42	5.85	1.33	0.65	5.8
42-80	9.7	8.6	56.7	0.63	2.78	0.1	<4	197	96	19.3	-	-	-	-	13.0	2.14	7.73	5.01	0.44	38.5
80-120	9.8	8.4	62.8	0.50	1.38	<0.1	<4	239	43	21.3	-	-	-	-	10.6	1.96	5.26	4.51	0.90	42.5
120-155	9.8	8.3	55.1	0.48	1.60	0.3	<4	292	35	23.8	-	-	-	-	10.6	2.08	5.06	4.60	0.70	43.4

Note: Paddock sample bulked from 20 cores (0-10 cm) taken 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