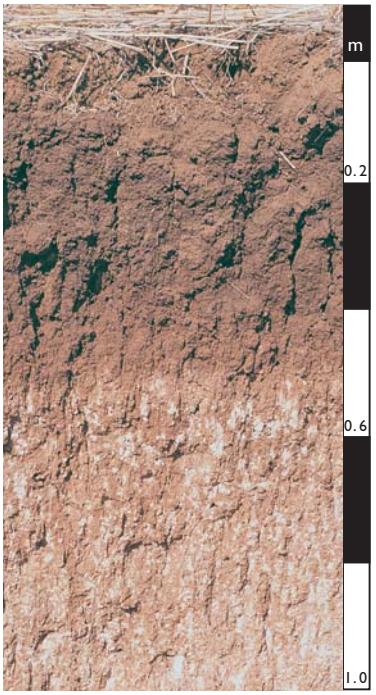
# CA7: Endohypersodic, Pedal, **Hypercalcic Calcarosol**



**Clare Valley, South Australia**

## General description of the soil

A Hypercalcic Calcarosol (>20 % soft and <20% hard carbonate) with a strongly structured B horizon, and an ESP of 15 or greater occurs below 0.5 m.

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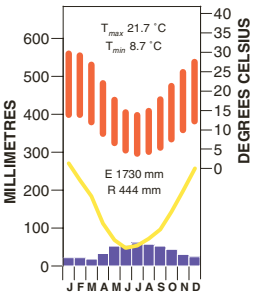
|---|---|
| **Distribution:** | A common soil in the Mallee Region of South Australia. |
| **Typical land use:** | Cereal cropping. |
| **Common variants:** | Carbonate may vary in form and amount. |
| **World Reference Base:** | Luvic Calcisol. |
| **Other names:** | Solonised Brown Soils and Mallee Soils. |

## Environment and location of the example profile

| | |
|---|---|
| **Landform:** | Midslope of a long pediment. |
| **Parent material or substrate:** | Substrate is fine-textured calcareous alluvium. |
| **Drainage class:** | Moderately well-drained, but climate is generally dry. |
| **Surface condition:** | Self-mulching. |
| **Site disturbance:** | Cultivation – rainfed. |
| **Native vegetation:** | Mallee shrubland. |

## Site location

## Site climate




## Soil morphology

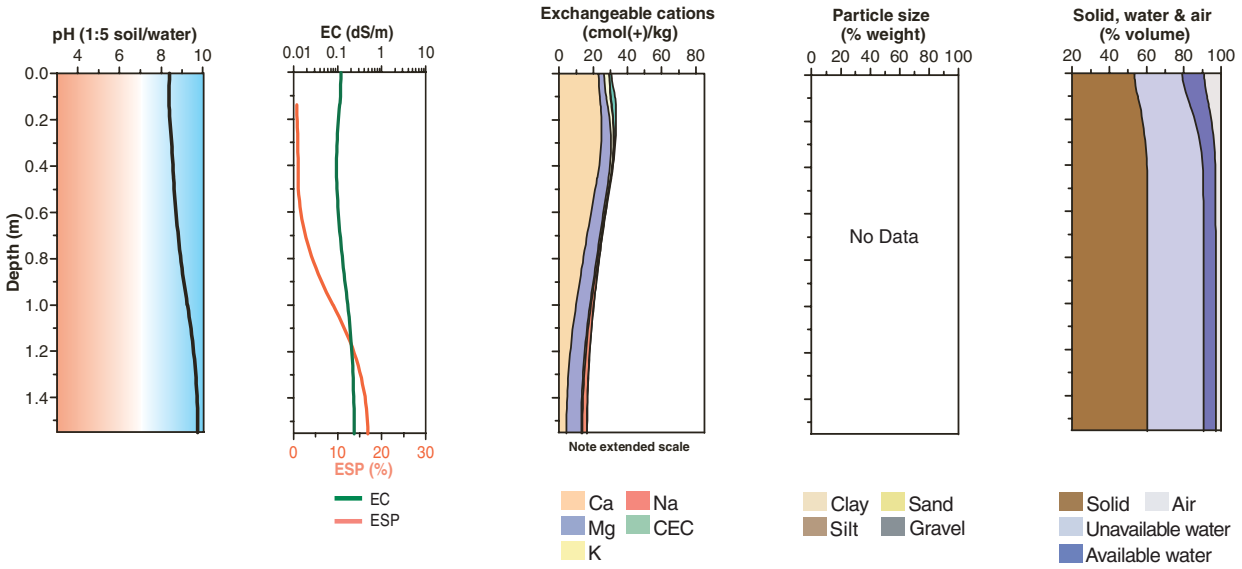
| Horizon | Depth (m) | Colour | Mottles | Texture | Structure | | | Consistence | Coarse fragments | Segregations | Boundary |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Grade | Shape | Size | | | | |
| A1 | 0.00–0.10 | dark reddish brown (5YR 3/3) | – | light clay | strong | granular | 5–10 mm | | – | slightly calcareous* | clear |
| B1 | 0.10–0.14 | dark reddish brown (5YR 3/3) | – | light medium clay | strong | subangular blocky | 10–20 mm | | – | slightly calcareous* | clear |
| B2 | 0.14–0.45 | reddish brown (5YR 3/4) | – | heavy clay | strong | subangular blocky | 10–20 mm | | – | moderately calcareous* | clear |
| B31k | 0.45–1.00 | red (2.5YR 4/6) | – | medium clay | moderate | subangular blocky | 10–20 mm | | – | 20–50% soft carbonate very highly calcareous* | gradual |
| B32k | 1.00–1.55 | yellowish red (5YR 5/6) | – | heavy clay | moderate | subangular blocky | 5–10 mm | | – | 20–50% soft carbonate very highly calcareous* | |

* Fine earth fraction

## Soil chemical and physical properties

| Horizon | Sample Depth (m) | pH $H_2O$ [A] | pH $CaCl_2$ [B] | Elect. Cond. dS/m [A] | $CaCO_3$ % [B] | Org. C % [D] | Extr. P mg/kg [A] | Tot. P % | Tot. K % | Cation exchange properties [G] cmol(+)/kg | | | | | | | ESP % [A] | Bulk dens. Mg/m³ | Particle size % | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Ca | Mg | K | Na | H+Al | CEC | ECEC | | | CS | FS | Silt | Clay |
| A1 | 0.00–0.10 | 8.4 | 7.6 | 0.12 | 3 | 1.6 | 27 | | | 23.1 | 3.2 | 3.0 | 0.2 | | 32 | | – | | | | | |
| B1 | 0.10–0.14 | 8.3 | 7.4 | 0.12 | 4 | 1.2 | 7 | | | 24.1 | 3.8 | 2.2 | 0.2 | | 34 | | – | | | | | |
| B2 | 0.14–0.45 | 8.5 | 7.5 | 0.09 | 4 | 0.7 | 5 | | | 26.4 | 6.1 | 1.2 | 0.4 | | 34 | | 1 | | | | | |
| B31k | 0.45–1.00 | 8.8 | 7.8 | 0.11 | 27 | 0.3 | 4 | | | 15.6 | 7.6 | 0.7 | 0.5 | | 24 | | 2 | | | | | |
| B32k | 1.00–1.55 | 9.7 | 8.2 | 0.23 | 48 | 0.1 | 2 | | | 4.9 | 8.6 | 0.8 | 2.5 | | 16 | | 16 | | | | | |

## Key profile properties




## General qualities of the soil

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|---|---|
| **Infiltration:** | Generally high but less when profile is already wet and swollen. |
| **Available water store:** | Moderate. |
| **Permeability:** | Moderate to high in the A horizon decreasing to low in the sodic B horizon. |
| **Physical root limitations:** | No apparent physical barriers in the A and upper B horizons. Roots may be confined to channels and fissures in the carbonate layers. |
| **Erosion hazard:** | Low, except where water is allowed to concentrate on the soil surface when they become highly susceptible to gully erosion. |
| **Nutrient availability:** | The high pH of these soils will restrict some nutrient availability. High sodicity may inhibit root growth. Phosphorus levels are marginal and zinc may be deficient. |
| **Toxicities:** | Unlikely to occur except for boron deep in the profile. |

**The soil has formed in fine-textured alluvial deposits south of Clare in the mid-north of South Australia**

*Acknowledgements:* Soil image, soil description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site CM012. Landscape image: David Eastburn, Murray Darling Basin Commission.