

## GRADATIONAL CALCAREOUS CLAY LOAM

**General Description:** *Calcareous clay loam becoming more clayey and calcareous with depth, grading to medium to heavy clay within 120 cm*

**Landform:** Gently undulating rises.

**Substrate:** Coarsely structured red and brown heavy clay (Hindmarsh Clay).

**Vegetation:**



<b>Type Site:</b>	Site No.:	CY024	1:50,000 mapsheet:	6429-1 (Kainton)
	Hundred:	Kulpara	Easting:	769950
	Section:	B	Northing:	6229100
	Sampling date:	23/12/1993	Annual rainfall:	395 mm average

Lower slope of 3%. Firm surface with no stones.

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark reddish brown soft highly calcareous clay loam with moderate granular structure. Abrupt to:
10-20	Dark reddish brown firm highly calcareous medium clay with moderate coarse subangular blocky structure. Clear to:
20-35	Dark reddish brown firm very highly calcareous light clay with moderate medium subangular blocky structure and 2-10% hard carbonate veins and nodules. Gradual to:
35-70	Yellowish red firm very highly calcareous light medium clay with moderate medium angular blocky structure. Diffuse to:
70-100	Yellowish red firm very highly calcareous medium clay with weak coarse angular blocky structure. Diffuse to:
100-145	Yellowish red and brown hard highly calcareous medium heavy clay with strong coarse angular blocky structure.



**Classification:** Ceteric, Pedal, Hypercalcic Calcarosol; medium, non-gravelly, clay loamy / clayey, deep



## Summary of Properties

- Drainage:** Moderately well drained. Soil may remain wet for up to a week following heavy or prolonged rainfall.
- Fertility:** Natural fertility is high as indicated by the exchangeable cation data. Surface fertility relies on organic matter levels which are adequate, and on phosphorus levels which are good at this site. Trace element deficiencies may occur from time to time
- pH:** Alkaline at the surface, strongly alkaline at depth.
- Rooting depth:** Approximately 130 cm in pit (few roots below 70 cm).
- Barriers to root growth:**
- Physical:** Hard poorly structured clay at depth caused by the high percentage of exchangeable sodium restricts root growth.
  - Chemical:** High boron concentrations and high sodicity from 100 cm prevent deeper root growth. Nutrient availability problems probably occur in the subsoil.
- Waterholding capacity:** Approximately 100 mm in rootzone, but less is effectively available due to low root density in the subsoil.
- Seedling emergence:** Fair to good. Organic matter levels need to be maintained to preserve surface soil structure.
- Workability:** Fair to good.
- Erosion Potential:**
- Water:** Moderately low.
  - Wind:** Low.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> 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	7.9	2.2	0.16	0.52	1.5	38	579	-	3.3	1.0	7	7.6	0.5	31.4	27.2	4.2	0.5	2.4	1.7
0-10	8.2	7.8	3.5	0.16	0.53	1.4	42	512	-	3.4	1.0	7	8.8	1.2	29.6	26.0	4.5	0.3	2.2	1.1
10-20	7.9	7.7	1.0	0.15	0.40	0.9	12	253	-	3.5	1.4	10	3.1	0.2	29.4	24.3	4.7	0.6	1.4	2.1
20-35	8.2	7.8	7.8	0.16	0.31	0.5	7	147	-	3.4	1.3	8	2.7	0.1	24.6	19.0	5.4	0.7	1.0	2.8
35-70	8.5	7.9	30.1	0.18	0.36	0.1	7	113	-	2.9	1.2	7	2.2	0.2	19.2	12.4	5.9	1.1	0.7	5.8
70-100	8.9	8.0	39.8	0.23	0.60	0.3	6	176	-	2.9	1.2	7	1.8	0.1	18.5	8.1	8.0	2.4	0.8	12.9
100-145	9.2	8.5	14.5	0.68	1.80	0.1	4	343	-	31.6	0.9	8	1.0	0.1	27.2	6.9	14.6	7.7	1.5	28.1

**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

**Further information:** [DEWNR Soil and Land Program](#)

