

GRADATIONAL CALCAREOUS CLAY LOAM

General Description: *Clay loam grading to a calcareous light clay becoming more clayey and calcareous with depth, over non calcareous heavy clay substrate*

Landform: Gently undulating rises.

Substrate: Brown mottled coarsely structured heavy clay (Tertiary Hindmarsh Clay).

Vegetation:



Type Site: Site No.: CY031

1:50,000 sheet: 6430-2 (Alford)

Hundred: Ninnes

Annual rainfall: 380 mm

Sampling date: 11/03/96

Landform: Crest of low rise, 1% slope

Surface: Firm with minor calcrete gravel

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-12	Dark reddish brown firm cloddy clay loam with moderate firm angular blocky structure. Abrupt to:
12-24	Brown firm highly calcareous light clay with moderate fine angular blocky structure. Abrupt to:
24-68	Strong brown firm very highly calcareous medium clay with coarse prismatic breaking to coarse angular blocky structure. Gradual to:
68-145	Brown hard medium heavy clay with strong coarse angular blocky structure. Gradual to:
145-165	Strong brown and light olive brown mottled hard medium heavy clay with strong coarse angular blocky structure.



Classification: Epibasic, Pedal, Hypercalcic Calcarosol; medium, non-gravelly, clay loamy / clayey, moderate

Summary of Properties

Drainage	Moderately well to imperfectly drained. The clay from 24 cm restricts drainage so that the soil may remain wet for a week or two following heavy or prolonged rainfall.
Fertility	Inherent fertility is high, as indicated by the exchangeable cation data. High clay and moderate organic matter contents provide favourable nutrient retention capacity, and phosphorus levels are high at this site. Sulphur levels are low in the surface, but subsoil reserves are high.
pH	Slightly alkaline at the surface, strongly alkaline at depth.
Rooting depth	70 cm in pit, but few roots below 24 cm.
Barriers to root growth	
Physical	The hard clayey deep subsoil (from 24 cm, but particularly from 68 cm) restricts root growth by confining roots to surfaces of aggregates.
Chemical	High pH, sodicity and boron concentrations from 24 cm restrict root growth and prevent it altogether from 70 cm.
Water holding capacity	Approximately 70 mm (moderate) in rootzone, but only about 50 mm is effectively available due to poor root densities.
Seedling emergence	Good to fair. Surface structure is cloddy, organic matter levels need to be maintained, and possibly workings reduced, to preserve and improve surface structure.
Workability	Fair.
Erosion Potential	
Water	Low.
Wind	Low to moderately 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	
Paddock	7.6	6.9	1	0.17	0.94	1.4	42	660	4.0	2.0	1.46	14	17.3	0.88	-	17.4	3.11	0.50	1.72	2.2
0-12	7.8	7.1	1	0.16	0.81	1.5	34	662	3.1	2.5	-	-	-	-	-	19.5	3.35	0.61	1.90	2.4
12-24	8.7	7.8	22	0.29	1.43	0.9	8	408	4.0	3.2	-	-	-	-	-	21.1	4.99	1.73	1.33	5.9
24-68	9.5	8.5	36	0.79	2.36	0.3	4	320	34	18.0	-	-	-	-	-	7.62	8.37	9.68	1.18	36.1
68-145	9.6	8.8	4	0.87	2.62	0.1	2	456	109	25	-	-	-	-	-	4.79	9.96	17.6	1.75	51.6
145-165	9.4	8.7	2	0.86	2.51	0.1	1	504	178	25	-	-	-	-	-	4.44	11.5	22.2	2.05	55.2

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 estimated by dividing the exchangeable sodium value by the sum of the exchangeable cations (an approximation in the absence of CEC data).