DARK GRADATIONAL CLAY LOAM

General Description: *Dark well structured clay loam becoming more clayey, coarser structured and calcareous with depth, grading to heavy clay*

Landform: Slopes of undulating rises.

Substrate: Heavy clay, probably of Tertiary age

Vegetation:

Type Site:

Site No.:	CL022	1:50,000 mapsheet:	6729-3 (Truro)
Hundred:	Dutton	Easting:	330100
Section:	17	Northing:	6198750
Sampling date:	21/3/95	Annual rainfall:	430 mm average

Upper slope of undulating rise, 3% slope. Hard, with some cracking. The naturally occurring gilgai microrelief has been obliterated by cultivation

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown hard clay loam with strong granular structure. Clear to:
10-30	Dark grey brown hard clay loam with coarse polyhedral structure. Clear to:
30-60	Dark grey brown hard light clay with moderate coarse polyhedral structure. Clear to:
60-100	Yellowish brown very hard moderately calcareous medium heavy clay with coarse prismatic structure. Gradual to:
100-140	Yellowish brown very hard moderately calcareous medium heavy clay with coarse prismatic structure and slickensides. Moist and friable from 180 cm. Gradual to:
140-180	Yellowish brown firm moderately calcareous medium heavy clay with coarse subangular blocky structure and slickensides. Gradual to:
180-220	Brown, grey and red mottled medium heavy clay with slickensides.

Classification: Melanic-Sodic, Calcic, Black Dermosol; medium, non-gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage: Moderately well to imperfectly drained. Water movement impeded by clay layers from 30 cm, causing saturation for a week or two following heavy or prolonged rainfall.

Fertility: Inherent fertility is very high as indicated by the exchangeable cation data. Organic carbon is also high. Phosphorus levels are marginal, but concentrations of other measured nutrient elements are high.

pH: Slightly alkaline at the surface, strongly alkaline with depth. Surface pH is variable depending on depth to lime due to underground gilgai effect.

Rooting depth: 100 cm in pit, but few roots below 60 cm.

Barriers to root growth:

Physical: Apart from general hardness of the soil, there are no obvious physical barriers.

Chemical: High pH, sodicity and boron, and increasing salinity from 60 cm combine to restrict root growth significantly below 60 cm. Boron toxicity likely in dry seasons.

Waterholding capacity: Approximately 100 mm in rootzone (not limiting).

Seedling emergence: Patchy due to variable gilgai (crabhole) surface condition, possible surface sealing.

Workability: Occasional temporary waterlogging after rain.

Erosion Potential:

Water: Moderately low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 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	8.3	7.6	2.6	0.2	0.9	1.7	23	794	30	3.6	-	-	-	-	37.3	28.01	6.42	0.76	1.77	2.0
0-10	7.1	6.6	0.1	0.1	0.9	3.0	13	575	26	3.1	-	-	-	-	36.4	26.28	7.89	0.71	2.21	6.0
10-30	8.0	7.6	0.0	0.1	0.3	1.5	4	254	23	3.9	-	-	-	-	40.3	26.19	8.52	1.75	1.31	2.4
30-60	9.0	8.1	2.0	0.3	0.6	1.1	<4	257	20	6.0	-	-	-	-	46.5	21.11	13.94	7.49	1.68	16.1
60-100	9.5	8.6	15.0	0.8	1.9	0.4	<4	245	55	26.3	-	-	-	-	40.6	11.57	15.36	13.50	1.32	33.2
100-140	9.3	8.6	9.8	1.5	4.6	0.1	<4	271	240	29.2	-	-	-	-	41.7	9.74	14.96	16.69	1.37	40.0
140-180	9.1	8.6	5.4	2.2	7.0	0.1	<4	277	370	21.8	-	-	-	-	40.7	9.71	15.59	17.30	1.36	42.5
180-220	9.0	8.5	2.7	2.3	6.0	0.1	<4	269	372	22.5	-	-	-	-	45.4	9.28	16.75	17.77	1.37	39.1

Note: Paddock sample bulked from 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