MOS Mosquito Land System

Gently undulating plains east of Langhorne Creek

Area: 42.5 km^2

Annual rainfall: 380 – 405 mm average

Geology: The land is underlain by a complex of old alluvium variably capped by Woorinen Formation carbonates. The alluvium is characteristically a micaceous clayey sand to sandy clay. The carbonates vary from soft and finely divided, to heavy rubble. Parts of the landscape are covered by windblown sands.

Topography: The System flanks the eastern side of the Bremer flood plains, and is a transition zone between the alluvial soils to the west, and the sandy and stony soils of the Brinkley Land System to the east. In the north the landscape is very gently undulating with broad loamy flats interspersed with sandy and stony rises. Towards the south there is an increasing proportion of sandy and stony rises, separated by flats which are commonly seasonally waterlogged and marginally to moderately saline.

Elevation: 0 to 40 m

Relief: 2 - 8 m

Soils: The soils divide into three categories depending on landscape position. On the flats, loamy soils with limited rubble are common. On stony rises, soils with moderate to high amounts of rubble are predominant. On sandy rises, deep sands or sand over clay soils are most common.

Main soils

Soils of flats

D3/D2 Sandy loam over red clay
A4a Calcareous sandy loam

Soils of rises

G1 Sand over clay
A4b Rubbly calcareous loamy sand

Minor soils

Soils of flats

C3 Gradational clay loam
D3/A6 Calcareous sandy clay loam over clay
G3a Sand over clay
G4 Sand over dispersive brown clay
N2/A4 Miscellaneous saline soil

Soils of stony rises

B3 Shallow sandy loam over calcrete
C1 Sandy loam over sandy clay loam

Soils of sandy rises

G3b Thick sand over dispersive clay
G2 Sand over light sandy clay loam
H2/H3 Deep sand

Main features: The Mosquito Land System comprises gently undulating flats and rises with a gradation in properties from the higher elevations in the north to lake level in the south. In the north, deep, fertile loamy soils are predominant, with stony and sandy soils occupying limited areas. Towards the south, sandy and stony soils become more prevalent. These have limitations due to low fertility and water holding capacity, with wind erosion potential on sandy soils. Soil drainage becomes increasingly impeded, with associated increases in salinity.

Soil Landscape Unit summary: 11 Soil Landscape Units (SLUs) mapped in the Mosquito Land System:

SLU	% of area	Main features #
GSA GST	10.9 2.4	Very gently undulating sandy flats with imperfectly drained depressions formed on micaceous clayey sand to sandy clay alluvium overlain by Woorinen Formation carbonates. Occasional sandhills overlie the flats. **GSA** Very gently undulating flats. **GST** Marginally saline depressions. Main soils: sand over dispersive brown clay - **G4** (E), with calcareous sandy clay loam over clay - **D3/A6** (L), sandy loam over red clay - **D3/D2** (L), calcareous sandy loam - **A4a** (L) and sand over clay - **G3a** (M). On low rises, main soils are sand over clay - **G1** (M), deep sand - **H2/H3** (M) and rubbly calcareous loamy sand - **A4b** (M). These soils have low natural fertility, restricted waterholding capacity and imperfect drainage. In GST, salinity is a further limitation. Productive potential is generally low.
HvA HvE HvT	52.7 1.7 2.3	Very gently undulating loamy plains and small flats formed on micaceous clayey sand to sandy clay alluvium overlain by Woorinen Formation carbonates. The plains have less than 3 m relief and slopes of less than 2%. There is no defined surface drainage pattern. Surface stone is minor. **HvA** Very gently undulating plains. **HvE** Depressions. **HvT** Marginally saline depressions with occasional highly saline patches. The soils include loamy texture contrast and calcareous profiles. Main soils on the plains and flats: sandy loam over red clay - **D3/D2** (E), with calcareous sandy clay loam over clay - **D3/A6** (L), gradational clay loam - **C3** (L) and calcareous sandy loam - **A4a** (L). Main soils on low rises: sand over clay - **G1** (L) and rubbly calcareous loamy sand - **A4b** (L), with deep sand - **H2/H3** and shallow sandy loam over calcrete - **B3** (M). Saline soil - **N2/A4** (M) dominates the salty land. The soils of the flats are deep, moderately fertile and well drained. Minor limitations are due to high pH (with associated nutrient fixation) of the calcareous soils and restricted water availability in the more rubbly types. Salinity in **HvT** limits productivity of most crops. The soils of the rises are well drained but less fertile, and often have restricted root zones due to the extent of rubble in the profile.
O-B ODg	4.8 4.5	Sand dunes and spreads. **O-B** Parallel east - west oriented moderate sand dunes. **ODg** Sand spreads (50% of area) superimposed on low rises. Main soils: thick sand over dispersive clay - **G3b** (E), sand over light sandy clay loam - **G2** (E) and deep bleached sand - **H3** (E). Soils as listed under "*Stony rises*" also occur between the sand spreads of **ODg** and on eroded sections of **O-B**. The sandy soils are infertile and prone to water repellence and wind erosion. Productivity potential is low. Wind erosion control is a management priority on unstable dunes. Most of the cleared dunes are arable, but specialized management techniques and crops such as cereal rye are needed to maintain stability.
SiB SjL	12.4 5.8	Low stony rises. **SiB** Mainly stony rises **SjL** Stony rises with sand spreads and minor saline depressions. Main soils: rubbly calcareous loamy sand - **A4b** (E) and sand over clay - **G1** (E) with calcareous sandy clay loam over clay - **D3/A6** (L) in **SiB**. In **SjL**, these soils account for half the area, with sandy loam over sandy clay loam - **C1** (L), shallow sandy loam over calcrete - **B3** (L), sand over dispersive brown clay - **G4** (M) and deep sand - **H2/H3** (M), often moderately shallow over calcrete, occupying the other half. Saline soil - **N2/A4** (M) occurs in depressions. The rubbly soils of SiB have restricted waterholding capacity, but are well drained. In **SjL** there is a higher proportion of sandy surfaced soils, drainage conditions deteriorate and salinity is more of a problem.

UUg	1.1	Sand spreads overlying calcrete rises. Main soils: deep sand - **H2** (E) with rubbly calcareous loamy sand - **A4b** (L), shallow sandy loam over calcrete - **B3** (L) and sand over clay - **G1** (L). These soils are either deep, sandy and infertile and prone to wind erosion, or shallow over rubble with limited water holding capacity.
ZA-	1.4	Moderately saline flats. These are mostly non-arable, but are suitable for establishment of salt tolerant pastures. Saline soil - **N2/A4** is dominant.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(D) Dominant in extent (>90% of SLU)
(V) Very extensive in extent (60–90% of SLU)
(E) Extensive in extent (30–60% of SLU)
(C) Common in extent (20–30% of SLU)
(L) Limited in extent (10–20% of SLU)
(M) Minor in extent (<10% of SLU)

Detailed soil profile descriptions:

Soils of flats

A4a Calcareous sandy loam (Hypercalcic / Supracalcic Calcarosol)
Medium thickness brown calcareous loamy sand to light sandy clay loam, overlying a reddish brown highly calcareous sandy clay loam to sandy clay with up to 50% calcrete nodules (Class III A / B carbonate) from 40 cm. Brown, red and grey clayey sand to sandy clay alluvium underlies the profile from 65 cm.

D3/A6 Calcareous sandy clay loam over clay (Hypercalcic, Effervescent, Red Sodosol / Hypercalcic Calcarosol)
Calcareous sandy clay loam grading to a grey brown to red moderately calcareous well structured light clay becoming more clayey and calcareous to about 100 cm, below which texture becomes more sandy, less calcareous and increasingly micaceous.

D3/D2 Sandy loam over red clay (Hypercalcic, Red Chromosol / Sodosol)
Medium thickness brown loamy sand to light sandy clay loam, overlying a dark reddish brown to orange massive sandy clay, very highly calcareous with limited hard nodules (Class III A carbonate) from 40 cm. Brown, red and grey clayey sand to sandy clay alluvium underlies the profile from 85 cm.

C3 Gradational clay loam (Hypercalcic / Calcic, Red Dermosol)
Medium thickness clay loam to light clay grading to a red well structured light clay, calcareous from about 20 cm merging with a medium clay from about 55 cm.

G3a Sand over clay (Calcic, Brown / Red Chromosol)
Medium thickness loamy sand abruptly overlying a brown or red mottled blocky clay, calcareous from about 50 cm, grading to a micaceous clay, becoming more sandy with depth.

G4 Sand over dispersive brown clay (Calcic, Brown Sodosol)
Medium thickness sand with a bleached A2 layer, abruptly overlying a mottled brown columnar structured and dispersive sandy clay loam to clay grading to variably rubbly carbonate.

N2/A4 Saline soil (Salic Hydrosol)
Miscellaneous calcareous soils affected by near surface saline water tables.

Soils of stony rises

A4b Rubbly calcareous loamy sand (Lithocalcic Calcarosol)
Calcareous loamy sand with increasing rubble over Class III C carbonate from about 40 cm, grading to highly calcareous sand.

B3 Shallow sandy loam over calcrete (Petrocalcic, Leptic Tenosol)
Medium thickness sandy loam over calcrete.

C1 Sandy loam over sandy clay loam (Calcic / Lithocalcic, Red Kandosol)
Thick sandy loam to loamy sand, calcareous with depth, grading to a highly calcareous sandy clay loam to sandy light clay with variable rubble.

Soils of sandy rises

G1 Sand over clay (Lithocalcic, Brown / Red Chromosol)
Medium to thick reddish sand abruptly overlying a yellow brown or red sandy clay loam with abundant carbonate rubble at depths ranging from 25 - 60 cm. Rubble decreases with depth, and clay content increases.

G3b Thick sand over dispersive clay (Calcic, Brown Sodosol)
Thick loose sand with a bleached A2 layer sharply overlying a brown columnar sandy clay with some soft carbonate from about 80 cm, continuing below 100 cm.

G2 Sand over light sandy clay loam (Brown Kandosol)
Loose grey sand with a bleached A2 layer grading to a yellow sand over a brownish light sandy clay loam from about 75 cm, becoming sandier with depth with clayey bands.

H2/H3 Deep sand (Basic, Arenic, Brown-Orthic / Bleached-Orthic Tenosol)
Very thick sand with a paler coloured or bleached A2 layer, becoming yellow with depth, continuing below 150 cm, or deep pale brown sand.

Further information: DEWNR Soil and Land Program