

SANDY LOAM OVER SODIC BROWN CLAY

(Butler soil)

General Description: *Thin to medium loamy sand to sandy clay loam over a brown coarsely structured dispersive clay, calcareous with depth*

Landform: Gently undulating plains.

Substrate: Tertiary clay.

Vegetation:

Type Site:	Site No.:	EL032	1:50,000 mapsheet:	6129-4 (Butler)
	Hundred:	Butler	Easting:	606400
	Section:	50	Northing:	6229050
	Sampling date:	26/02/1992	Annual rainfall:	375 mm average

Mid slope of gently undulating rise, 4% slope. Loose surface with 5% quartz and ironstone (5-50 mm).

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-8	Dark greyish brown soft loamy sand with weak subangular blocky structure and 5% quartz and ironstone gravel. Abrupt to:
8-21	Light brown very hard sandy clay with coarse columnar structure and 2% quartz gravel (2-10 mm). Clear to:
21-46	Reddish yellow hard highly calcareous light clay with moderate subangular blocky structure and 20% nodular carbonate segregations. Diffuse to:
46-56	Light yellowish brown very hard very highly calcareous clay with moderate subangular blocky structure and vertical red clayey segregations. Diffuse to:
56-190	Light brown very hard very highly calcareous medium clay with 50% fine carbonate segregations and vertical red clayey segregations.



Classification: Hypercalcic, Hypernatric, Brown Sodosol; thin, slightly gravelly, sandy / clayey, very deep



Summary of Properties

- Drainage:** Imperfectly drained. Water perches on the clayey subsoil for more than a week to following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is moderately low, as indicated by the exchangeable cation data. Low clay and organic matter levels in the surface soil restrict nutrient retention capacity. Regular phosphorus applications are essential. Nitrogen levels depend on cropping history and legume content of pastures.
- pH:** Neutral at the surface, strongly alkaline with depth.
- Rooting depth:** Few roots below 21 cm.
- Barriers to root growth:**
- Physical:** The dense dispersive clayey subsoil prevents strong even root growth by restricting root growth to the surfaces of clay aggregates.
 - Chemical:** High pH and sodicity at shallow depth limit deeper root growth.
- Waterholding capacity:** Approximately 30 mm in the rootzone.
- Seedling emergence:** Satisfactory although water repellence reduces establishment in dry seasons.
- Workability:** Soft / loose surface is easily worked.
- Erosion Potential:**
- Water:** Low.
 - Wind:** Moderate.

Laboratory Data

Depth cm	pH H ₂ O	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	
0-8	7.2	6.9	1	0.1	1.2	0.51	23.0	-	6	<0.1	0.69	2.94	7.24	0.73	4.0	2.21	0.71	0.20	0.33	5.0
8-21	8.7	8.1	2	0.4	2.0	0.26	6.0	-	41	10.2	1.55	2.80	0.61	0.27	18.8	6.63	6.67	5.71	1.26	30.4
21-46	9.5	8.5	32	0.9	3.4	0.16	<2.0	-	106	18.5	1.65	2.80	0.61	0.24	17.4	3.46	6.76	8.01	1.52	46.0
46-56	9.6	8.5	17	0.8	3.4	<0.1	4.7	-	81	18.8	1.59	6.40	0.50	0.13	16.0	2.48	6.05	8.54	1.44	53.4
56-190	9.6	8.5	27	1.1	5.8	<0.1	3.1	-	176	21.0	1.56	4.33	0.63	0.25	14.7	2.20	4.88	8.68	1.50	59.0

Note: 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](#)

