

## DEEP RED CLAY

**General Description:** *Well structured red brown light clay grading to a strongly structured deep red medium to heavy clay overlying limestone at about 100 cm*

**Landform:** Gently undulating plains.

**Substrate:** Calcreted calcarenite of the Bridgewater Formation.

**Vegetation:**



<b>Type Site:</b>	Site No.:	SE100	1:50,000 mapsheet:	7023-2 (Penola)
	Hundred:	Penola	Easting:	486880
	Section:	496	Northing:	5866860
	Sampling date:	07/12/2004	Annual rainfall:	660 mm average

Low rise on gently undulating plain. Hard setting surface with no stones.

### Soil Description:

Depth (cm)	Description
0-15	Dark reddish brown very hard light clay with strong medium polyhedral structure. Gradual to:
15-45	Dark reddish brown and dusky red hard medium clay with strong coarse (breaking to fine) polyhedral structure. Diffuse to:
45-85	Dark reddish brown hard medium clay with strong fine polyhedral structure. Diffuse to:
85-115	Dark reddish brown, reddish brown and strong brown hard medium heavy clay with strong fine polyhedral structure. Sharp to:
115-	Calcreted calcarenite.



**Classification:** Sodic, Petrocalcic, Red Dermosol; medium, non-gravelly, clayey / clayey, deep



## Summary of Properties

**Drainage:** Moderately well drained. The soil is unlikely to remain wet for more than a few days to a week following heavy or prolonged rainfall. Underlying calcarenite is permeable, except where capped by unfractured sheet calcrete.

**Fertility:** Inherent fertility is high, as indicated by the exchangeable cation data. High clay content imparts high nutrient retention capacity throughout the profile. The test results show low phosphorus concentrations, and possibly a zinc deficiency.

**pH:** Slightly alkaline throughout.

**Rooting depth:** 115 cm in pit, with noticeable horizontal growth along the 45 cm boundary.

### Barriers to root growth:

**Physical:** The high strength clay impedes uniform root growth to some extent.

**Chemical:** Marginal sodicity and salinity in the lower profile restrict root development to some extent.

**Waterholding capacity:** (Estimates for potential rootzone of grape vines)

Total available: 175 mm

Readily available: 65 mm

**Seedling emergence:** Fair to satisfactory, depending on degree of compaction of surface (significant in inter-row at this site).

**Workability:** Fair. The clayey surface is very hard when dry and tends to stickiness when wet.

### Erosion Potential:

**Water:** Low.

**Wind:** Low.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO <sub>4</sub> -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-15	7.5	7.0	0	0.128	0.85	3.09	11	483	56	5.4	1.0	7.51	178	3.42	241	24.3	20.3	2.07	0.69	1.33	2.8
15-45	7.6	6.8	0	0.093	0.55	1.65	6	484	25	2.8	1.0	1.07	73	1.07	187	21.3	15.4	2.92	1.60	1.37	7.5
45-85	7.5	6.6	0	0.095	0.58	1.01	4	501	25	11.2	1.2	0.46	38	0.25	87.8	23.0	16.7	2.86	2.11	1.32	9.2
85-115	7.8	7.2	1.1	0.239	4.47	0.76	4	345	75	31.6	0.7	0.22	37	0.21	167	30.8	25.6	2.64	1.67	0.93	5.4
115-120	8.8	7.7	81.9	0.186	1.65	0.15	4	119	114	18.9	0.5	0.14	7.6	<.05	19.3	15.9	13.9	1.14	0.53	0.36	3.3

**Note:** Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

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

