

GRADATIONAL CALCAREOUS CLAY LOAM

General Description: *Calcareous clay loam becoming more clayey and calcareous with depth over a non calcareous heavy clay substrate within 100 cm*

Landform: Gently undulating plains.

Substrate: Red and grey mottled coarsely structured heavy clay (Tertiary Hindmarsh Clay).

Vegetation:



Type Site: Site No.: CY032

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

Hundred: Kadina

Annual rainfall: 375 mm

Sampling date: 11/03/96

Landform: Flat, 0% slope

Surface: Firm with no stones

Soil Description:

Depth (cm)	Description
0-8	Dark brown friable very highly calcareous clay loam with moderate fine granular structure. Sharp to:
8-21	Yellowish red firm massive very highly calcareous light clay. Abrupt to:
21-48	Brown and pale olive mottled very hard very highly calcareous heavy clay with strong coarse prismatic, breaking to coarse angular blocky structure. Gradual to:
48-90	Brown, pale olive and red mottled hard slightly calcareous heavy clay with strong very coarse prismatic structure. Gradual to:
90-150	Brown, pale olive and red mottled hard heavy clay with strong coarse angular blocky structure.



Classification: Hypervescent, Pedal, Calcic Calcarosol; thin, non-gravelly, clay loamy / clayey, moderate

Summary of Properties

Drainage	Imperfect drainage. The clay layer from 21 cm restricts drainage so that the soil may remain wet for up to several weeks following heavy or prolonged rainfall.
Fertility	Inherent fertility is high, as indicated by the exchangeable cation data. High clay and organic matter contents provide favourable nutrient retention capacity, but high carbonate content to the surface reduces availability, particularly of trace elements. Regular phosphorus applications are necessary - concentrations are adequate at the sampling site. Nitrogen levels depend on legume status of pastures and cropping history. Concentrations of other tested elements are satisfactory.
pH	Alkaline throughout.
Rooting depth	50 cm in pit.
Barriers to root growth	
Physical	Hard coarsely structured clay from 21 cm and particularly from 48 cm impedes root growth by confining roots to surfaces of aggregates.
Chemical	High pH, sodicity and boron concentrations from 48 cm restrict deeper root growth.
Water holding capacity	Approximately 50 mm in rootzone.
Seedling emergence	Satisfactory provided surface friability is maintained.
Workability	Good to fair.
Erosion Potential	
Water	Low.
Wind	Moderately low to 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	8.6	7.9	13	0.21	0.87	1.51	29	806	8.4	2.1	1.21	6	18.7	0.85	-	18.2	1.95	0.49	2.28	2.1
0-8	8.5	7.7	14	0.24	1.25	1.50	39	803	7.7	2.5	-	-	-	-	-	19.6	2.42	0.62	2.28	2.5
8-21	8.7	7.9	22	0.20	0.82	0.66	4	584	4.1	2.4	-	-	-	-	-	16.9	3.51	1.05	1.62	4.5
21-48	9.1	8.1	17	0.42	2.32	0.38	3	444	14.2	6.3	-	-	-	-	-	12.5	7.14	4.60	1.41	17.9
48-90	9.4	8.6	4	1.45	5.38	0.15	2	613	147	24	-	-	-	-	-	5.82	9.60	15.1	2.05	46.4
90-150	8.2	7.5	1	1.31	4.89	0.12	2	565	198	19.6	-	-	-	-	-	3.10	9.52	18.4	2.11	55.5

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).