

# GRADATIONAL CALCAREOUS CLAY LOAM ON CALCRETE

**General Description:** *Thin to medium thickness calcareous clay loam grading to a red calcareous clay on calcrete at shallow depth*

**Landform:** Undulating rises.

**Substrate:** Siltstone basement capped by calcrete.

**Vegetation:**



**Type Site:** Site No.: CY005

1:50,000 sheet: 6429-1 (Kainton)

Hundred: Tiparra

Annual rainfall: 475 mm

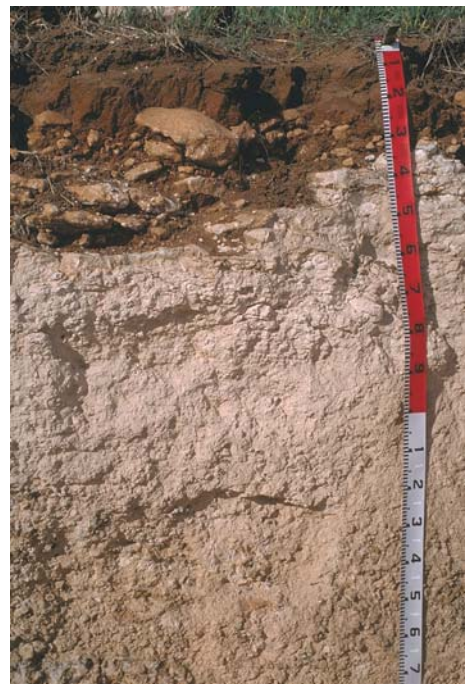
Sampling date: 19/02/92

Landform: Midslope of 2.5%

Surface: Firm with no stones

## Soil Description:

Depth (cm)	Description
0-10	Brown firm massive highly calcareous fine sandy clay loam. Abrupt to:
10-21	Yellowish red friable massive moderately calcareous medium clay. Clear to:
21-56	Yellowish red friable massive calcareous medium clay with 75% calcrete fragments (20-200 mm). Sharp to:
56-68	Calcrete pan. Clear to:
68-115	Very pale brown very hard massive light coarse sandy loam. Gradual to:
115-161	Light grey soft massive very highly calcareous weathered siltstone with 50-90% hard siltstone fragments (6-20 mm). Clear to:
161-200	More than 90% hard siltstone with pockets of very highly calcareous soft weathered material.



**Classification:** Ceteric, Petrocalcic, Lithocalcic Calcarosol; medium, non-gravelly, clay loamy / clayey, moderate

## Summary of Properties

**Drainage** Moderately well drained. The soil rarely remains wet for more than a week following heavy or prolonged rainfall.

**Fertility** Surface fertility relies on organic matter levels which are adequate, and on phosphorus levels which are high. Phosphorus has probably accumulated through restricted crop uptake caused by the shallow profile. Subsoil nutrient retention capacity is high, but capacity is low beneath the calcrete. Zinc levels are marginal in the paddock sample.

**pH** Alkaline at the surface, strongly alkaline at depth.

**Rooting depth** 56 cm in pit.

### Barriers to root growth

**Physical:** Calcrete fragments in the 21-56 cm layer restrict the volume which roots can exploit for moisture and nutrients. Calcrete pan at 56cm impedes root growth of annual plants.

**Chemical:** Soil below the calcrete is mostly carbonate with a high pH preventing deeper growth of any roots penetrating the calcrete.

**Water holding capacity** Approximately 50 mm in the rootzone - annual crops mature relatively quickly in a season with a sharp finish.

**Seedling emergence:** Fair to good.

**Workability:** Fair to good. Probably some interference by calcrete fragments.

### 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> -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	7.6	3.6	0.14	0.7	1.70	41	500	-	-	0.46	3.2	2.5	0.23	25.1	22.33	2.39	0.21	1.77	0.8
0-10	8.5	7.6	6.6	0.15	0.8	1.97	75	640	-	-	0.57	4.1	7.3	0.53	25.2	22.06	2.45	0.24	2.21	1.0
10-21	8.7	7.6	3.9	0.10	0.3	0.96	6	180	-	2.3	0.56	5.8	1.0	0.09	24.8	23.59	2.41	0.30	0.74	1.2
21-56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56-68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68-115	9.8	8.3	74.0	0.19	0.9	0.31	2	20	-	2.1	0.44	0.4	0.1	0.06	5.9	2.41	3.60	1.24	0.06	21.0
115-161	10.0	8.4	50.0	0.40	1.4	0.18	1	30	-	-	0.24	0.4	0.1	0.12	13.1	1.99	7.24	4.82	0.14	36.8
161-200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**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.