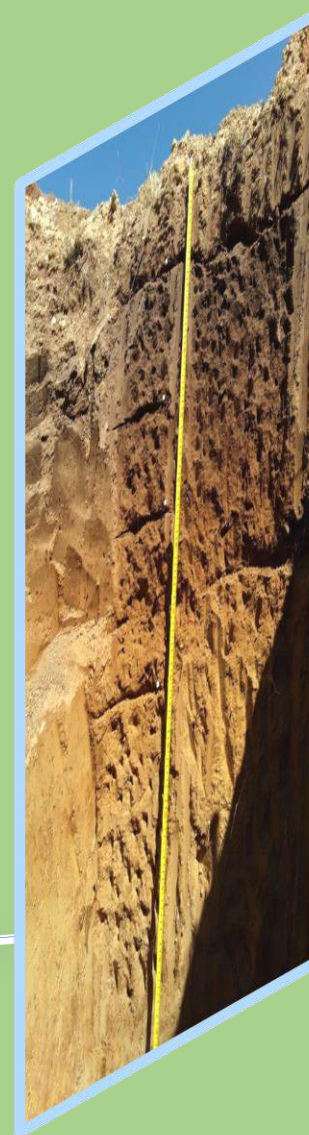


# LESOTHO SOIL CATALOQUE



Ministry of Forestry,  
Range and Soil Conservation  
Department of Soil and Water Conservation  
September, 2019

## LESOTHO SOIL CATALOQUE

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September, 2019



**Food and Agriculture  
Organization of the  
United Nations**



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United Nations**



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Soil Profile Catalogue was established from the 2018 national soil survey 159 profile pits throughout the country. The survey points are representative randomly assigned points to be sampled. They were developed using soil legacy data and topographic variables to predict the representative sampling points. To develop work plan for field soil survey, existing information on soils of Lesotho was first established, hence the compilation of soil legacy data formed the basis for planning for field survey. These included; Soil Sampling/Survey, Soil association map, Benchmark soils, Soils of Lesotho (1967), Soils of Lesotho (1979), Farmers soils, Land cover, Climate data, Agro-ecological maps, geologic maps. The scorpan model was used to arrange all data sets using the theory of soil forming factors to predict soil types. Scorpan is based on the seven predictive scorpan factors, including soil, climate, organisms, topography, parent material, age, and geographic position to obtain sampling sites. With representative profile samples to be described selected a mobile tool was developed as a survey instruments (ODK connect). "**lesis\_soilsurvey\_data\_collection**". The survey protocols and field guide were also developed to support the survey. Laboratory protocols and work plan were also developed. All the field and laboratory tools were tested and piloted through in house and field training workshops.

The scorpan model was used to arrange all soil forming factors to predict soil types. Scorpan is based on the seven predictive scorpan factors, a generalisation of Jenny's five factors (McBratney *et al.*, 2003). The seven scorpan factors are (1) s: soil, other or previously measured attributes of the soil at a point; (2) c: climate, climatic properties of the environment at a point; (3) o: organisms, including land cover and natural vegetation; (4) r: topography, including terrain attributes and classes; (5) p: parent material, including lithology; (6) a: age, the time factor; (7) n: space, spatial or geographic position.

The scorpan model: (i) Define soil attribute(s) of interest and decide resolution  $q$  and block size  $b$ . (ii) Assemble data layers to represent  $Q$ . (iii) Spatial decomposition or lagging of data layers. (iv) Sampling of assembled data ( $Q$ ) to obtain sampling sites. (v) GPS field sampling and laboratory analysis to obtain soil class or property data. (vi) Fit quantitative relationships (observing Ockham's razor) with autocorrelated errors. (vii) Predict digital map Field sampling and laboratory analysis for corroboration and quality testing.

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**Location:** Bushmanspass, Maseru



Popa series

**WBR Soil Classification:** Skeletic Leptic Cambisols

**ProfileID:**A01Bushmanspass148

**Lab # :** 471 - 473

**Surface and climate characteristics**

Surface rock: Yes  
Coarse fragments: Few  
Slopeclass: Moderately slopy  
Flooding:No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop: None  
Landcover: Grassland  
Sampling date :19/11/2018

**Profile description A- horizon (0-15cm)**

Colour moist: 10YR2/2  
Colour dry: 10YR2/1  
Structure type: Sub-angular blocky  
Structure-size: Very fine/ thin  
Mottles: No  
Root presence: Common  
pHsoil: 6.38  
Carbonate reaction: No detectable visible

**Profile decription B-Horizon (15-49cm)**

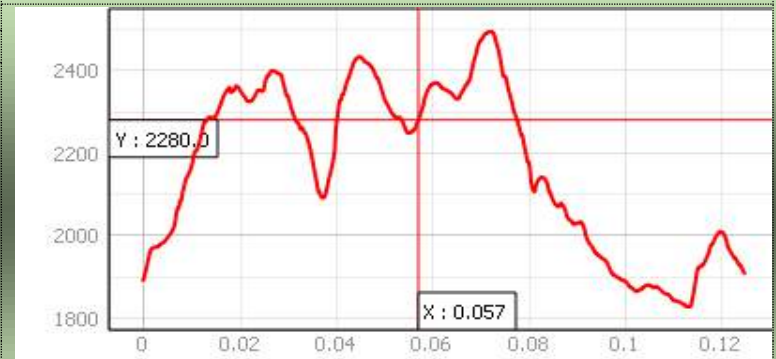
Colour moist: None  
Colour dry:10YR2/1  
Structure type: Sub- angular blocky  
Structure size: Coarse/thick  
Mottles: No  
Root presence: Common  
pHsoil: 6.45  
Carbon reaction: No detectable visible



**Remote sensing image**



**Relief Hillshade**



**Soil profile location in the landscape**

**Location:** Ha-Liau , Maseru



Popa series

**WBR Soil Classification:** Skeletic Leptic Cambisols

**Profile ID:** A01Liau001

**Lab #:** 460-462

**Surface and climate characteristics**

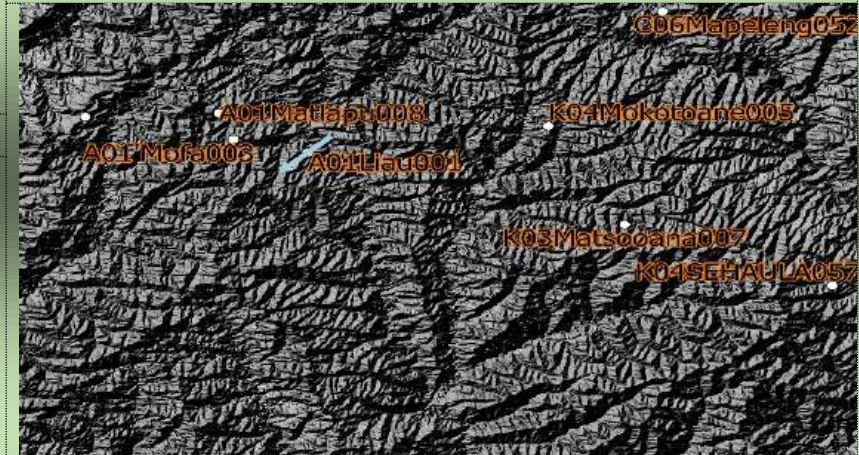
Surface rock: Yes  
Coarse Fragment: Abundant  
Slope Class: Moderately sloping  
Flooding: No  
Erosion types: Sheet  
Surface seal No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 18/11/ 2018

**Profile description A-Horizon (0-49cm)**

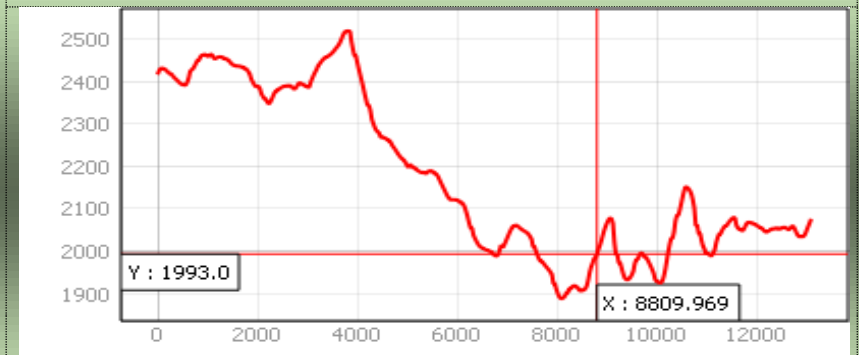
Colour dry: 10YR2/2  
Structure type: sub-angular blocky  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Abundant, Common  
pH: 5.60  
Carbonate reaction: No detectable visible or audible effervescence



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha-Liile , Maseru



**Profile ID:** A02Liile134

**Lab # :** 51- 54

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Very gently sloping  
Flooding: Yes  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat poorly (imperfectly)drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: None  
Land cover: Rain fed Agriculture  
Sampling Date: 09/09/2018

**Profile description A-Horizon (0-50cm)**

Colour moist: 10yr 3/6 , 7.5YR 4/6  
Colour dry: 10YR3/6 , 5YR 3/4  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Many, Common  
pH: 6.31  
Carbonate reaction: No detectable visible or audible effervescence

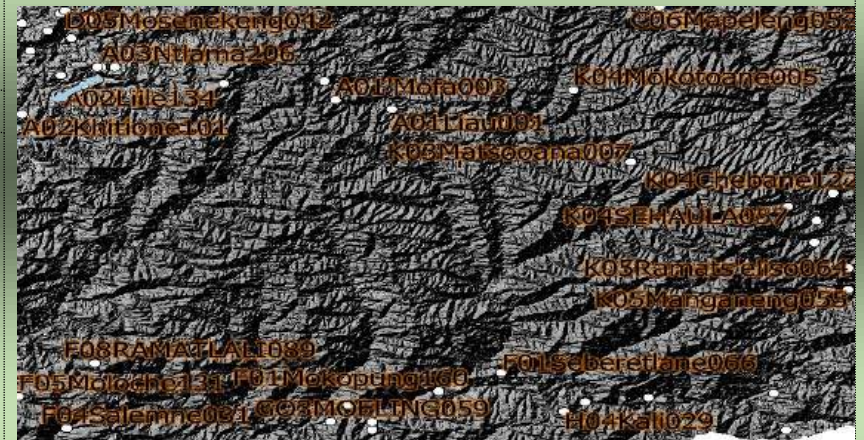
**Profile description B-Horizon (50-120cm)**

Colour moist: 5YR 4/6  
Colour dry: 5YR 4/6 , 5YR3/4  
Structure type: Crumby  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Common, Few  
pH: 6.60  
Carbonate reaction: No detectable visible or audible effervescence, Audible effervescence but not visible

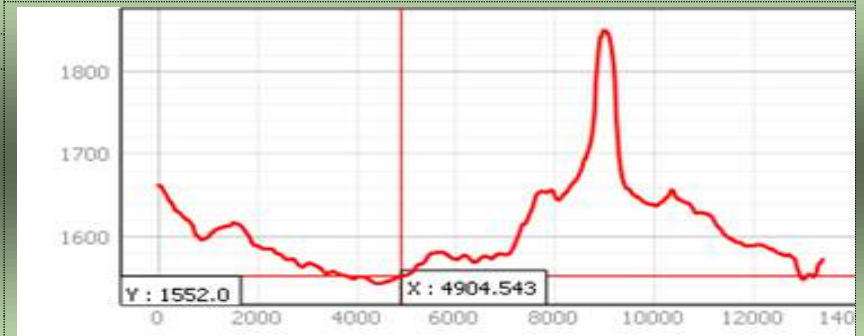
**WBR Soil Classification:** Albic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Matlapu , Maseru



**Profile ID: A01Matlapu008**

Lab # : 454-456

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Common  
Slope Class: Steep  
Flooding: No  
Erosion types: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat poorly (imperfectly) drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 20/11/ 2018

**Profile description A-Horizon (0-24cm)**

Colour moist: 10YR3/2  
Colour dry: 10YR2/1  
Structure type: Angular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Abundant  
pH: 6.31  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (24-45cm)**

Colour moist: 10YR3/2  
Colour dry: 10YR2/1  
Structure type: Angular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Common  
pH: 6.32  
Carbonate reaction: No detectable visible or audible effervescence

Popa series

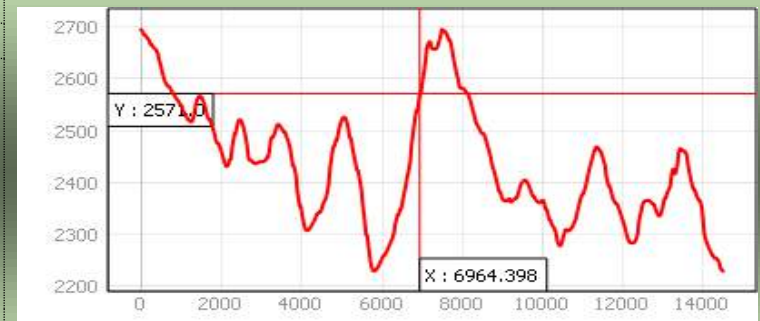
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Soil profile location in the landscape**

**Location:** Ha-Makhoathi, Maseru



Berea Series

**WBR Soil Classification:** Haplic Plinthisols

**Profile ID:** A02Makhoathi127

**Lab #:** 43-46

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: Common  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 09/09/2018

**Profile description A-Horizon (0-36cm)**

Colour moist: 10YR7/6, 10YR6/4  
Colour dry: 7.5YR4/6  
Structure type: Crumbly, Granular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Many, Few  
pH: 4.11  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (36-124cm)**

Colour moist: None  
Colour dry: 5YR4/6, 2.5YR4/6, 2.5YR4/8  
Structure type: Granular, Sub-angular block, Angular block  
Structure size: Medium  
Mottles: Yes; Mottle Type: Depletion  
Root presence: Few, None  
pH: 5.26  
Carbonate reaction: No detectable visible or audible effervescence



**Remote sensing image recheck**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Nkhokho, Maseru



WBR Soil Classification: Albic Plinthisols

**Profile ID: A02Nkhokho023**

Lab #: 474-476

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Few  
Slope Class: Sloping  
Flooding: No  
Erosion types: None  
Surface seal: Yes  
Surface cracks: No  
Surface drainage: Poorly drained  
Soil temperature: Mesic  
Land use: Not Used  
Crop: Grasses  
Land cover: Barrenland  
Sampling Date: 07/12/ 2018

**Profile description A-Horizon (0-18cm)**

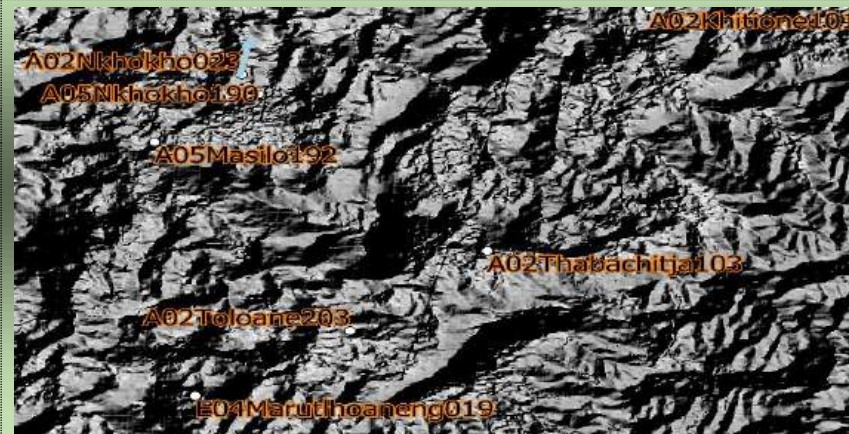
Colour moist: 10YR7/3  
Colour dry: 10YR4/3  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Abundant  
pH: 5.6  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (18-56cm)**

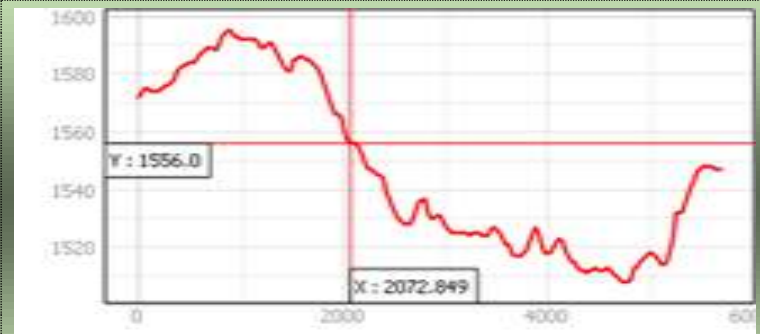
Colour moist: 10YR7/3  
Colour dry: 10YR5/4  
Structure type: Crumbly  
Structure size: very fine/ thin  
Mottles: Yes;  
Mottle Type: Concentrations  
Root presence: Many, Few  
pH: 5.65  
Carbonate reaction: No detectable visible or audible effervescence



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

**Location:** Ha-Sofonia, Maseru



**Profile ID: A02Sofonia104**

**Lab #:** 60-63

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Very few  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately well drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed agriculture  
Sampling Date: 09/09/ 2018

**Profile description A-Horizon (0-26cm)**

Colour moist: 10YR7/4  
Colour dry: 10YR4/4  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Common  
pH: 4.49  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (26-54cm)**

Colour moist: 10YR6/4, 10YR7/6  
Colour dry: 10YR4/4, 10YR5/6  
Structure type: Crumbly, Granular  
Structure size: very fine/ thin  
Mottles: Yes  
Mottle Type: Depletion, Concentrations  
Root presence: Abundant  
pH: 4.98  
Carbonate reaction: No detectable visible or audible effervescence

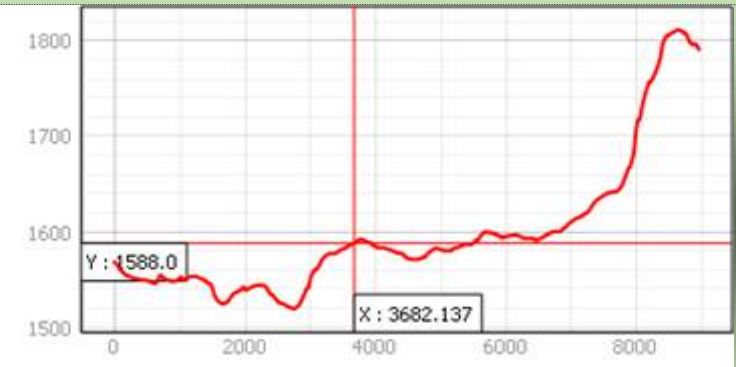
**WBR Soil Classification:** Ferralic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: A01'Mofa003**

**Lab #:** 457-459

**Surface and climate characteristics**

Surface rock : No  
Slope class: Moderately slopy  
Flooding: No  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil tempure: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Shrubland  
Date of sampling: 19/11/ 2018

**Profile description A-Horizon (0-8cm)**

Colour moist: 10YR 3/1  
Colour dry: 10YR 2/1  
Structure type: Crumby  
Structure size:Very fine/thick  
Mottles: No  
Rootpresence: Abundant  
pH soil: 5.46  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (8-43cm)**

Colour moist: 10YR 3/1  
Colour dry: 10YR 2/1  
Structure type: Crumby  
Structure size: Medium  
Mottles: No  
Rootpresence: Common  
pH soil: 5.52  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Maseru, Mofa

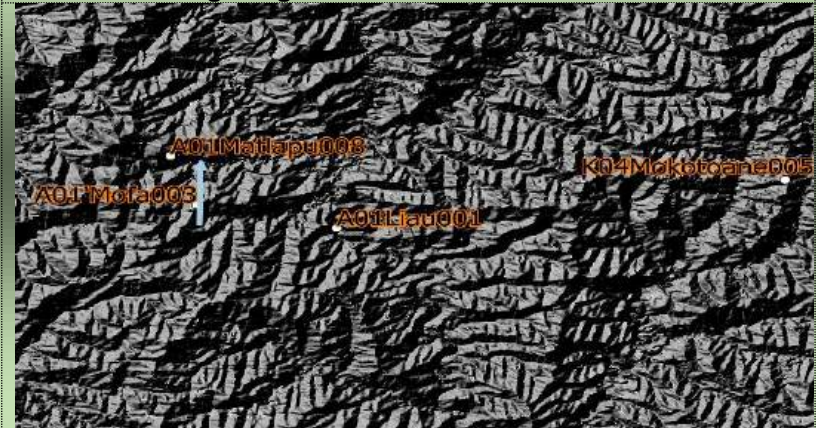


Matsana Series

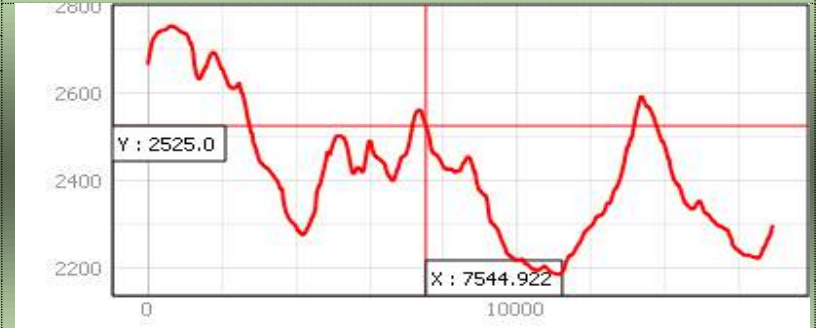
**WBR Soil Classification:** Skeletic Cambic Phaeozems



**Remote sensing image**

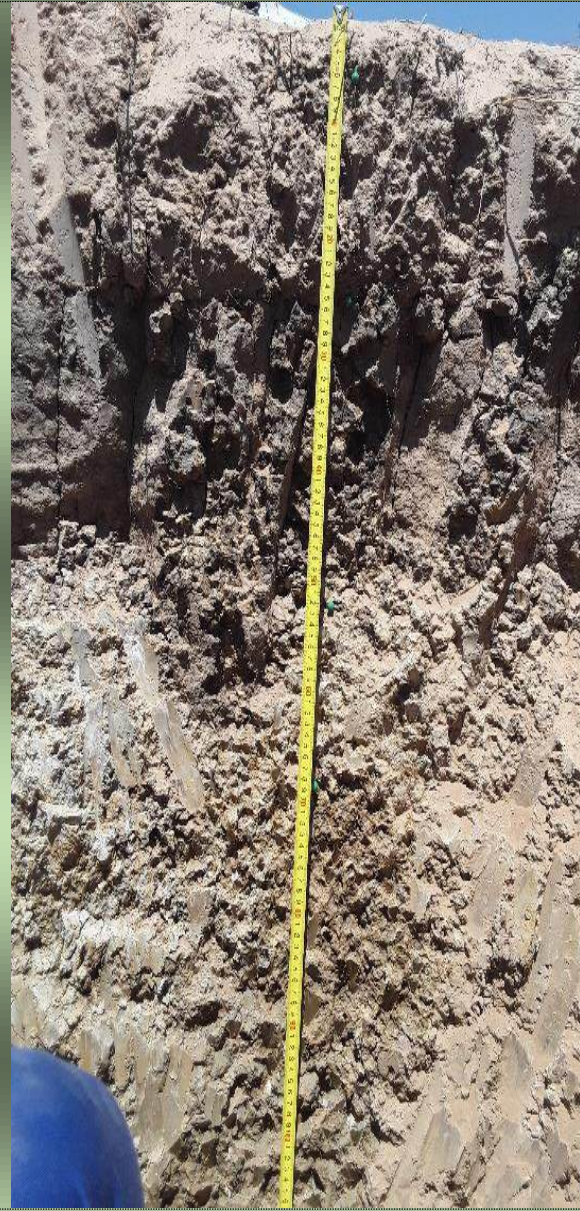


**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Khitione, Maseru



**Profile ID: A02Khitione101**

Lab #: 467-470

**Surface and climate characteristics**

Surface rock: No  
Slope class: Very gentle sloping  
Flooding: Yes  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Poorly drained  
Soil temperature: Mesic  
Land use: Not used  
Crop: None  
Land cover: Irrigated Agriculture  
Date of sampling: 10/12/ 2018

**Profile description A-Horizon (0-7cm)**

Colour moist: 10yr5/4  
Colour dry: 10yr4/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Common  
pH soil: 5.22  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (7-123cm)**

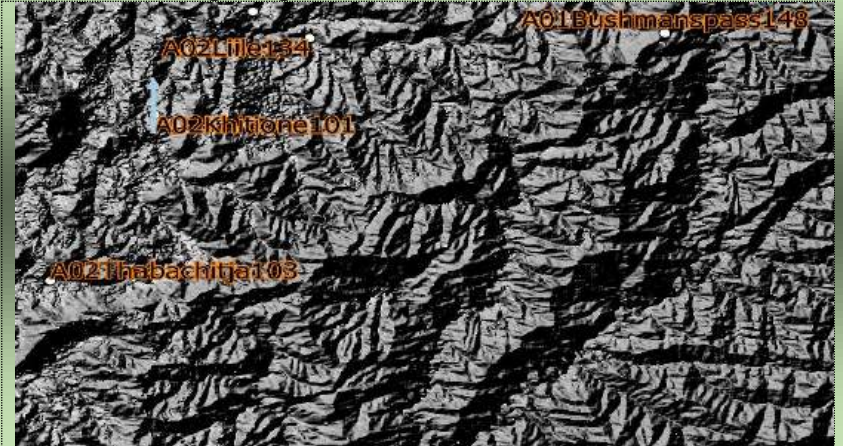
Colour moist: 10yr5/4, 2.5y5/3, None, None  
Colour dry: 10yr4/3, 2.5y3/2, 2.5y5/6, 2.5y4/3  
Structure type: Granular, Prismatic, Angular blocky  
Structure size: Very fine/ thick,  
Mottles: No, Yes  
Mottle type: depletion  
Root presence: Common, None  
pH soil: 7.29  
Carbonate reaction: No detectable visible or audible effervescence

Phechela Series

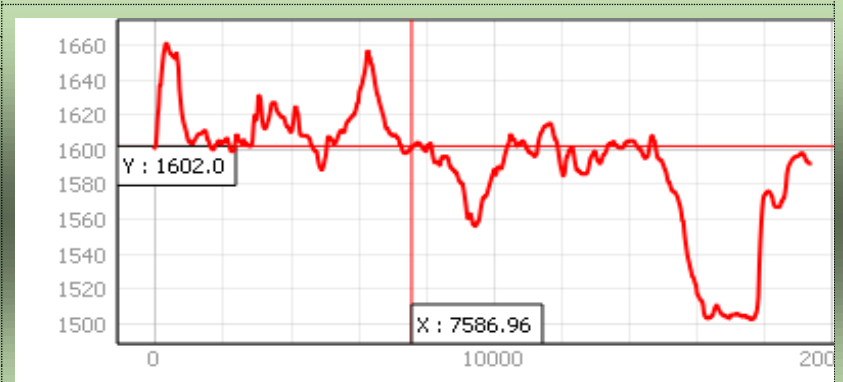
WBR Soil Classification: Haplic Vertisols



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

Location: Ha- Ntlama, Maseru



Berea Series

**WBR Soil Classification:** Ferric Cambisols (Arenic)

**Profile ID: A03Ntlama213**

Lab #: 449-452

**Surface and climate characteristics**

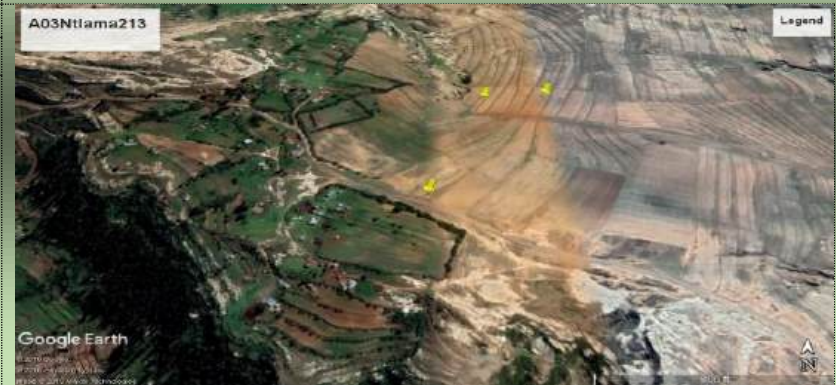
Surface rock: No  
Coarse fragments: Very few  
Slope class: Gentle sloping  
Flooding: No  
Surface seal: No  
Surface cracks: Yes  
Surface drainage: Well drained  
Soil tempature: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover; Rainfed Agriculture  
Date of sampling: 07 Dec 2018

**Profile description A-Horizon (0-55cm)**

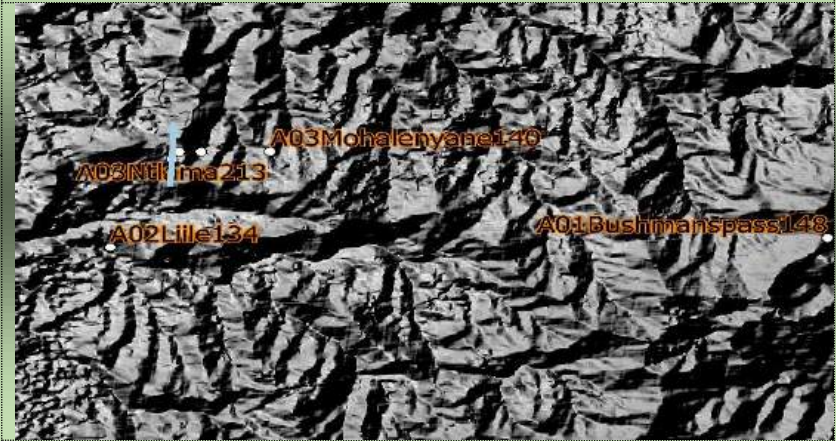
Colour moist: 10YR7/6  
Colour dry: 10YR4/6  
St0ructure type: Crumby  
Structure size: Very fine/ thin  
Mottles: No  
Root presence: Abundant, few  
pH soil: 4.98  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (55-140cm)**

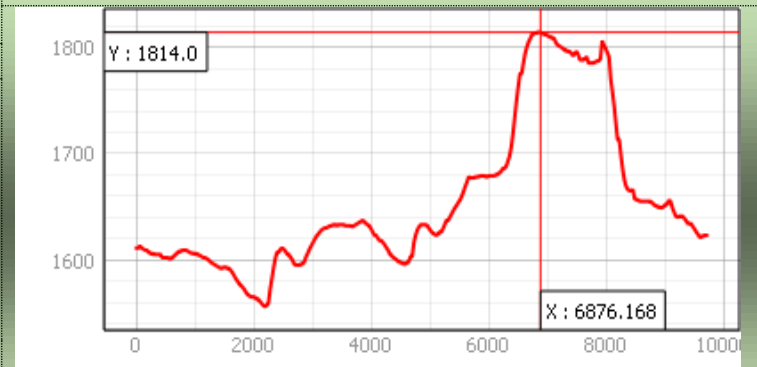
Colour moist: 10YR 6/6, 10YR 7/6, 10YR 6/6  
Colour dry: 10YR 6/6, 10YR 7/6  
Structure type: Single grain, masive  
Structure size: Very fine/ thin, none  
Mottles: No, Yes  
Mottle type: Concentrations  
Root presence: few  
pH soil: 4.64  
Carbonate reaction: No detectable visible or audible effervescence



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

Location: Ha- Ntsane Ntsane, Maseru



Berea Series

WBR Soil Classification: Ferralic Cambisols (Arenic)

Profile ID: A03Ntsane205

Lab #: 505-508

**Surface and climate characteristics**

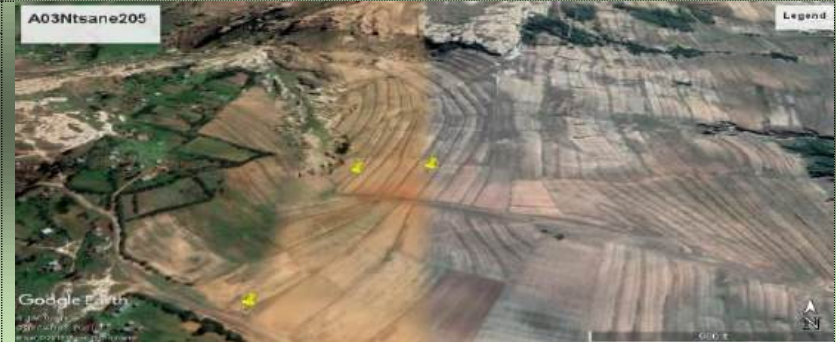
Surfacerock:: No  
Slopeclass: slopy  
Flooding:No;Surface seal:No  
Surface cracks:No  
Surface-drainage:Moderately well drained  
Soil temp:Mesic  
Landuse:cropland  
Crop:Maize  
Landcover: Rainfed Agriculture  
Date of sampling: 07 /12/ 2018

**Profile description A-Horizon (0-26cm)**

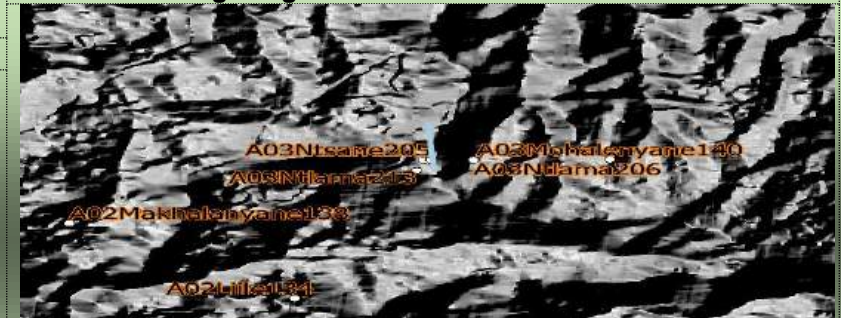
Colour moist: 10YR6/6  
Colour dry: 10YR3/4  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Common  
pH soil: 4.32  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (26-150cm)**

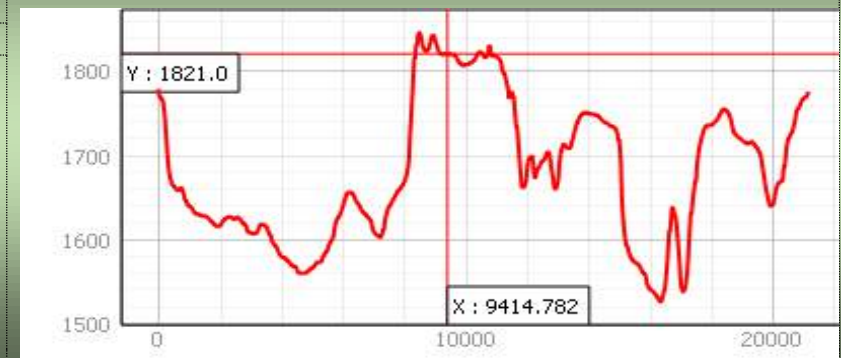
Colour moist: 10YR4/4, 7.5YR 5/8,7.5YR5/8,5YR5/8  
Colour dry: 10YR3/3,7.5YR4/6,7.5YR4/6,5YR4/6  
Structure type: Crumby  
Structure size: Medium  
Mottles: No  
Root presence: Common, Few  
pH soil: 4.71  
Carbonate reaction: No detectable visible or audible effervescence



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: A05Masilo192**

**Location:** Ha Masilo, Maseru

**Lab #:** 477-480

**Surface and climate characteristics**

Surface rock: Yes  
Coarse fragments: Few  
Slope class: Nearly level  
Flooding: No  
Erosion type: Rill  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat poorly (imperfectly) drained  
Soil temp: Mesic  
Land use: Cropland  
Crop: Wheat  
Land cover: Rainfed Agriculture  
Date of sampling: 10/12 2018

**Profile description A-Horizon (0-31cm)**

Colour moist: 10YR5/4  
Colour dry: 10YR3/3  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles: No  
Root presence: Many, Few  
pH soil: 5.55  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (31-121cm)**

Colour moist: 10YR7/2, 10YR4/2, 10YR6/6  
Colour dry: 10YR5/3, 10YR3/2, 10YR5/6  
Structure type: Sub- angular blocky, Prismatic, Massive  
Structure size: Very fine/thin, Medium  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few, None  
pH soil: 6.5  
Carbonate reaction: No detectable visible or audible effervescence



Patsa Series

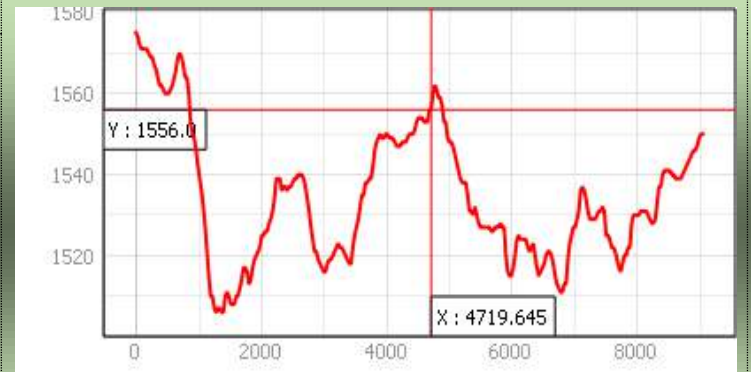
**WBR Soil Classification:** Vertic Planasols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: A05Nkhokho190**

**Lab #:** 481-484

**Surface and climate characteristics**

Surface rock: No  
Slope class: Nearly level  
Flooding: Yes  
Surface seal: No  
Surface cracks: No  
Surface drainage: Very poorly drained  
Soil tempure: Mesic  
Land use: Not used  
Crop: None  
Land cover: Rainfed agriculture  
Date of sampling: 07 Dec 2018

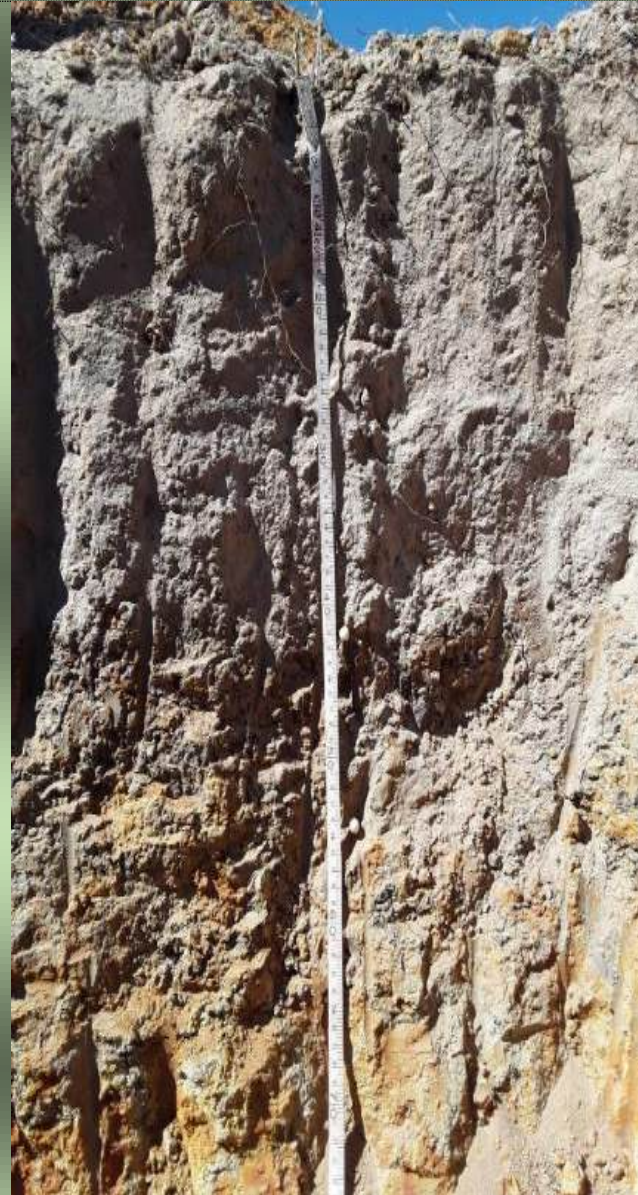
**Profile description A-Horizon (0-42cm)**

Colour moist: 10YR6/2, 10YR 7/2  
Colour dry: 10YR4/2, 10YR 4/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: Yes, No  
Mottle type: Nodules  
Root presence: Many, few  
pH soil: 5.64  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (42-80cm)**

Colour moist: 10YR4/2, 10YR 7/1  
Colour dry: 10YR 3/1, 10YR 6/2  
Structure type: Sub-angular blocky  
Structure size: Coarse/thick, Extremely coarse  
Mottles: Yes  
Mottle type: concentrations  
Root presence: None  
pH soil: 6.13  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha Nkhokho, Maseru



Sephula Series

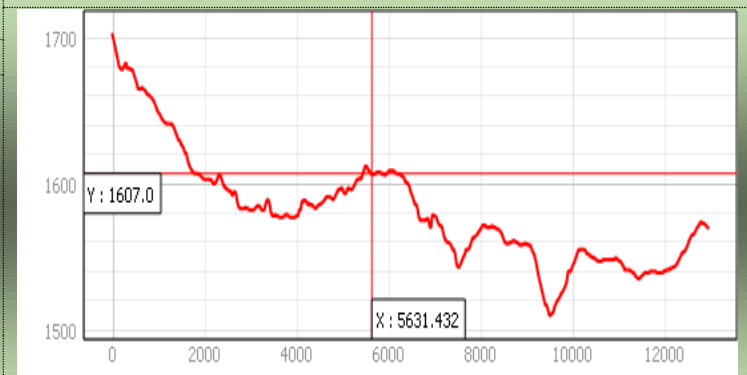
**WBR Soil Classification:** Albic Gleyic Planasols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Thabachitja, Maseru

Profile ID: A02Thabachitja103

Lab #: 497-500



#### Surface and climate characteristics

Surfacerock: No  
Coarse fragments: Few  
Slopeclass: Very slopy  
Flooding: Yes  
Erosion type: Sheet  
Surface seal: Yes  
Surface cracks: No  
surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: Not used  
Crop: Rangeland grasses  
Land cover: Barrenland  
Sampling date: 01/12/2018

#### Profile description A-Horizon (0-48cm)

Colour moist: 10YR6/2, 10YR5/2, 10YR6/2  
Colour dry: 10YR4/3, 10YR4/2, 10YR4/2  
Structure type: Crumby, massive  
Structure size: Very fine, none  
Mottles: No, yes  
Mottle type: Concentrations, concretions  
Root presence few, none  
pHsoil; 5.00  
Carbonate reaction: Non Detectable visible

#### Profile description B-Horizon (48-101 cm)

Colour moist: 2.5Y5/3  
Colour dry: 2.5Y4/3  
Structure type: Sub angular blocky  
Structure size: Very coarse  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: None  
pHsoil: 5.92  
Carbon reaction: No detectable visible

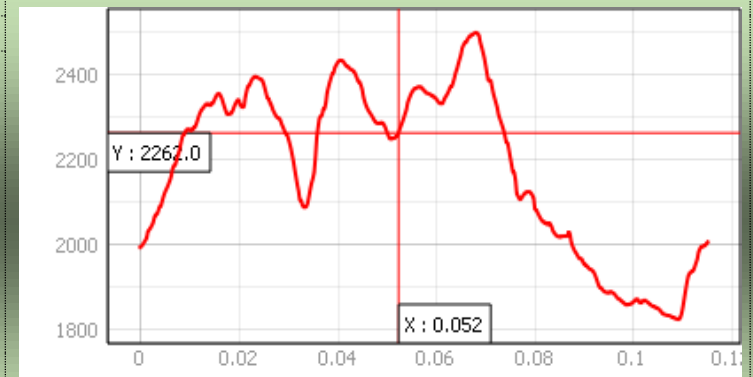
WBR Soil Classification: Vertic Planosols



#### Remote sensing image



#### Relief Hillshade



Soil profile location in the landscape

**Profile ID: A02Toloane203**

**Location:** Ha-Toloane, Maseru

**Lab #:** 509-512



**Surface and climate characteristics**

Surfacerock: None  
Coarse fragments: Very few  
Slope class: Gentle slopy  
Flooding: No  
Erosion type: Sheet  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Well drained  
Soil tempture: Mesic  
Land use: Cropland  
Crop: None  
Land cover: Rainfed Agriculture  
Sampling date: 01/12/2018

**Profile description A-Horizon (0-57cm)**

Colour moist: 7.5YR 5/6, 5YR 5/6, 5YR 5/8  
Colour dry: 5YR 4/6, 5YR 3/4, 2.5YR 4/6  
Structure type: Granular, crumby  
Structure: size: very fine/thin, medium  
Mottles: No  
Root presence: Abundant, common, few  
pHsoil 5.32  
Carbonate reaction: Non detectable visible

**Profile description B-Horizon (57-99cm)**

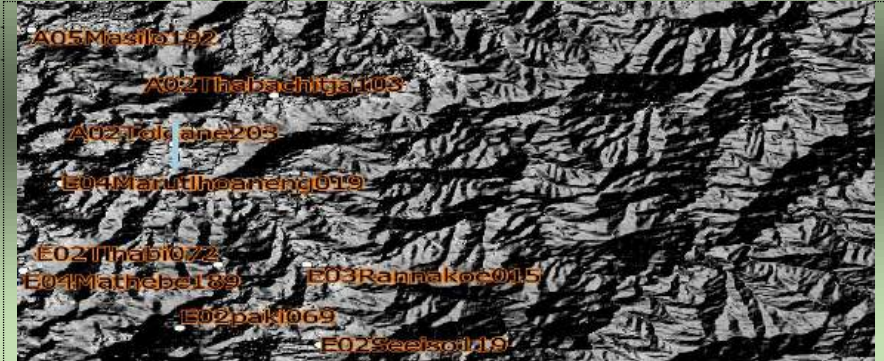
Colour moist: None,  
Colour dry: 2.5YR 2.5/4, 2.5YR 3/6  
Structure type: Sub- angular blocky  
Structure size: Very fine  
Mottles: No, yes  
Mottle type: Concentrations  
Root presence: Few  
pHsoil: 5.63, Carbonate reaction: No detectable visible

Leribe Series

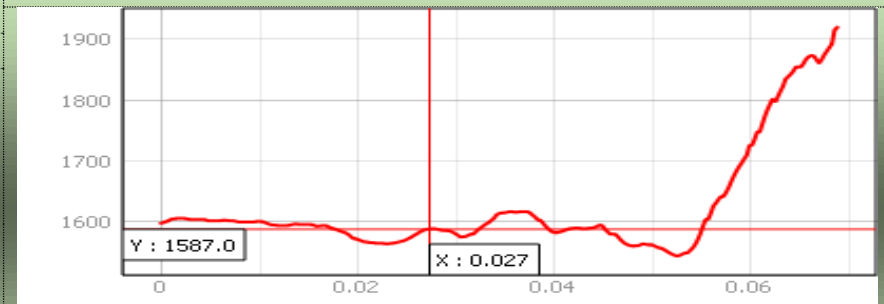
**WBR Soil Classification:** Ferralic Nitisols



**Remote sensing image**



**Relief Hillshade**

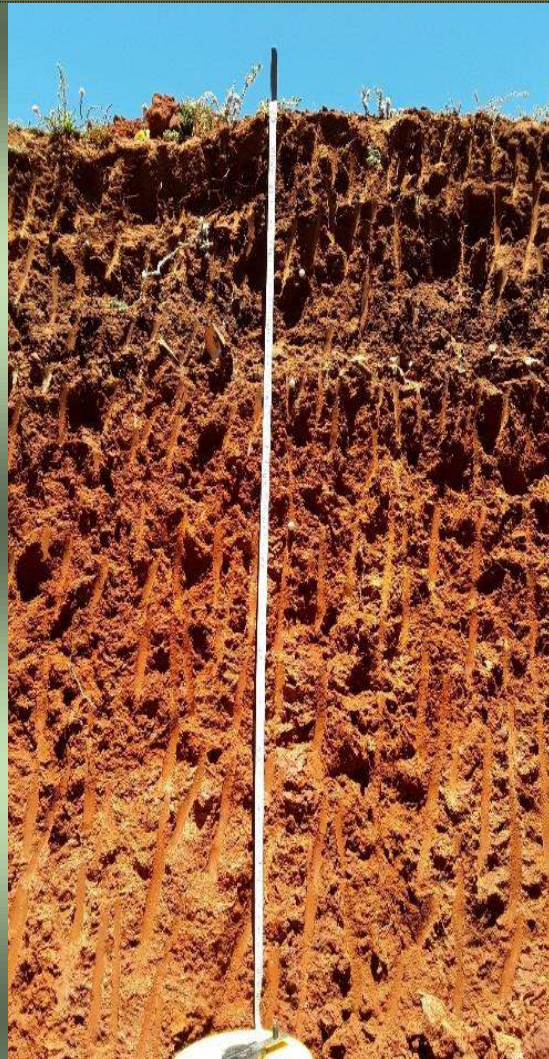


**Soil profile location in the landscape**

**Profile ID: A03Mohalenyane140**

**Location:** Ha-Mohalenyane, Maseru

**Lab #:** 493-496



Ralebese Series

**Surface and climate characteristics**

Surfacerock: No  
Coarsefragments: Common  
Slope class: Nearly level  
Flooding: No  
Surface seal: No  
Surface cracks : No  
Surface-drainage: Well drained  
Soil tempture: Mesic  
Land use: Cropland  
Crop: Rotational Cropping (Maize followed by Wheat)  
Land cover: Rainfed agriculture  
Sampling date: 7/12/2018

**Profile description A-Horizon (0-28cm)**

Colour moist: 7.5YR 4/4  
Colour dry: 7.5YR 3/4  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Many  
pHsoil: 4.18  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (28-64cm)**

Colour moist: 7.5YR 4/4, 2.5YR 4/8  
Colour dry: 7.5YR 3/4, 2.5YR 4/6  
Structure type: Crumbly, sub-angular blocky  
Structure size: Very fine, medium  
Mottles : No  
Root presence: Few  
pHsoil: 4.38  
Carbonate reaction: No detectable visible

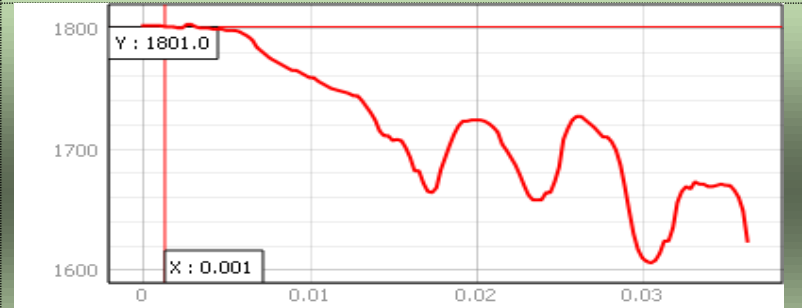
**WBR Soil Classification:** Lixic Nitisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: A03Ntlama151**

**Location:** Ha-Ntlama, Maseru

**Lab #:** 485-488



**Surface and climate characteristics**

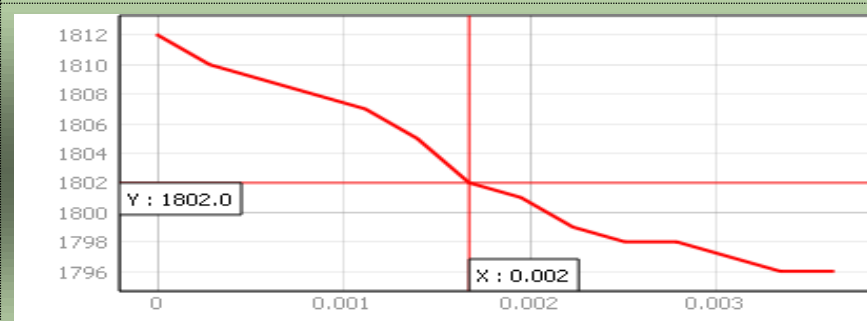
Surface rock: No  
Slope class: Strongly slopy  
Flooding: No  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Moderately drained  
Soil tempture: Mesic  
Landuse:Ccropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Sampling date: 7/12/2018



**Remote sensing image**



**Relief Hillshade**



**Soil profile location in the landscape**

**Profile description A-Horizon (0-30cm)**

Colour moist: 10YR5/4  
Colour dry: 10YR4/4  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Rootpresence: Few  
pHsoil: 4.75  
Carbonate reaction: No detectable visible

**Profile description B-Horizon ( 30-150cm)**

Colour moist: 10YR 5/6, 7.5YR 5/8, 10R3/6  
Colour dry: 10YR 3/4, 7.5YR 4/6, 10R3/4  
tructure type: Crumbly  
Structure size: Medium, very fine  
Mottles : No, yes  
Mottle type: Nodules  
Rootpresence: Few  
pHsoil: 4.83  
Carbonate reaction: No detectable visible

Berea Series

**WBR Soil Classification:** Ferralic Cambisols (Arenic)

**Profile ID: A03Ntlama206**

**Location:** Ha-Ntlama, Maseru

**Lab #:** 489-492



**Surface and climate characteristics**

Surfacerock: No  
Slopeclass: Strongly sloping  
Flooding: No  
Erosion type: Gully  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Very poorly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: None  
Land cover: Rainfed agriculture  
Sampling date: 7/12/2018

**Profile description A-Horizon (0-25cm)**

Colour moist: 10YR5/2,  
Colour dry: 10YR4/2, 10YR3/2  
Structure type: crumby, blockyb  
Structure size:Very fine/thin  
Mottles: Yes  
Mottle type: Concentrated  
Root presence: Abundant, few  
pHsoil: 4.99  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (25-130cm)**

Colour moist: 5Y8/1, 5Y8/2  
Colour dry: 5Y6/1, 5Y6/2  
Structure type: Single grain  
Structure size: Very fine/thin  
Mottles: Yes  
Mottle type: Depletion  
Root presence: Few  
pHsoil: 4.57  
Carbonate reaction: No detectable visible

Tsenola Series

**WBR Soil Classification:** Sodic Fluvisols



**Remote sensing image**



**Relief Hillshade**



**Soil profile location in the landscape**

Profile ID: B01Nqabeni143

Location: Nqabeni, Maseru

Lab #: 205-208

**Surface and climate characteristics**

Coarse fragments:none  
Slopeclass:Very gentle slopy  
Flooding:Yes  
Erosion Type: None  
Soil tempture:Mesic  
Landuse:Cropland  
Crop:Maize  
Landcover:Rainfed agriculture  
Date of sampling: 3/07/ 2018

**Profile description A-Horizon( 0-33cm)**

Colour moist:10YR4/3, 10YR4/3  
Colour dry:10YR3/3, 10YR3/4  
Structure type:Moderate  
Structure size:Very fine, fine  
Mottles:No, Yes  
Mottle type:Concentrations  
Rootpresence:common,few  
pHsoil:5.4  
Carbonate reaction:No detectable visible

**Profile description B-Horizon(33-110cm)**

Colour moist: 10YR6/6,10YR6/1  
Colour dry: 10YR5/6,10YR5/6,10YR5/8  
Structure type:Moderate,single grain  
Structure size:Fine,Medium  
Mottles:Yes  
Mottle type:Concretions,depletion  
Rootpresence:few,none  
pHsoil: 5.2  
Carbonate reaction:No detectable visible

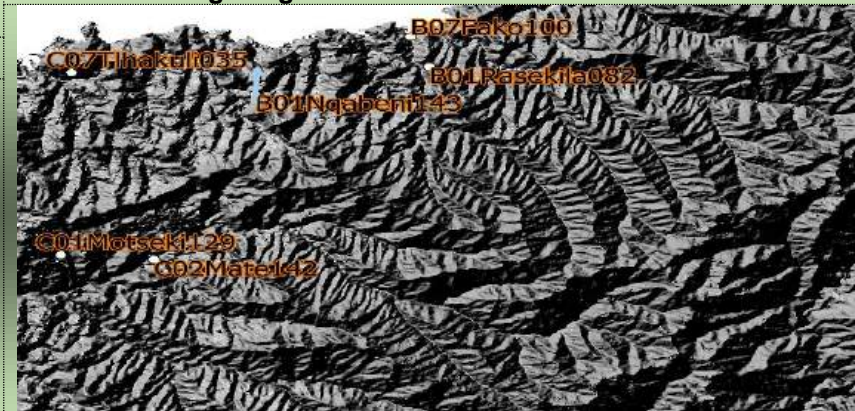


Ralebese Series

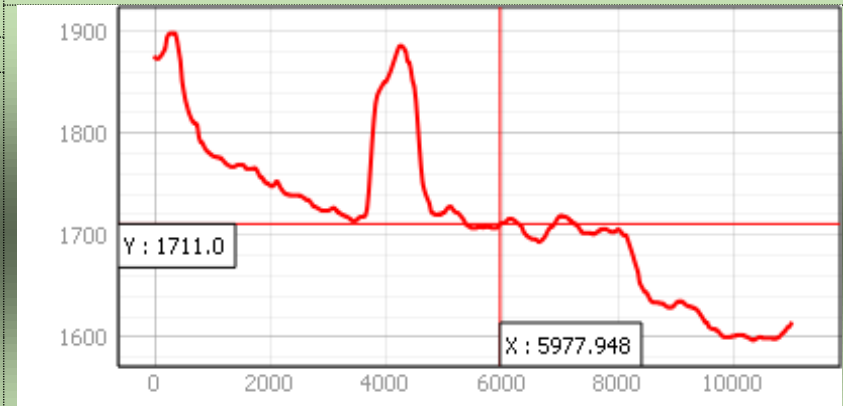
WBR Soil Classification: Ferralic Nitisols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: B01Rasekila082**

**Location:** Rasekila, Maseru

**Lab #:** 201-204



**Remote sensing image**



**Surface and climate characteristics**

Surfacerock: Yes  
Coarse fragments: Common  
Slopeclass: Gentle sloping  
Flooding: Yes  
Erosion type: Rill  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Moderately well drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Date of sampling: 05/08/2018

**Profile description A-Horizon (0-38cm)**

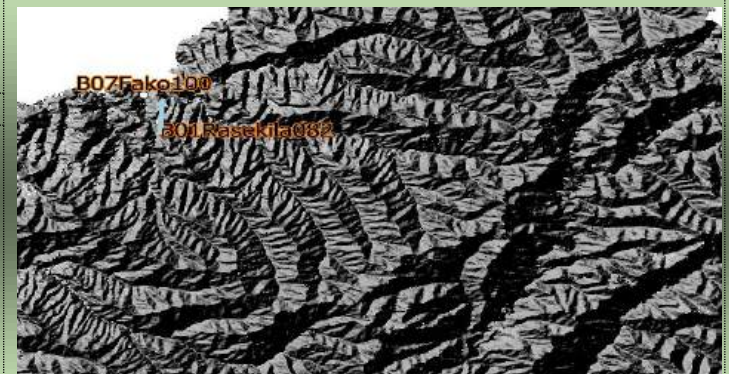
Colour moist: 10YR 5/6  
Colour dry: 10YR 4/6  
Structure type: Granular  
Structure size: Very fine/thick  
Mottles: No  
Root presence: many  
pHsoil: 5.5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (38-79cm)**

Colour moist: 7.5YR 6/6  
Colour dry: 7.5YR 5/6  
Structure type: Angular blocky  
Structure size: Medium  
Mottles: Yes  
Mottle type: Concentrations  
Rootpresence: Few  
pHsoil: 5.4  
Carbonate reaction: No detectable visible

Qalo Series

**WBR Soil Classification:** Rhodic Ferralic Cambisols



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Fako,Buthabuthe

Profile ID: B07Fako100

Lab #: 209-212

### Surface and climate characteristics

Surfacerock:No  
Slopeclass:Gentle slopy  
Flooding:No  
Erosion Type: None  
Surface seal:Yes  
Surface cracks:Yes  
Surface-drainage:Impeferctly drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop:Maize  
Landcover:Rainfed agriculture  
Date of sampling: 05/08/ 2018

### Profile description A-Horizon(0-20cm)

Colour moist: 10YR4/2  
Colour dry: 10YR3/2  
Structure type: Sub- Angular blocky  
Structure size: Very fine/ thick  
Mottles: No  
Rootpresence: Many  
pHsoil: 5.0  
Carbonate reaction:No detectable visible

### Profile description B-Horizon(20-90cm)

Colour moist:10YR5/2,10YR4/2,7.5YR5/3  
Colour dry:10YR3/1,10YR3/2,7.5YR3/4  
Structure type:Sub-angular blocky  
Structure size: Very fine/ thick,medium  
Mottles:No Rootpresence: many,few,none  
pHsoil:5  
Carbonate reaction: No detectable visible



Pechela Series

WBR Soil Classification: Haplic Vertisols (Mollic)



### Remote sensing image



### Relief Hill-shade



### Soil profile location in the landscape

**Profile ID: C01Chafo214**

**Location:** Chafo, Maseru

**Lab #:** 431-433

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass:very gentle slopy  
Flooding:No  
Erosion type:Sheet  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Moderately drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop:Maize  
Landcover: Rainfed agriculture  
Date of sampling: 15/08/2018

**Profile description A-Horizon (0-36cm)**

Colour moist: 10YR5/3  
Colour dry:10YR3/3  
Structure type:crumby  
Structure size:Very fine/ thick  
Mottles:No  
Root presence:common,none  
pHsoil:5.5  
Carbonate reaction:No detectable visible

**Profile description B-Horizon (36-55cm)**

Colour moist:10YR 6/6  
Colour dry:10 YR 4/6  
Structure type:Crumbly  
Structure size: Very fine/ thick  
Mottles:No  
Root presence: None  
pHsoil: 5.5  
Carbonate reaction:No detectable visible

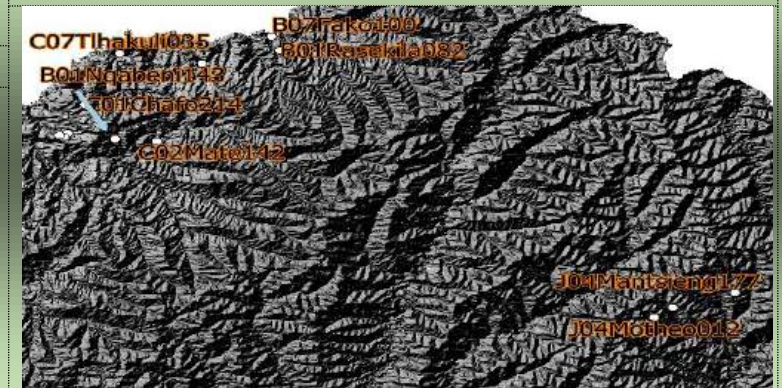


Berea Series

**WBR Soil Classification:** Ferralic Cambisols (Arenic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: C01Likoting074**

**Location:** Likoting ,Leribe

**Lab #:** 418-421



**Surface and climate characteristics**

Surfacerock: No  
Slopeclass:Strongly slopy  
Flooding:No  
Erosion Type: None  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Moderately drained  
Soil tempture:Mesic  
Landuse:not used  
Landcover:fallow  
Date of sampling: 05/08/2018

**Profile description A-Horizon (0-33cm)**

Colour moist:10 YR 6/4,10 YR 5/3  
Colour dry:10YR 4/4,10YR 4/3  
Structure type:crumby  
Structure size: Very fine/ thick  
Mottles:No,Yes  
Mottle type:nodules  
Rootpresence:many,few  
pHsoil:5.5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (33-150cm)**

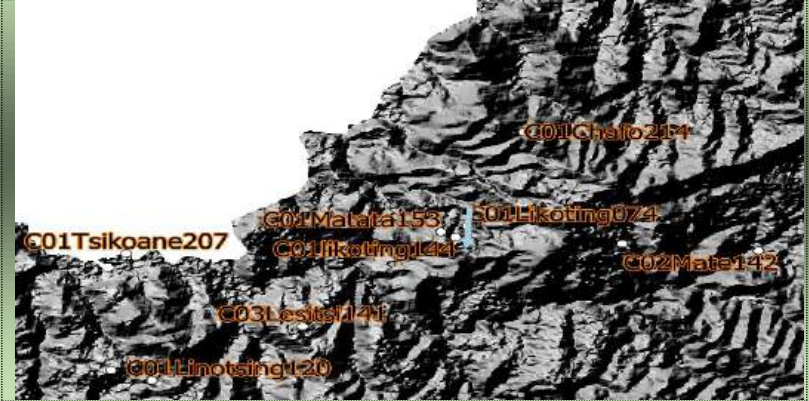
Colour moist:10YR6/6,10YR 7/3,2.5 Y 8/1  
Colour dry: 10YR 5/6,10YR 5/6,10YR 6/3,2.5Y 7/2  
Structure type:Crumbly  
Structure size: Very fine/ thick  
Mottles:Yes,No  
Mottle type:Concentrations  
Rootpresence:few,none  
pHsoil:5.5  
Carbonate reaction: No detectable visible

Berea Series

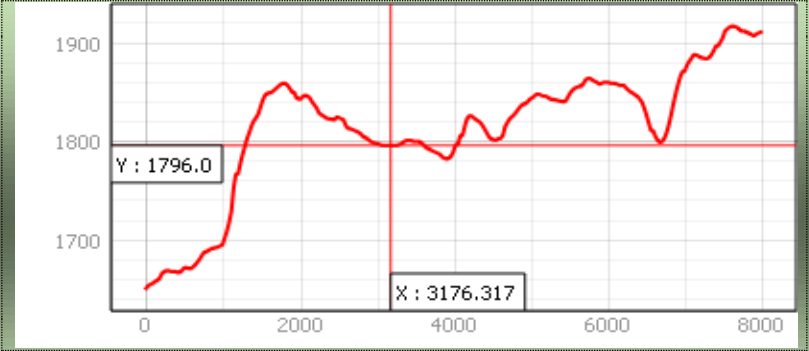
**WBR Soil Classification:** Ferralic Cambisols (Arenic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: C01likoting144**

**Location:** Likoting,Leribe

**Lab #:** 426-429

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass:Very gentle slopy  
Flooding:No  
Erosion Type: None  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Moderately drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop:Wheat  
Date of sampling: 05/08/ 2018

**Profile description A-Horizon (0-49cm)**

Colour moist:10YR5/4,10YR4/3  
Colour dry:10YR3/6,10YR4/4  
Structure type:granular  
Structure size: Very fine/ thick  
Mottles:No  
Rootpresence: Abundant,many  
pHsoil:5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon(49-66cm)**

Colour dry:10YR3/4,7.5YR4/6  
Structure type: Sub- angular blocky  
Structure size: Very fine/ thick  
Mottles:yes  
Mottle type:nodules  
Rootpresence:few  
pHsoil:5  
Carbonate reaction: No detectable visible



Berea Series

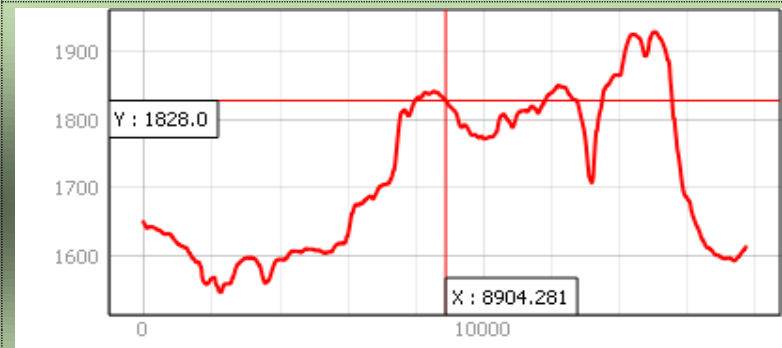
**WBR Soil Classification:** Fluvis Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID:** C01Linotsing120

**Location:** Linotsing, Leribe

**Lab #:** 414-417

**Surface and climate characteristics**

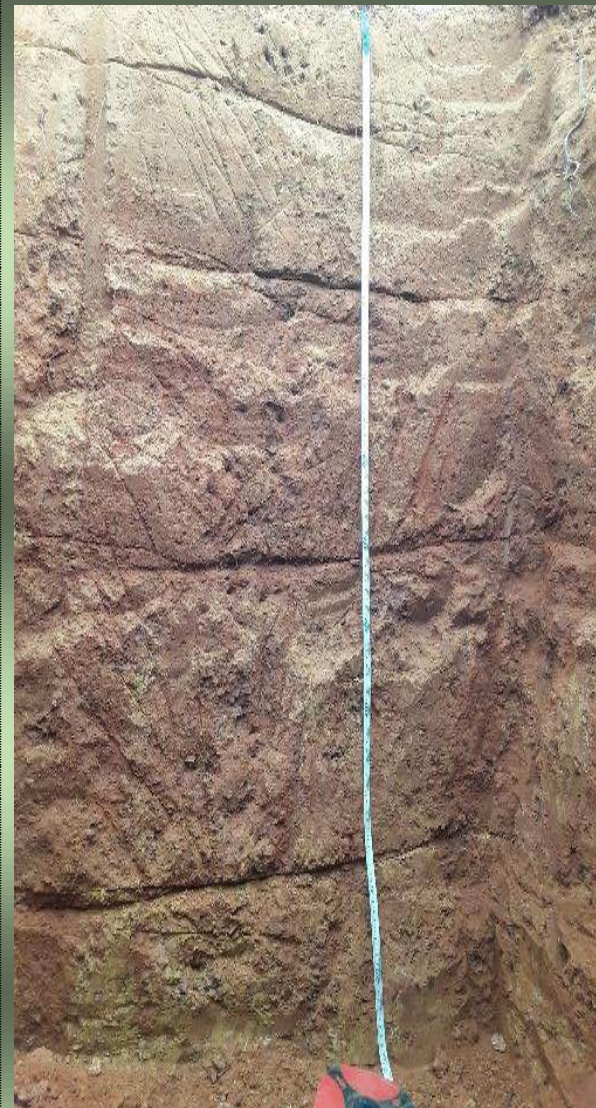
Surfacerock: No  
Slopeclass: Nearly level  
Flooding: No  
Erosion Type: None  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempreture: Mesic  
Landuse: cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Date of sampling: 05/08/ 2018

**Profile description A-Horizon ( 0-18cm)**

Colour moist: 10R 4/6 (red)  
Colour dry: 10R 3/6 (dark red)  
Structure type: Granular  
Structure size: medium  
Mottles: No  
Rootpresence: common  
pHsoil: 5.6  
Carbonate reaction: No detectable visible

**Profile description B-Horizon ( 0-72cm)**

Colour moist: 2.5YR 5/6 (red)  
Colour dry: 2.5YR 4/6 (red)  
Structure type: Granular  
Structure size: Medium  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few  
pHsoil: 5.5  
Carbonate reaction: No detectable visible

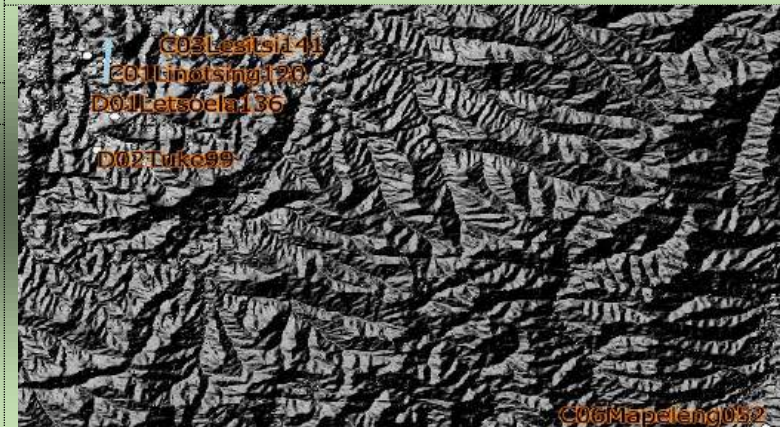


Berea Series

**WBR Soil Classification:** Ferralic Leptic Lixisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: C05Molangoane073**

**Lab #: 68-71**

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass:strongly slopy  
Flooding:No  
Erosion type:sheet  
Surface seal:No  
Surface cracks;No  
Surface-drainage:Impeferctly drained  
Soil tempture: Mesic  
Landuse:range  
Crop:None  
Landcover:shrubland  
Date of sampling: 09/09/2018

**Profile description A-Horizon (0-33cm)**

Colour moist:10YR4/2  
Colour dry:10YR3/2  
Structure type:Granular  
Structure size: Very fine/ thick  
Mottles:No  
Rootpresence:many  
pHsoil:5.7  
Carbonate reaction: No detectable visible

**Profile description B-Horizon ( 33-88cm)**

Colour moist:10YR5/4,10YR7/6  
Colour dry:10YR3/6,10YR5/8  
Structure type:Granular  
Structure size: Very fine/ thick  
Mottles:Yes  
Mottle type:nodules  
Rootpresence:common  
pHsoil: 5.6  
Carbonate reaction: No detectable visible

**Location:** Molangoane,Leribe

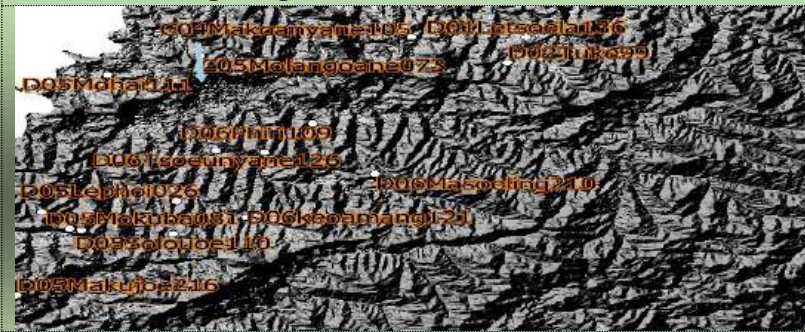


**Berea Series**

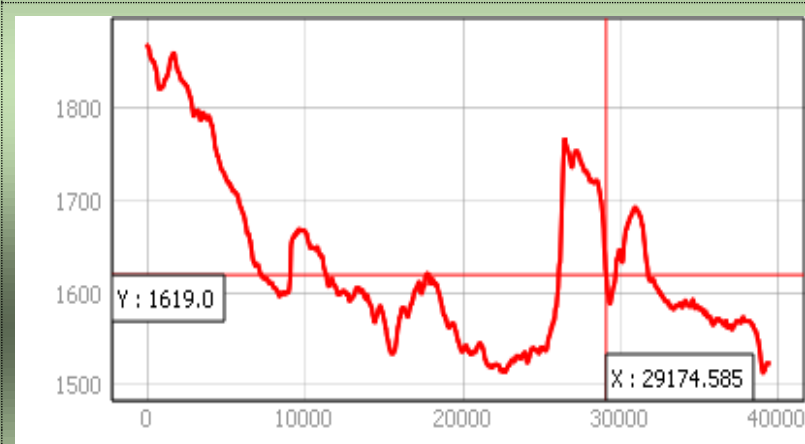
**WBR Soil Classification:** Ferralic Cambisols (Arenic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Tlhakuli, Leribe

Profile ID: C07Tlhakuli035

Lab #: 434-437



Surface and climate characteristics

Surfacerock:Yes
Coarse fragments:few
Slopeclass:Gentle slopy
Flooding:No
Erosion type:Gully
Surface seal:No
Surface cracks:No
Surface-drainage:Moderately drained
Soil tempture:Mesic
Landuse:settlement
Crop:Grassland
Landcover:buildup
Date of sampling: 09/09/2018

Profile description A-Horizon (0-22cm)

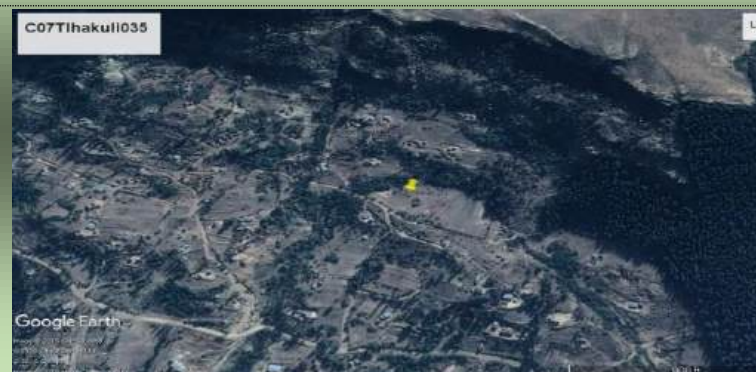
Colour moist:10YR 6/3,10 YR 5/3
Colour dry:10YR 4/3,10YR 3/2
Structure type:crumby
Structure size:vfinet
Mottles: No
Root presence:common
pHsoil: 6. 0
Carbonate reaction: No detectable visible

Profile description B-Horizon ( 22-124cm)

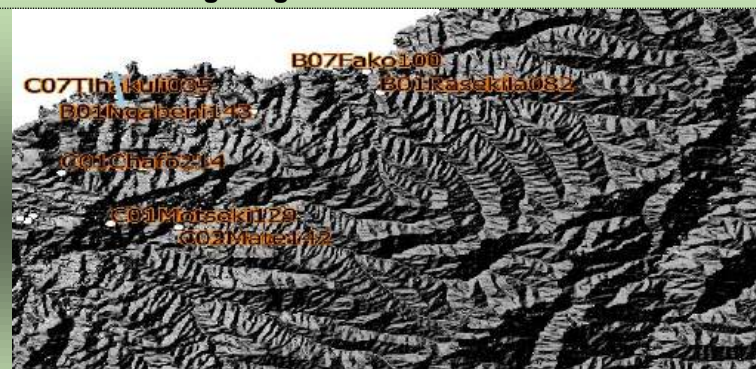
Colour moist:7.5YR 4/3,10YR 5/3,10YR 7/3,10YR 4/2
Colour dry: 7.5YR 3/2,10YR 4/2,10YR 4/3,7.5YR 2.5/2
Structure type: Angular blocky, crumby
Structure size:Very coarse/ thick, Very fine/ thick
Mottles:Yes,No
Mottle type: nodules
Rootpresence:none,few,common
pHsoil:5.5
Carbonate reaction:No detectable visible

Berea Series

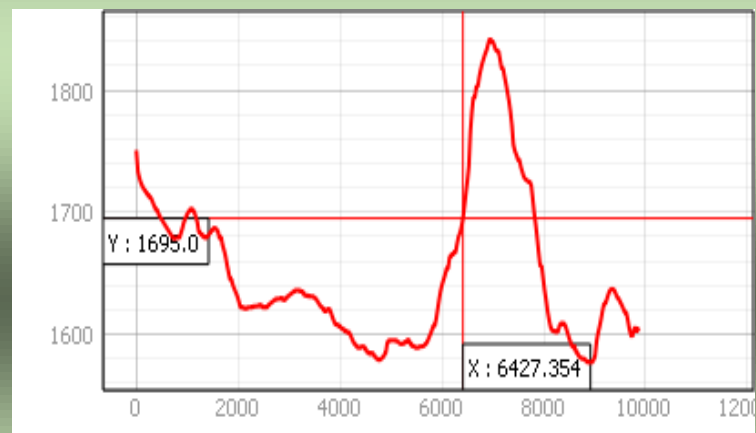
WBR Soil Classification: Fluvic Cambisols (Densic)



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: CO1Linots'ing106**

**Location:** Linotsing,Leribe

**Lab #:** 406-409

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass: Very gentle slopy  
Flooding:No  
Erosion Type: None  
Surface seal:Yes  
Surface cracks:Yes  
Surface-drainage:Moderately drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop:Maize  
Landcover: Rainfed agriculture  
Date of sampling: 05/08/ 2018

**Profile description A-Horizon (0-39cm)**

Colour moist:5YR5/8  
Colour dry:5YR4/6  
Structure type:Granular  
Structure size:Very fine/ thick  
Mottles: No  
Rootpresence:abundant  
pHsoil:5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (39-96cm)**

Colour moist: 5YR7/8,5YR6/8  
Colour dry: 5YR5/8,5YR4/6  
Structure type: Granular, sub-angular blocky  
Structure size:Very fine/ thick  
Mottles:Yes  
Mottle type: Nodules,concretions  
Rootpresence:Common,few,none  
pHsoil: 5.0  
Carbonate reaction: No detectable visible



Leribe Series

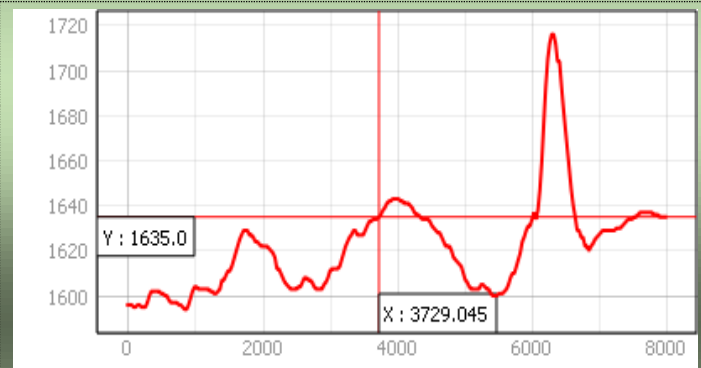
**WBR Soil Classification:** Rhodic Nitisols



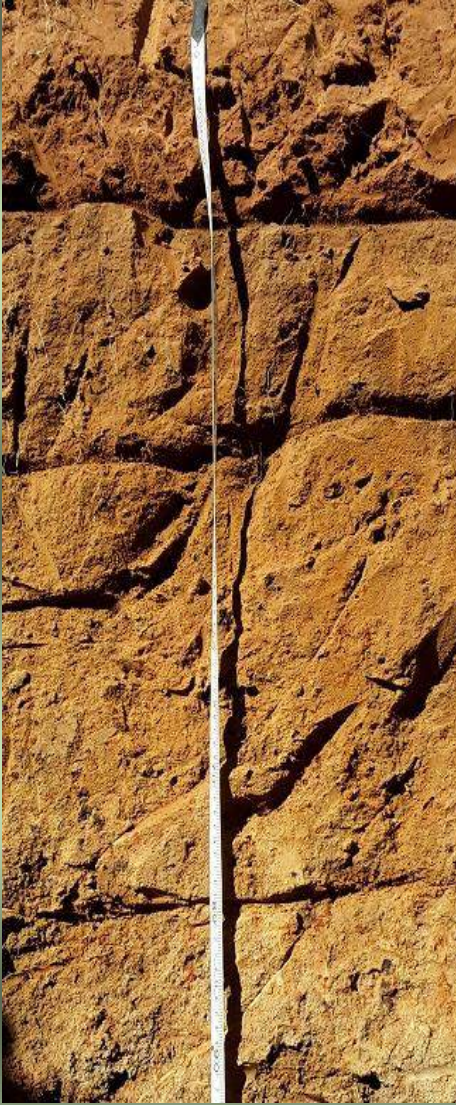
**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

<p><b>Location:</b> Mate, Leribe</p>	<p><b>Profile ID:</b> C02Mate142 <b>Lab #:</b> 394-397</p>
	<p><b>Surface and climate characteristics</b>          Surface rock: No          Coarse Fragment: None          Slope Class: Gently sloping          Flooding: Yes          Erosion types: None          Surface seal: No          Surface cracks: No          Surface drainage: Somewhat poorly (imperfectly) drained          Soil temperature: Mesic          Land use: Not used          Crop: None          Land cover: Barrenland          Sampling Date: 16/08/2018</p>
	<p><b>Profile description A-Horizon (0-25cm)</b>          Colour moist: 7.5YR5/6          Colour dry: 7.5YR4/4          Structure type: Granular          Structure size: very fine/ thin          Mottles: None          Root presence: Many          pH: 5.6          Carbonate reaction: No detectable visible or audible effervescence</p>
	<p><b>Profile description B-Horizon (25-165cm)</b>          Colour moist: 10YR5/4          Colour dry: 10YR4/3          Structure type: Angular blocky          Structure size: Coarse/ thick          Mottles: Yes          Mottle Type: Concentration          Root presence: None          pH: 5.6          Carbonate reaction: No detectable visible or audible effervescence</p>
<p>Ralebese Series  <b>WBR Soil Classification:</b> Llixic Nitisols</p>	



**Remote sensing image**



**Relief Hill-shade**

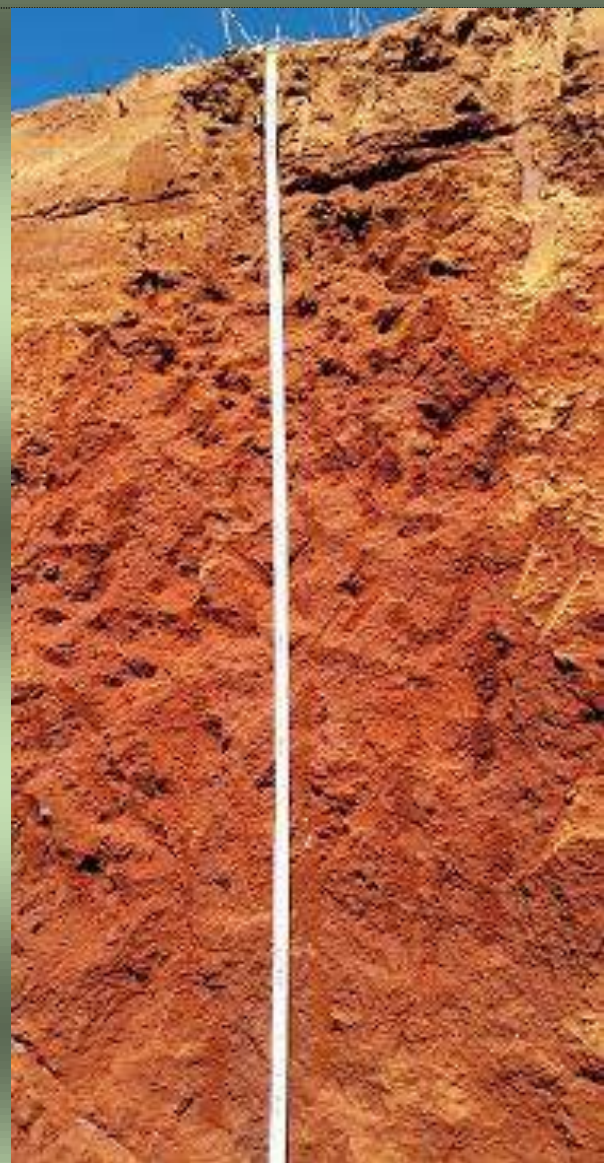


**Soil profile location in the landscape**

**Profile ID: CO3 Lesitsi 141**

**Location:** Ha Lesitsi, Leribe

**Lab #:** 422-425



**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Very gently sloping  
Flooding: Yes  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately well drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Fallow  
Sampling Date: 15/08/2018

**Profile description A-Horizon (0-20cm)**

Colour moist: 10YR5/8  
Colour dry: 10YR4/6  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Abundant  
pH: 5.0  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon ( 20+cm)**

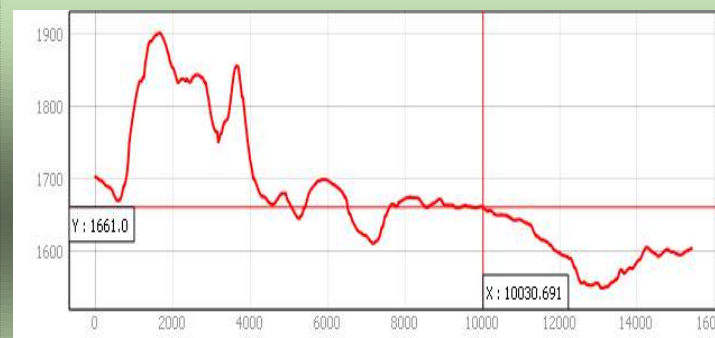
Colour moist: 10YR3/6  
Colour dry: 10YR3/6  
Structure type: Sub-angular blocky  
Structure size: Medium  
Mottles: Yes  
Mottle Type: Concretions  
Root presence: Few  
pH: 5.0  
Carbonate reaction: No detectable visible or audible effervescence



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Leribe Series

**WBR Soil Classification:** Ferralic Nitisols

**Profile ID: C04Makoanyane105**

**Lab #: 57-59**

**Location:** Ha-Makoanyane, Leribe

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Poorly drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 09/09/2018

**Profile description A-Horizon (0-31cm)**

Colour moist: 10YR6/4, 10YR6/6, 10YR5/6  
Colour dry: 10YR4/6  
Structure type: Crumbly  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Abundant, Few  
pH: 5.5  
Carbonate reaction: No detectable visible or audible effervescence

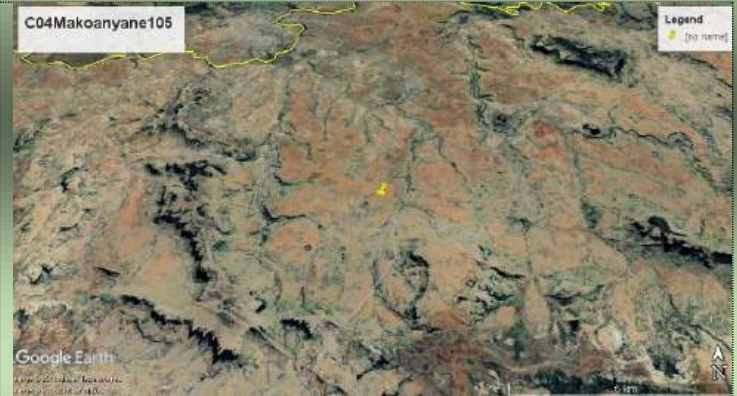
**Profile description B-Horizon (31-55cm)**

Colour moist: 10YR6/6  
Colour dry: 10YR3/4, 10YR5/6  
Structure type: Crumbly  
Structure size: Very fine/ thin  
Mottles: Yes  
Mottle Type: Nodules, Depletion  
Root presence: Few  
pH: 5.75; Carbonate reaction: No detectable visible or audible effervescence  
Coarse Fragment: None



Berea Series

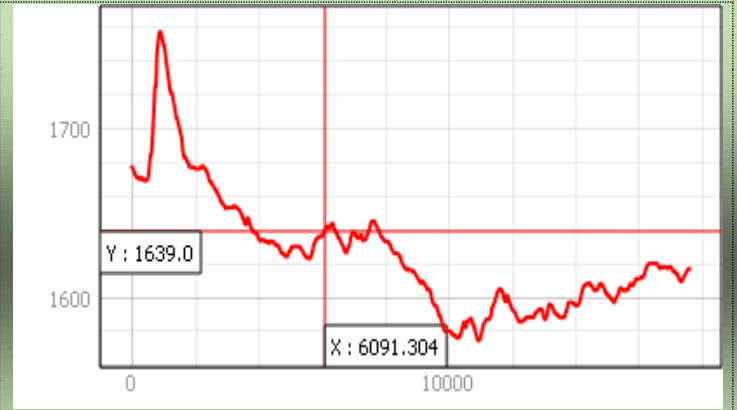
**WBR Soil Classification:** Ferralic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: C01Matata153**

**Location:** Matata, Leribe



Berea Series

**WBR Soil Classification:** Fluvic Leptic Cambisols

**Lab #:** 410-413

**Surface and climate characteristics**

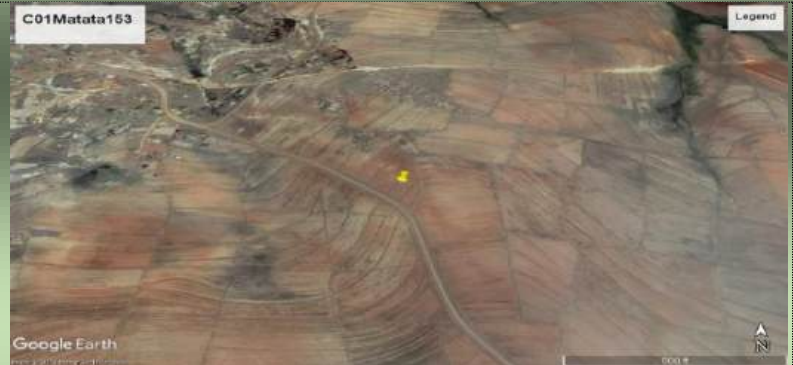
Surfacerock: Yes  
Coarse fragments:  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Well drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Sampling date: 5/08/2018

**Profile description A-Horizon (0-21cm)**

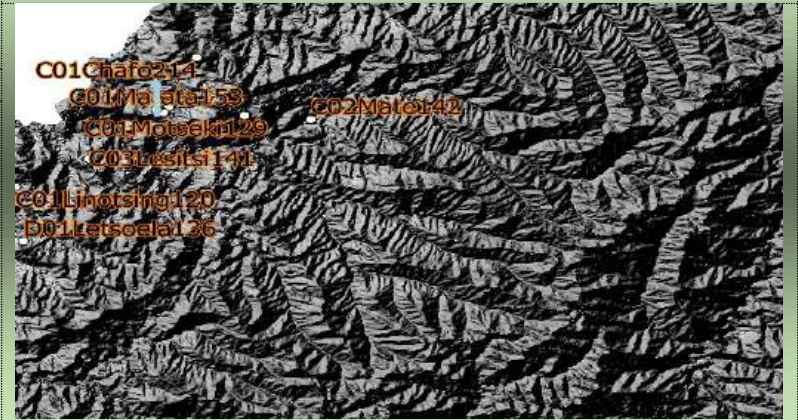
Colour moist: 10YR 4/6  
Colour dry: 10YR 3/6  
Structure type: Granular  
Structure size: Medium  
Mottles: None  
Root presence: Many  
pHsoil: 5.6  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (21-65cm)**

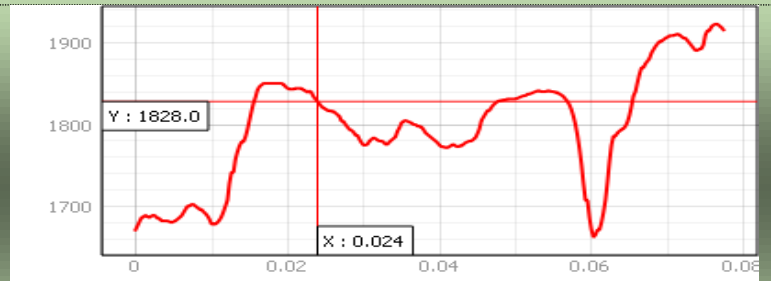
Colour moist: 7.5YR 5/6 (strong brown)  
Colour dry: 7.5YR 4/4 (brown)  
Structure type: Sub-angular blocky  
Structure size: medium  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few  
pHsoil: 5.5  
Carbonate reaction: No detectable visible



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: C01Motseki129**

**Location:** Ha-Motseki, Leribe

**Lab #:** 398-401



**Surface and climate characteristics**

surfacerock: No  
Coarsefragments:  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surfacedrainage: Moderately drained  
Soil tempature: Mesic  
Landuse: Cropland  
Crop: Wheat  
Landcover: Rainfed agriculture  
Sampling date: 15/08/2018

**Profile description A-Horizon (0-30cm)**

Colour moist: 10YR 6/6, 7.5YR 4/4, 7.5YR 5/6  
Colour dry: 7.5YR 3/4, 7.5 YR 3/4, 5YR 4/6  
Structure type: Crumbly  
Structure size: Very fine  
Mottles: No  
Rootpresence: Many  
pHsoil: 5.5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (30-140cm)**

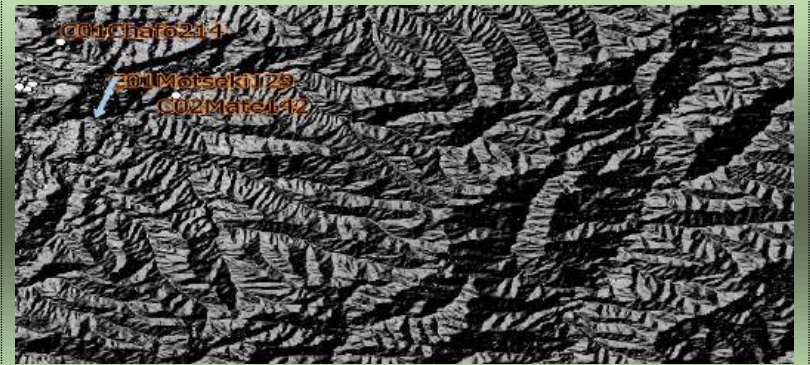
Colour moist: 2.5YR 4/6  
Colour dry: 2.5YR 3/6  
Structure type: Sub-angular blocky  
Structure size: Medium  
Mottles: No  
Root presence:Few  
pHsoil: 5.5  
Carbonate reaction: No detectable visible

Matela Series

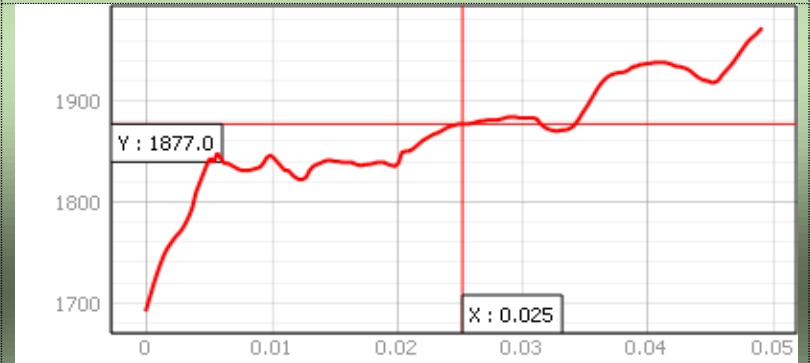
**WBR Soil Classification:** Ferralic Nitisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID:** C06Mapeleng052

**Location:** Mapeleng, Leribe

**Lab #:** 430

**Surface and climate characteristics**

Surfacerock: Yes  
coarse fragments: Dominant  
Slopeclass: Steep  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Well drained  
Soil temperture: Mesic  
Landuse: Range  
Crop: Rangeland grasses  
Landcover: grassland  
Date of sampling: 21/11/ 2018



*Rocky soil surface with no soil profile*

**Lithology:** Igneous

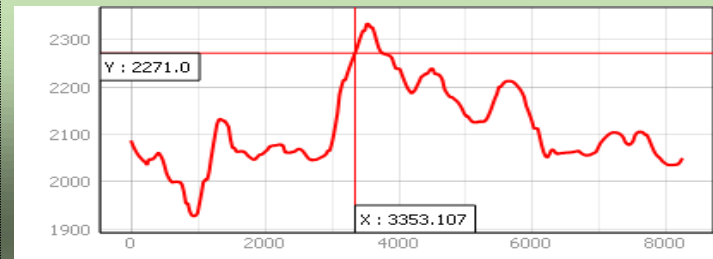
**WBR Soil Classification:** Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha-Mohai, Leribe

**Profile ID:** C05Mohai111

**Lab #:** 39-42



**Surface and climate characteristics**

Surfacerock: Yes  
 Coarse fragments: None  
 Slope class: Very gentle sloping  
 Flooding: Yes  
 Erosion type:  
 Surface seal: No  
 Surface cracks: No  
 Surface-drainage: Very poorly drained  
 Soil temperture: Mesic  
 Landuse: Cropland  
 Crop: No crop cultivation  
 Landcover: Fallow  
 Sampling date: 9/9/2018

**Profile description A-Horizon (0-31cm)**

Colour moist: 7.5yr 5/4 yellowish brown  
 Colour dry: 10yr 4/4 dark yellowish brown  
 Structure type: Granular  
 Structure size: Very fine  
 Mottles: No  
 Root presence: Common  
 pHsoil: 6.5  
 Carbonate reaction: No detectable visible

**Profile description B-Horizon (31-150cm)**

Colour moist: None  
 Colour dry: 2.5y 5/1 gray, 10yr 3/3 dark brown ,2.5y 4/3 olive brown  
 Structure type: Platy  
 Structure size: medium  
 Mottles: Yes  
 Mottle type: Depletion  
 Root presence: None  
 pHsoil: 6, Carbonate reaction: No dectactable visible

Berea Series

**WBR Soil Classification:** Vertic Fluvic Cmbisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: C01Tsikoane207**

**Lab #: 402-405**

**Surface and climate characteristics**

Surfacerock: No  
Coarse fragments:  
Slope class: Nearly level  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Well drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Sampling date: 5/08/2018

**Profile description A-Horizon (0-45cm)**

Colour moist: 10YR 4/2  
Colour dry: 10YR 2/2  
Structure type: Granular  
Structure size: Medium  
Mottles: No  
Root presence: Abundant  
pHsoil: 6.5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (45-130cm)**

Colour moist: 10YR 3/2  
Colour dry: 10YR 2/1  
Structure type: Granular  
Structure size: Medium  
Mottles: No  
Root presence: Common  
pHsoil: 6.5  
Carbonate reaction: No detectable visible

**Location:** Tsikoane, Leribe



Berea Series

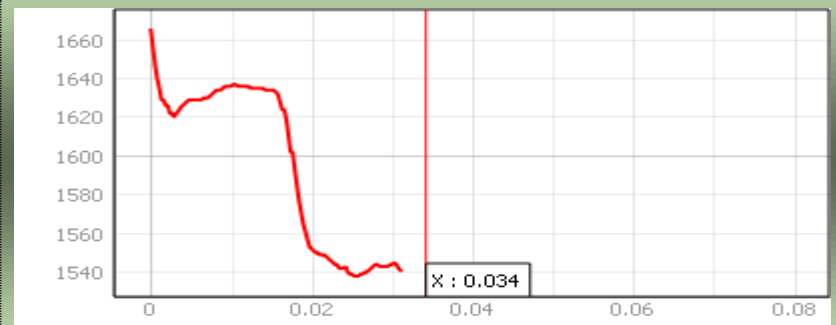
**WBR Soil Classification:** Fluvis Cambisols



**Remote sensing image**



**Relief Hillshade**



**Soil profile location in the landscape**

**Profile ID: D05Mokuba081**

**Lab #:** 124-127

**Location:** Ha- Mokuba, Berea



**Surface and climate characteristics**

Surfacerock: Yes  
Coarse fragments:  
Slope class: slopy  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Well drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: shrubland  
Sampling date: 17/09/2019

**Profile description A-Horizon (0-34cm)**

Colour moist: 7.5YR 5/6 strong brown, 7.5Yr 5/4 brown  
Colour dry: 7.5YR 4/4 brown, 7.5yr 3/4 dark brown  
Structure type: Granular  
Structure size: Very fine  
Mottles: No  
Mottle type:  
Root presence: Many  
pHsoil: 6.5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (0- 150cm)**

Colour moist: 10yr 6/8, 10yr 6/8 brownish yellow,  
10YR 5/8 yellowish brown, 7.5yr 6/8 reddish yellow  
Colour dry: 10yr 5/8, 10yr 5/8 yellowish brown, 10yr 5/8  
yellowish brown 7.5 yr 5/8 strong brown,  
Structure type: Crumbly , columnar  
Structure size: Very fine, medium  
Mottles: Yes  
Mottle type: Concretions, nodules, concentrations depletion  
Root presence: Few  
pHsoil: 6.07  
Carbonate reaction: No detectable visible, audible  
effervescence but not visible

Matela Series

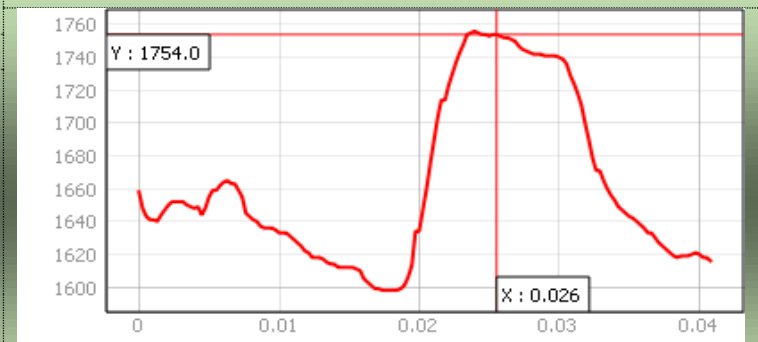
**WBR Soil Classification: Luvisols**



**Remote sensing image**



**Relief Hillshade**



**Soil profile location in the landscape**

**Profile ID: D05Mosenekeng042**

**Location:** Mosenekeng, Berea

**Lab #:** 64-67

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Very few  
Slope class: slopy  
Flooding: No  
Erosion type:  
Surfaseseal: No  
Surface cracks: No  
Surface-drainage: Moderately drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Habore  
Landcover: Rainfed agriculture  
Sampling date: 17/08/2018

**Profile description A-Horizon (0-30cm)**

Colour moist: 10YR6/4, 7.5YR 6/8  
Colour dry: 10YR4/6, 5YR 4/6  
Structure type: Crumby  
Structuresize: Very fine  
Mottles: No, yes  
Mottle type: Concentrations  
Root presence: Common, few  
pHsoil: 5.5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (30-73cm)**

Colour moist: 7.5YR 6/8 10YR 7/6  
Colour dry: 7.5YR 4/6, 10YR 5/8  
Structure type: Crumby  
Structure size: Very fine  
Mottles: No, yes  
Mottle type: Concentrations  
Root presence: Few  
pHsoil: 5.5  
Carbonate reaction: No detectable visible

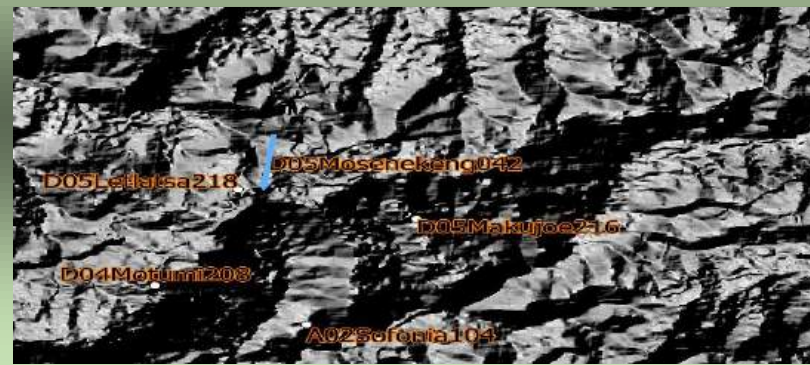


Matela Series

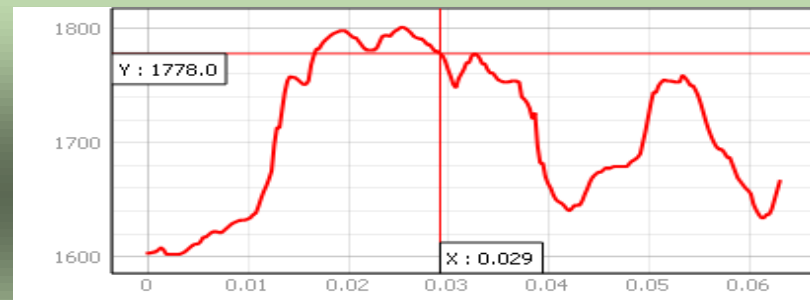
**WBR Soil Classification: Luvisols**



**Remote sensing image**



**Relief Hillshade**



**Soil profile location in the landscape**

**Profile ID: D05Solouoe110**

**Location:** Ha- Solouoe, Berea

**Lab #:** 116-119



**Surface and climate characteristics**

surfacerock:  
Coarse fragments:  
Slope class: Gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Well drained  
Soil tempture: Mesic  
Landuse: Settlement  
Crop: Vegetables  
Landcover: Construction (settlement)  
Sampling date: 24/08/2018

**Profile description A-Horizon (0-26cm)**

Colour moist:10YR5/3, 10YR6/3  
Colour dry:10YR4/4, 10YR3/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles:No  
Mottletype:  
Root presence: Common,few  
pHsoil: 6.25  
Carbonate reaction:No detectable visible

**Profile description B-Horizon (26-83cm)**

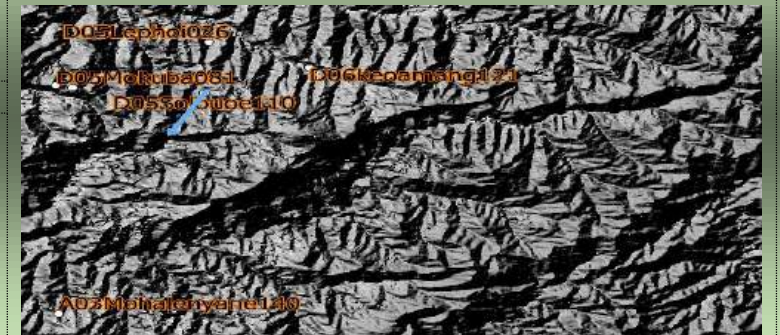
Colour moist: 10YR5/8  
Colour dry: 10YR3/6  
Structure type: Sub-angular blocky  
Structure size: Medium  
Mottles: Yes  
Mottle type: Nodules  
Root presence: Few  
pHsoil: 6.3  
Carbonate reaction: No detectable visible

Matela Series

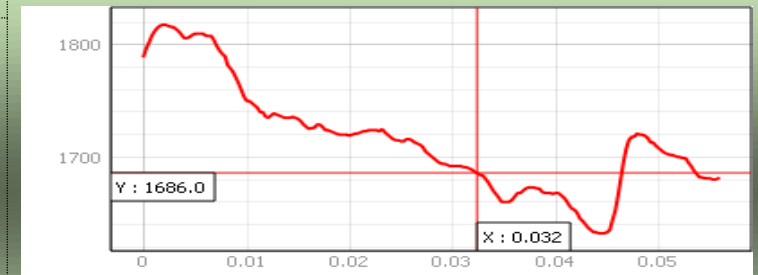
**WBR Soil Classification: Lixisols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID:** D01Letsoela136

**Location:** Ha Letsoela, Leribe

**Lab #:** 23-26

**Surface and climate characteristics**

Surfacerock: Yes  
Coarse fragments: few  
Slopeclass: Nearly level  
Flooding: No  
Erosion Type: None  
Other surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempreture: Mesic  
Landuse: other  
Crop: No crop  
Landcover: Barrenland  
Date of sampling: 09/09/2018

**Profile description A-Horizon ( 0-32cm)**

Colour moist: 10yr 5/4 , 10yr 6/4  
Colour dry: 10yr 3/4, 10yr 5/6  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No, Yes  
Mottle type: Nodules  
Rootpresence: common  
pHsoil: 5.5  
Carbonate reaction: Audible effevescence, No detectable visible

**Profile description B-Horizon ( 32-77cm)**

Colour moist: None  
Colour dry: 10yr 3/3 dark brown  
Structure type: Crumby  
Structure size: Very fine/thin  
Mottles: Yes  
Mottle type: Concentrated  
Root presence: Common  
pHsoil: 5.6  
Carbonate reaction: Audible effevescence

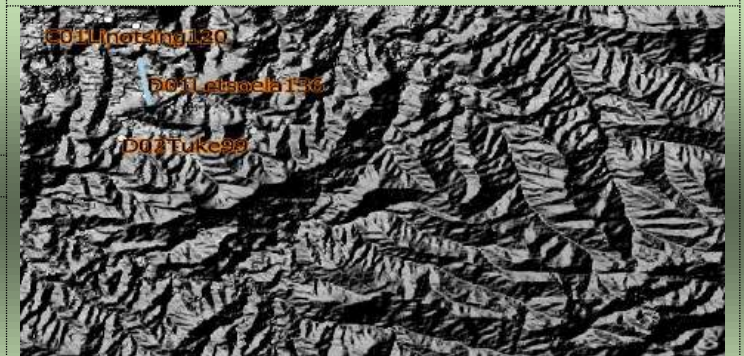


Berea Series

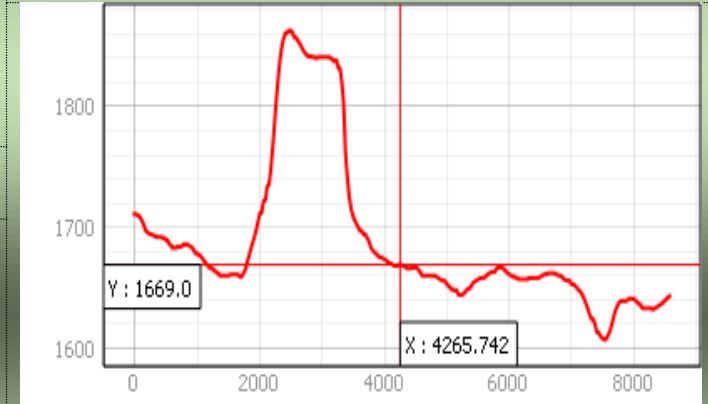
**WBR Soil Classification:** Salic Fluvic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: D06Mamate071**

**Lab #: 6-12**

**Location:** Ha Mamate, Berea

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass: Very gentle slopy  
Flooding:No  
Erosion Type: None  
Surfaceseal:No  
surface cracks:No  
Surface drainage:Moderately drained  
Soil\_tempture:Mesic  
Landuse: settlement  
Crop:Maize  
Landcover:grassland  
Date of sampling: 09/09/2018

**Profile description A-Horizon (0-49cm)**

Colour moist:10yr4/2 ,10yr3/4  
Colour dry:10yr3/1,10yr3/6  
Structure type: Granular  
Structure size: Very fine/ thick  
Mottles:No,Yes  
Mottle type: nodules  
Root presence:many  
pHsoil:5.6  
Carbonate reaction: No detectable visible

**Profile description B-Horizon ( 49-93cm)**

Colour moist:None  
Colour dry:7.5yr3/4,7.5YR 4/6,7.5yr3/4  
Structure type:Granular  
Structure size: Very fine/ thick  
Mottles:Yes  
Mottle type:concentrated,nodules  
Root presence:many,common  
pHsoil:5.6  
Carbonate reaction: No detectable visible, audible effervescence



Matela Series

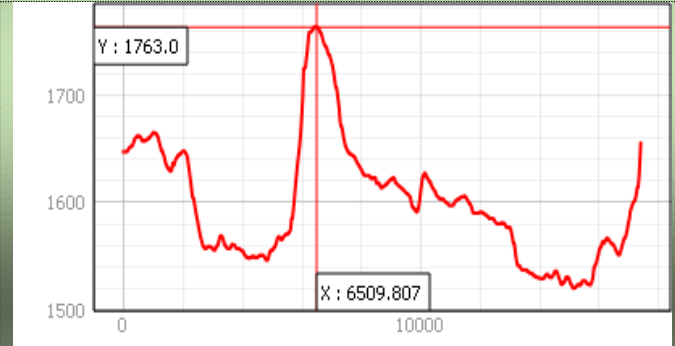
**WBR Soil Classification: Luvisols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Masoeling, Berea

Profile ID: D06Masoeling210

Lab #: 72-75



**Surface and climate characteristics**

Surfacerock:No  
Slopeclass: Very gentle slopy  
Flooding:No  
Erosion type:Sheet  
Surface seal:No  
Surfacecracks:No  
Surface-drainage:Imperfectly drained  
Soil\_tempture:Mesic  
Landuse:cropland  
Crop:Beans  
Landcover: Rainfed agriculture  
Date of sampling: 09/09/2018

**Profile description A-Horizon (0-31cm)**

Colour moist:10YR5/3  
Colour dry:10YR4/4  
Structure type:Granular  
Structure size:Very fine/ thick  
Mottles:No  
Rootpresence: Abundant  
pHsoil: 5.6  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (31-119cm)**

Colour moist:10YR7/3, 10YR8/4,10YR7/6  
Colour dry:10YR5/8,10YR6/6,10YR6/8  
Structure type:Granular  
Structure size: Very fine/thin  
Mottles:Yes  
Mottle type: Nodules  
Rootpresence: None,few  
pHsoil:5.6  
Carbonate reaction: No detectable visible

Berea Series

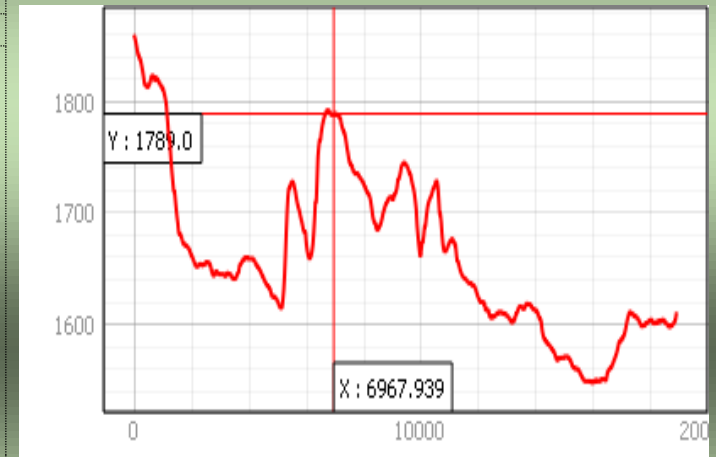
**WBR Soil Classification:** Ferralic Cambisols (Arenic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: D06Tsoeunyane126**

**Lab #: 55-56**

**Surface and climate characteristics**

Surfacerock:Yes  
coarse fragments: very few  
Slopeclass: slopy  
Flooding:No  
Erosion type:Rill  
surface seal:No  
surface cracks:no  
Surfacedrainage:Well drained  
Soil tempture:Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover:barrenland  
Date of sampling: 09/09/2018

**Profile description A-Horizon(0-24cm)**

Colour mois:t10yr 5/4  
Colour dry:10YR 3/3  
Structure type:Granular  
Structuresize: Very fine/thin  
Mottles:No  
Rootpresence: Abundant,many  
pHsoil:6.0  
Carbonate reaction: No detectable visible

**Profile description B-Horizon( 24-42cm)**

Colour moist:7.5YR 5/8  
Colour dry:7.5YR 3/3 Dark Brown  
Structure type:Granular  
Structure size: Very fine/ thick  
Mottles:No  
Rootpresence: Many  
pHsoil: 6.5  
Carbonate reaction: No detectable visible

**Location:** Ha Ts'oeunyane,Berea



Berea Gullied

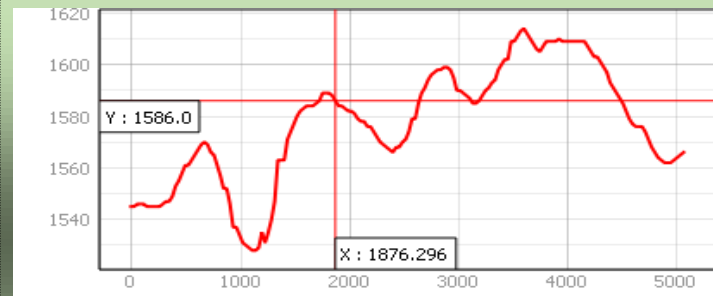
**WBR Soil Classification:** Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Tuke, Berea

Profile ID: D02Tuke99

Lab #: 112-115

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Common  
Slope Class: Strongly sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Poorly drained  
Soil temperature: Mesic  
Land use: Settlement  
Crop: grasses  
Land cover: Grassland  
Sampling Date: 09/09/2018

**Profile description A-Horizon (0-57cm)**

Colour moist: 7.5YR4/6, 7.5YR4/4  
Colour dry: 7.5YR3/3  
Structure type: Crumby  
Structure size: Very fine/ thin  
Mottles: None  
Root presence: Abundant, Many  
pH: 6.5  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (57-145+ cm)**

Colour moist: 2.5YR 3/6, 2.5YR 6/4  
Colour dry: 2.5YR 2.5/4, 2.5YR 4/4  
Structure type: Angular blocky  
Structure size: Coarse/ thick  
Mottles: None  
Root presence: Common, Few  
pH: 6.5  
Carbonate reaction: No detectable visible or audible effervescence

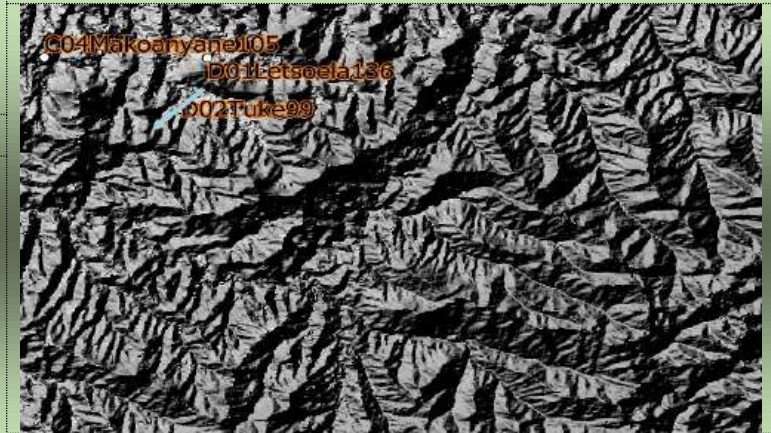


Berea Series

WBR Soil Classification: Ferralic Leptic Lixisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: D04Lekhalong080**

**Lab #:** 140-143

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat poorly (imperfectly) drained  
Soil temperature: Mesic  
Land use: Not used  
Crop: Invasive species (*Felicia fillifolia*)  
Land cover: Barrenland  
Sampling Date: 09/09/2018

**Profile description A-Horizon (0-33cm)**

Colour moist: 10YR6/3, 10YR5/4  
Colour dry: 10YR3/3, 10YR3/4  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: Yes  
Mottle Type: Nodules  
Root presence: Common, Few  
pH: 5.15  
Carbonate reaction: No detectable visible or audible effervescence, Audible effervescence but not visible

**Profile description B-Horizon (33-93cm)**

Colour dry: 5yr 4/6 yellowish red, 5YR 4/6  
Structure type: Crumby, angular blocky  
Structure size: Very fine/thin, very coarse/thick  
Mottles: No  
Root presence: Few, none  
pHsoil: 5.15  
Carbonate reaction: No detectable visible

**Location:** Ha-Lekhalong, Berea



Berea Series

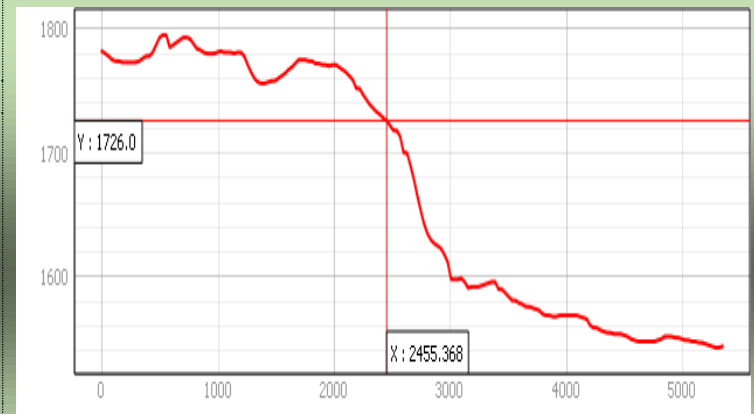
**WBR Soil Classification:** Ferralic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Motumi, Berea



Matela Series

WBR Soil Classification: Luvisols

### Profile ID: D04Motumi208

Lab #: 132-135

#### Surface and climate characteristics

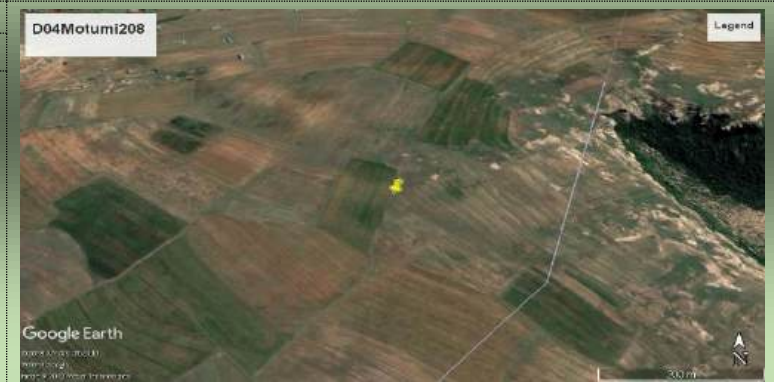
Surface rock: No  
Coarse Fragment: None  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat poorly (imperfectly) drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: None  
Land cover: Fallow  
Sampling Date: 09/09/2018

#### Profile description A-Horizon (0-55cm)

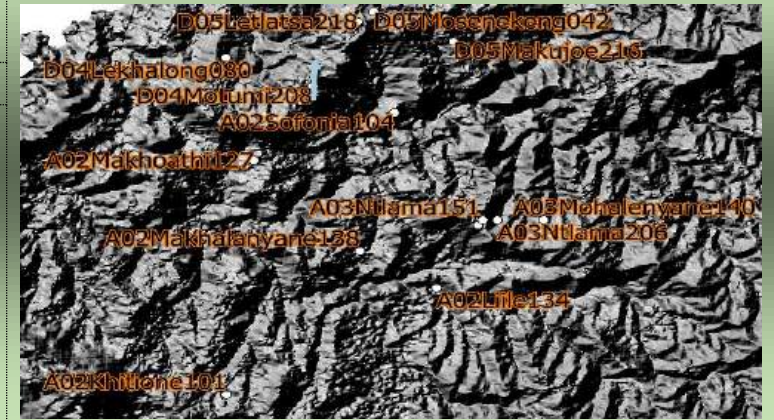
Colour moist: 10YR4/3, 10YR3/4, 10YR4/4  
Colour dry: 10YR3/3, 10YR3/4, 10YR4/4  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Many, Common  
pH: 5.87  
Carbonate reaction: No detectable visible or audible effervescence, Audible effervescence but not visible

#### Profile description B-Horizon (55-150cm)

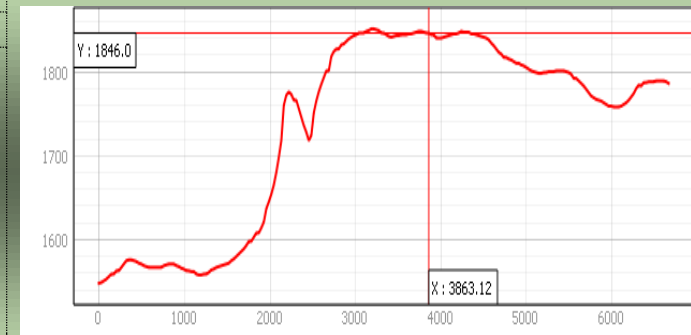
Colour moist: 10YR5/8  
Colour dry: 7.5YR5/8, 10YR5/8  
Structure type: Prismatic, Granular  
Structure size: very fine/ thin  
Mottles: Yes  
Mottle Type: Depletion, Concentrations  
Root presence: Few, Common  
pH: 6.12  
Carbonate reaction: No detectable visible or audible effervescence



#### Remote sensing image



#### Relief Hill-shade



#### Soil profile location in the landscape

Location: Ha-Lephoi, Berea



Berea Series

**WBR Soil Classification:** Ferralic Leptic Cambisols

**Profile ID: D05Lephoi026**

**Lab #:** 136-139

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Gently sloping  
Flooding: No  
Erosion type: Gully  
Surface seal: No  
Surface cracks: No  
Surface drainage: Poorly drained  
Soil temperature: Mesic  
Land use: Not used  
Crop: None  
Land cover: Barrenland  
Sampling Date: 09/09/ 2018

**Profile description A-Horizon (0-41cm)**

Colour moist: **None**  
Colour dry: 10YR3/3, 10YR3/4, 10YR4/4  
Structure type: Crumby  
Structure size: Very fine/ thin  
Mottles: Yes  
Mottle Type: Concentrations  
Root presence: Abundant  
pH: 6.45  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (41-95cm)**

Colour moist: **None;**  
Colour dry: 10YR6/4, 10YR5/6  
Structure type: Crumby, Sub-angular blocky  
Structure size: very fine/ thin, Medium  
Mottles: Yes; Mottle Type: Concretions  
Root presence: Common, None  
pH: 6.4  
Carbonate reaction: No detectable visible or audible effervescence



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha-Letlatsa, Berea



Berea Series

**WBR Soil Classification:** Fluvic Stagnic Cambisols

**Profile ID:** D05Letlatsa218

**Lab #:** 155-158

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Flat  
Flooding: Yes  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Very poorly drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 17/08/ 2018

**Profile description A-Horizon (0-23cm)**

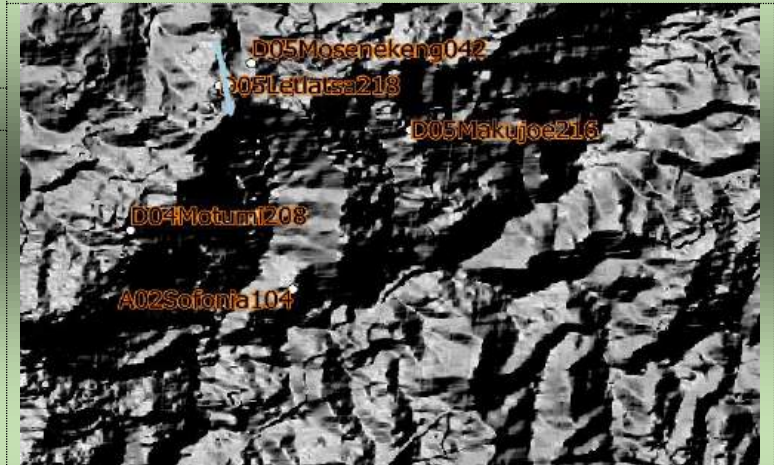
Colour moist: 10YR3/2, 10YR3/4  
Colour dry: 10YR3/2, 10YR3/4  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: Yes  
Mottle Types: Concentrations  
Root presence: Common, Few  
pH: 5.33  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (23-80+ cm)**

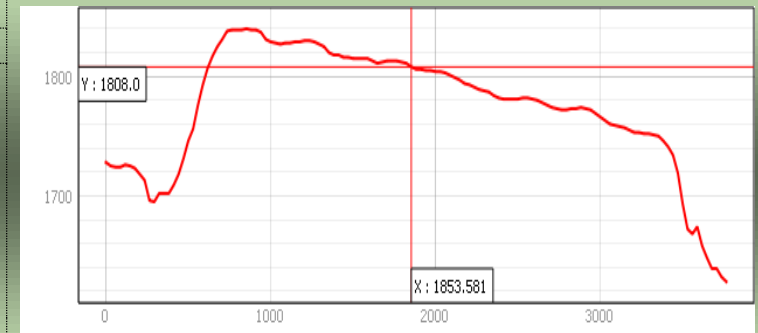
Colour moist: 7.5YR5/2  
Colour dry: 10YR4/6, 10YR3/3, 10YR2/2  
Structure type: Crumbly  
Structure size: very fine/ thin  
Mottles: Yes  
Mottle Type: Concretions, Concentrations  
Root presence: None  
pH: 5.87  
Carbonate reaction: No detectable visible or audible effervescence



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Keoamang, Berea



Pechela Series

WBR Soil Classification: Pellic Vertisols

Profile ID: D06keoamang121

Lab #: 151-154

#### Surface and climate characteristics

Surface rock: No  
Coarse Fragment: None  
Slope Class: Very gently sloping  
Flooding: No  
Erosion types: None  
Surface seal: Yes  
Surface cracks: Yes  
Surface drainage: Somewhat poorly (imperfectly) drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 17/08/2018

#### Profile description A-Horizon (0-32cm)

Colour moist: 5YR2.5/1  
Colour dry: 5YR2.5/1, 7.5YR2.5/1  
Structure type: Granular, Sub-angular blocky  
Structure size: Medium, Coarse/ thick  
Mottles: None  
Root presence: Common, Few  
pH: 5.87  
Carbonate reaction: No detectable visible or audible effervescence

#### Profile description B-Horizon (32-105cm)

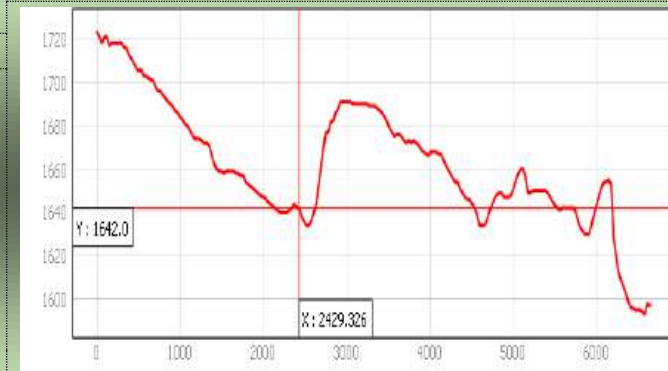
Colour moist: 10YR3/6, 7.5YR2.5/1  
Colour dry: 10YR3/2, 7.5YR2.5/1  
Structure type: Crumbly, Angular blocky  
Structure size: Medium, Coarse/ thick, Very coarse/ thick  
Mottles: Yes  
Mottle Type: Nodules, Concretions  
Root presence: None, Few  
pH: 6.73  
Carbonate reaction: No detectable visible or audible effervescence



#### Remote sensing image



#### Relief Hill-shade



Soil profile location in the landscape

**Location:** Ha-Lits'ilong, Berea



**Profile ID:** D06Lits'ilong079

**Lab #:** 29-32

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Very few  
Slope Class: Sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately drained  
Soil temperature: Mesic  
Land use: Not used  
Crop: None  
Land cover: Barrenland  
Sampling Date: 17/08/2018

**Profile description A-Horizon (0-36cm)**

Colour moist: 10YR4/3, 10YR3/4, 10YR4/4  
Colour dry: 10YR3/3, 10YR3/4, 10YR4/4  
Structure type: Crumbly, Granular  
Structure size: very fine/ thin  
Mottles: None  
Root presence: Common, Few  
pH: 5.5  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (36-140cm)**

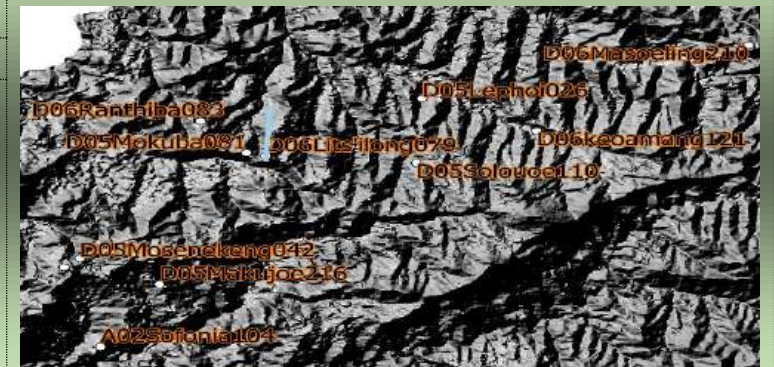
Colour moist: 2.5YR7/6, 10YR5/4, 10YR7/6  
Colour dry: 2.5YR6/6, 10YR3/4, 10YR5/6  
Structure type: Crumbly  
Structure size: Very fine/ thin  
Mottles: Yes  
Mottle Type: Concretions  
Root presence: Many, Common  
pH: 5.5  
Carbonate reaction: No detectable visible or audible effervescence

Matela Series

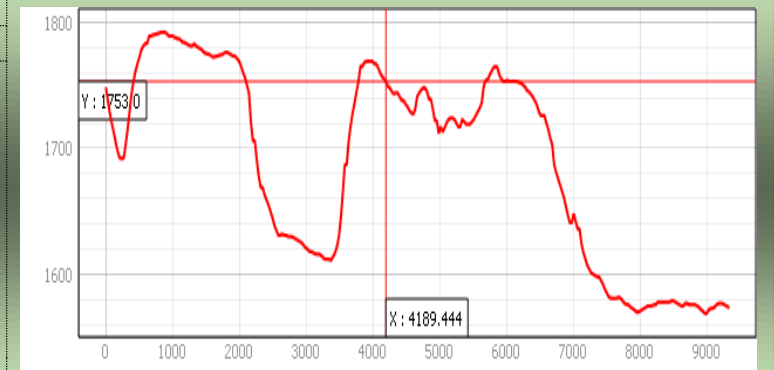
**WBR Soil Classification:** Lixisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Phiri, Berea



Berea Series

WBR Soil Classification: Ferralic Fluvic Cambisols

**Profile ID: D06Phiri109**

Lab #: 76-79

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat poorly (imperfectly) drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 09/09/2018

**Profile description A-Horizon (0-40cm)**

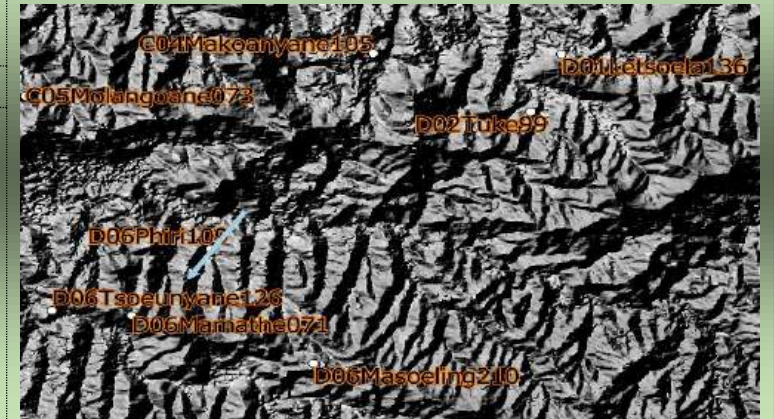
Colour moist: 10YR6/4, 7.5YR4/6  
Colour dry: 7.5YR4/4  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: None, Yes  
Mottle Type: Concretions  
Root presence: Common, Few  
pH: 5.6; Carbonate reaction: Audible effervescence but not visible, No detectable visible or audible effervescence

**Profile description B-Horizon (40-122cm)**

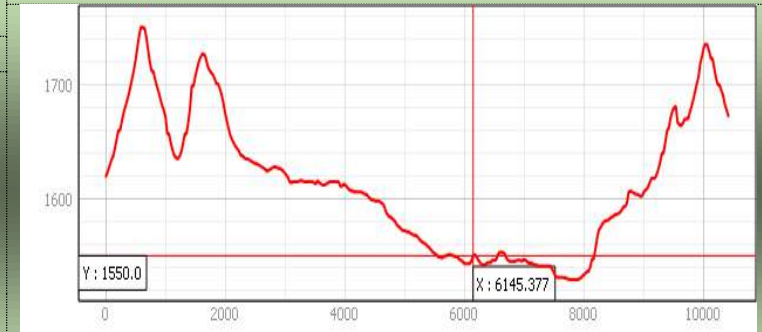
Colour moist: 7.5YR4/8, 5YR4/6  
Colour dry: 7.5YR4/3, 5YR5/8  
Structure type: Angular blocky, Crumbly  
Structure size: Medium  
Mottles: Yes, Mottle Type: Depletion, Concentrations  
Root presence: Few  
pH: 5.57, Carbonate reaction: No detectable visible or audible effervescence, Audible effervescence but not visible



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha-Ranthiba, Berea



Berea Guulied

**WBR Soil Classification:** Fluvisols

**Profile ID:** D06Ranthiba083

**Lab #:** 120-123

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: Sheet  
Surface seal: Yes  
Surface cracks: No  
Surface drainage: Poorly drained  
Soil temperature: Mesic  
Land use: other  
Crop: None  
Land cover: Rain fed Agriculture  
Sampling Date: 24/08/2018

**Profile description A-Horizon (0-37cm)**

Colour moist: 10YR5/3, 10YR7/8  
Colour dry: 10YR4/4, 10YR5/8  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: Yes  
Mottle Type: Nodules  
Root presence: Many, Common  
pH: 5.75  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (37-120+ cm)**

Colour moist: 10YR7/6, 10YR8/1  
Colour dry: 10YR6/6, 10YR7/3, 10YR4/4  
Structure type: Sub-angular blocky, Granular  
Structure size: very fine/ thin  
Mottles: Yes  
Mottle Type: Concentrations, Nodules  
Root presence: Few, Common  
pH: 6.2  
Carbonate reaction: No detectable visible or audible effervescence



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha- MakuJoe Berea



Profile ID: D05MakuJoe216

Lab #: 47-50

**Surface and climate characteristics**

Surface rock: No  
Coarse fragments: Common  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Well drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed agriculture  
Sampling date: 16/08/2018

**Profile description A-Horizon (0-39cm)**

Colour moist: 7.5YR4/6, 5YR4/4  
Colour dry: 7.5YR2.5/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Common  
pHsoil: 5.12  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (39-60cm)**

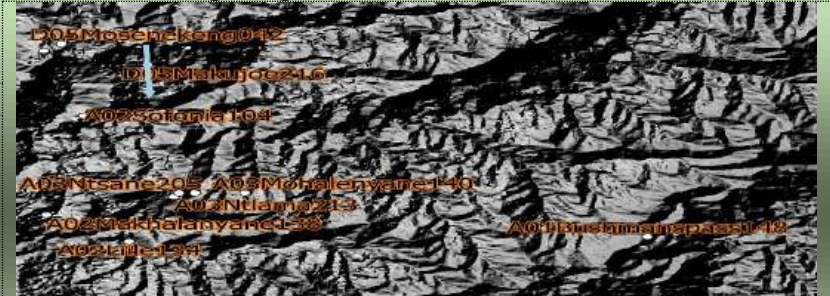
Colour moist: 10R3/6, 10R4/6  
Colour dry: 10R3/4, 10R3/6  
Structure type: Granular, crumbly  
Structure size: Very fine  
Mottles: No  
Root presence: Few, none  
pHsoil: 5.90; Carbonate reaction: No detectable visible

Ntsi Series

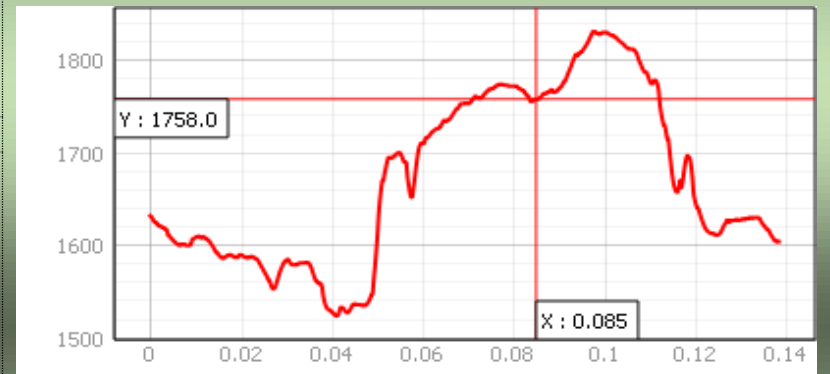
WBR Soil Classification: Leptosols  
Regosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E01Khubetsoana197**

**Location:** Khubetsoana, Mafeteng

**Lab #:** 322-325



**Surface and climate characteristics**

Surfacerock: No  
Coarse fragments: Abundant  
Slopeclass: Very gentle slopy  
Flooding: Yes  
Erosion Type: None  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: other  
Crop: None  
Landcover: fallow  
Date of sampling: 19/10/ 2018

**Profile description A-Horizon( 0-15cm)**

Colour moist: 10YR8/2  
Colour dry: 10YR3/6  
Structure type: Granular  
Structure size: Very fine/ thick  
Mottles: No  
Root presence: Abundant  
pHsoil: 7.6  
Carbonate reaction: No detectable visible

**Profile description B-Horizon(15-86cm)**

Colour moist: 2.5Y4/1, 10YR6/4, 2.5Y5/6  
Colour dry: 2.5Y3/1, 10YR5/4, 2.5Y5/3  
Structure type: Sub-Angular blocky  
Structure size: very coarse/Thick  
Mottles: No, Yes  
Mottle type: concentrations  
Root presence: common, none  
pHsoil: 8.4  
Carbonate reaction: No detectable visible, Visible effervescence, extremely strong reaction

Tsakholo Series

**WBR Soil Classification:** Calcic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E01Mafeto048**

**Location:** Ha-Mafeto, Mafeteng

**Lab #:** 342- 345



**Surface and climate characteristics**

surfacerock:  
Coarse fragments:Few  
Slope class: Gentle sloping  
Flooding:No  
Erosion type:  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempature: Mesic  
Landuse: Not used  
Crop: None  
Landcover: Barrenland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-49cm)**

Colour moist: 10YR5/4, 10YR5/3, 10YR4/3  
Colour dry: 10YR4/4, 10YR3/2, 10YR3/3  
Structure type: Crumby, massive, granular  
Structure size: Veri fine ,none,medium  
Mottles: No, Yes  
Mottle type:Concretions, concentrations  
Root presence: Few  
pHsoil: 5.87  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (49-98cm)**

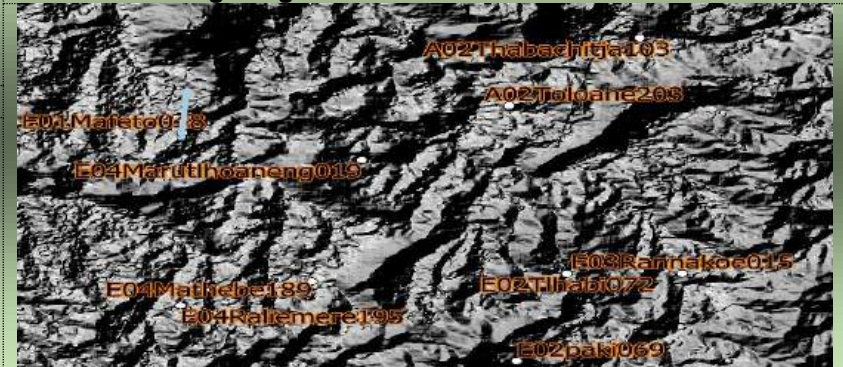
Colour moist:2.5Y5/3, 5Y7/4  
Colour dry:2.5Y4/3, 5Y4/4  
Structure type: Prismatic, Sub- angular blocky  
Structure size: Coarse, medium  
Mottles: Yes  
Mottle type: Concentrations, depletion  
Root presence: Few, none  
pHsoil: 8.00  
Carbonate reaction: No detectable visible, Extremely strong reaction. Thick foam forms quickly

**Not yet**

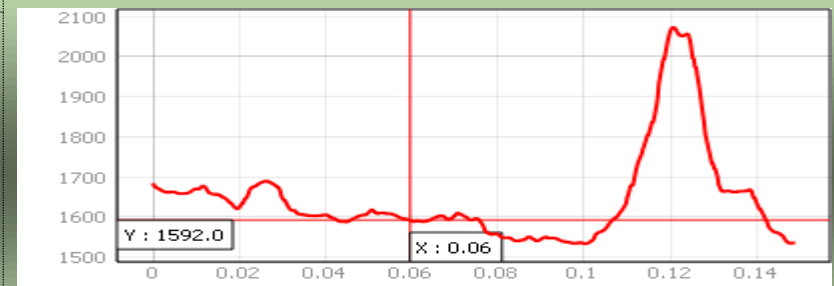
**WBR Soil Classification:** Abruptic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E01Moeletsi112**

**Location:** Ha-Moeletsi, Mafeteng

**Lab #:** 254-257

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Few  
Slope class: Gentle sloping  
Flooding: No  
Erosion type: Gully  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop: None  
Landcover: Grassland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-29cm)**

Colour moist: 10YR 5/2  
Colour dry: 10YR 3/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Mottle type:  
Root presence: Abundant, common  
pHsoil: 7.12  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (29-90cm)**

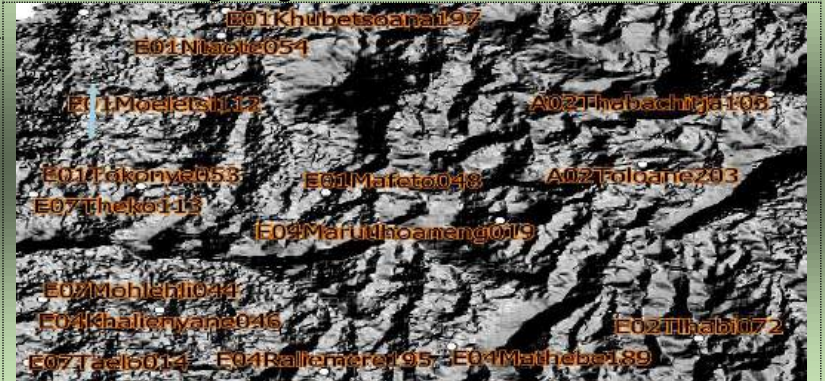
Colour moist: None  
Colour dry: 10YR 4/4, 10YR 5/6  
Structure type: prismatic, massive  
Structuresize: Medium  
Mottles: Yes  
Mottle type: Concentrations, concretions  
Root presence: Few  
pH soil: 7.82.  
Carbonate reaction: No detectable visible

Tsakholo Series

**WBR Soil Classification:** Columnic Planosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E01Ntaote054**

**Location:** Ha-Ntaote, Mafeteng

**Lab #:** 354-357



**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Common  
Slope class: very gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: None  
Landcover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-48cm)**

Colour moist: 10YR6/4, 10YR6/3, 10YR5/2  
Colour dry: 10YR5/4 10YR4/3, 10YR4/2  
Structure type: Crumbly, sub-angular blocky  
Structure size: Very fine/thin  
Mottles: No, Yes  
Mottle type: Concentrations  
Root presence: Common, few  
pHsoil: 6.44,  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (48-120cm)**

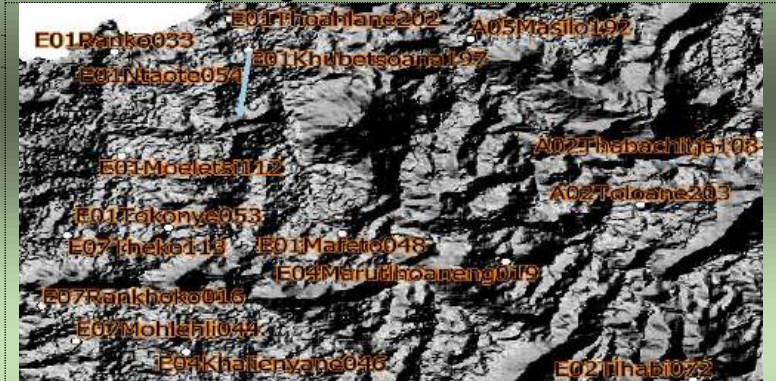
Colour moist: None  
Colour dry: 2.5Y5/6, 2.5Y5/3  
Structure type: Sub- angular blocky, angular blocky  
Structure size: Very fine/thin, medium  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: None, few  
pHsoil: 7.79  
Carbonate reaction: Strong visible effervescence.  
Bubbles form a low foam, No detectable visible

Tsakholo Series

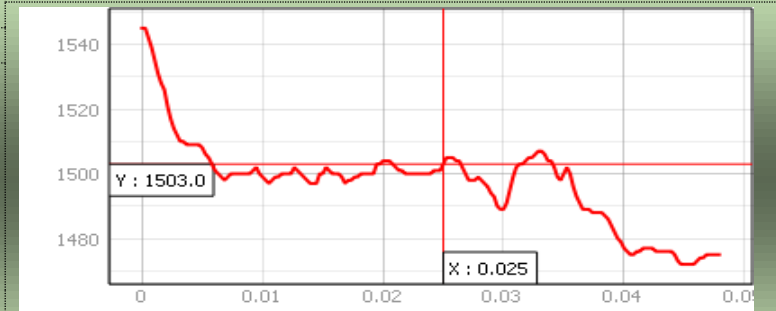
**WBR Soil Classification:** Fluvic Planosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E01Ranko033**

**Location:** Ha- Ranko, Mafeteng

**Lab #:** 366

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Abundant  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Very poorly drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop: Rangeland grasses  
Landcover: Grassland  
Sampling date: 19/10/2018



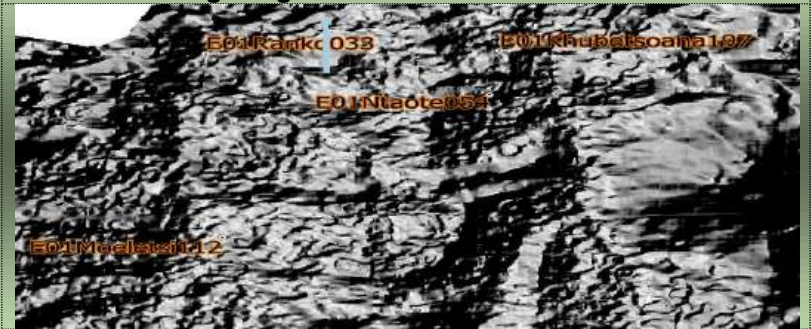
Rocky soil surface with no soil profile

Rockland Sandstone

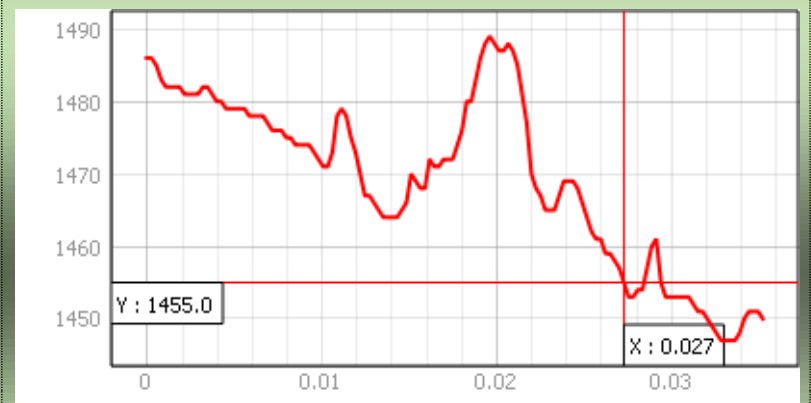
**WBR Soil Classification:** Leptosols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: E01Thoahlane202**

**Location:** Ha- Thoahloane, Mafeteng

**Lab #:** 294-297



**Surface and climate characteristics**

surfacerock:  
Coarse fragments: Very few  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal:No  
Surface cracks: No  
Surface-drainage: Impefectly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-55cm)**

Colour moist: 10YR6/3, 10YR6/4 , 10YR5/3  
Colour dry: 10YR4/4, 10YR3/3  
Structure type: Crumby, massive, sub-angular blocky  
Structure size: Very fine/thin, none  
Mottles: Yes  
Mottle type: concentrations, depletion  
Root presence: Few  
pHsoil: 7.35  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (55-167cm)**

Colour moist: None, 10YR5/3  
Colour dry: 10YR5/6, 10YR4/3  
Structure type: Angular blocky, sub-angular blocky  
Structure size: Coarse/thick, medium  
Mottles: Yes  
Mottle type: Depletion, concentrations  
Root presence: None, few  
pHsoil: 6.56  
Carbonate reaction: No detectable visible

Not yet

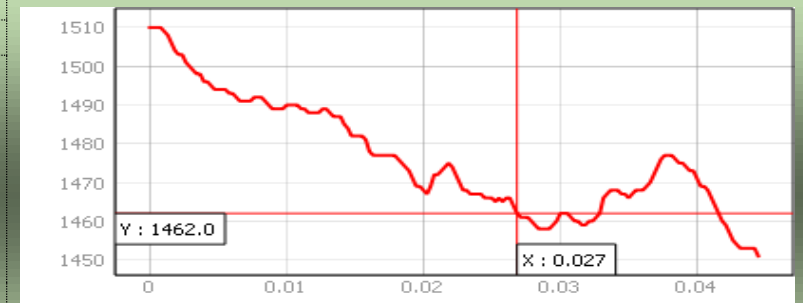
**WBR Soil Classification:** Fluvic Cambisols (Densic)



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: E01Tokonye053**

**Location:** Ha-Tokonye, Mafeteng

**Lab #:** 362-365

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments:  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Poorly drained  
Soil tempure: Mesic  
Landuse: Not used  
Crop: None  
Landcover: Grassland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-30)**

Colour moist:10YR7/2  
Colour dry:10YR4/2  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No, Yes  
Mottle type: Nodules  
Root presence: Abundant, few  
pHsoil: 6.5  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (30-103cm)**

Colour moist:10YR4/6,10YR7/1,  
2.5Y4/1,10YR3/1  
Colour  
dry:10YR3/4,10YR5/1,2.5Y3/1,10YR2/1  
Structure type: Sub-angular blocky,granular  
Structure size: coarse/ thick, very fine/thin  
Mottles:Yes  
Mottle type: Concretions, nodules,  
concentrations  
Root presence: None, few, common  
pHsoil: 7.77  
Carbonate reaction: No detectable visible

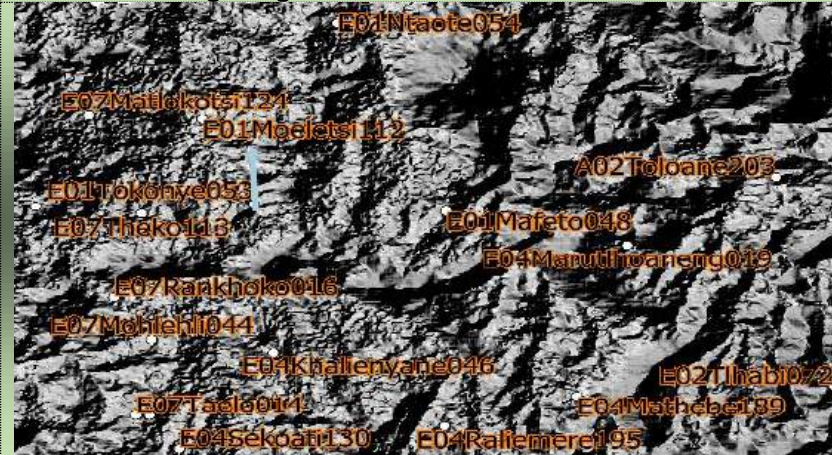


Not yet

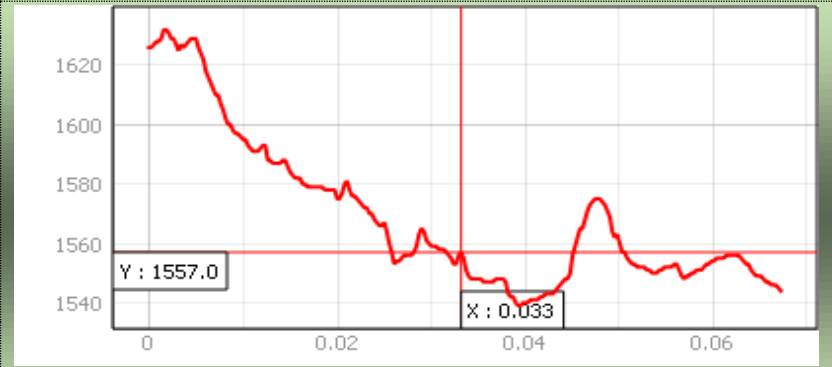
**WBR Soil Classification:** Fluviic Cambisols (Densic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E02Paki069**

**Lab #: 371**

**Location:** Ha- Paki, Mafeteng

**Surface and climate characteristics**

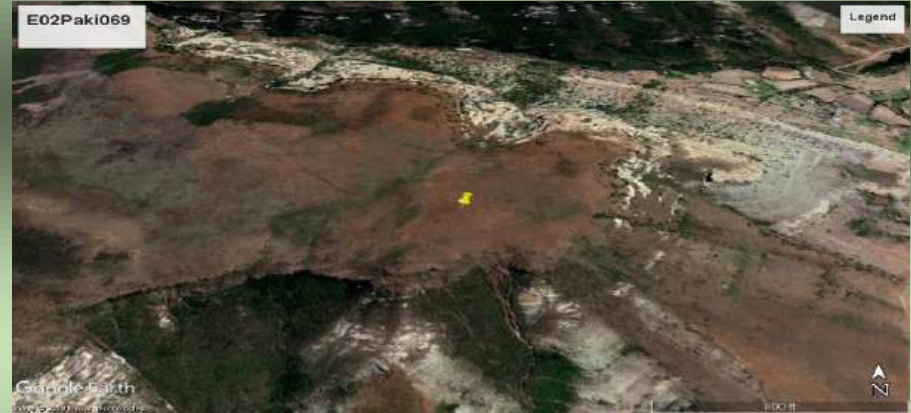
Surfacerock:  
Coarse fragments: Dominant  
Slope class: Slopy  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Well drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop: None  
Landcover: Grassland  
Sampling date: 10/12/2018



Rocky soil surface with no soil profile

Not yet

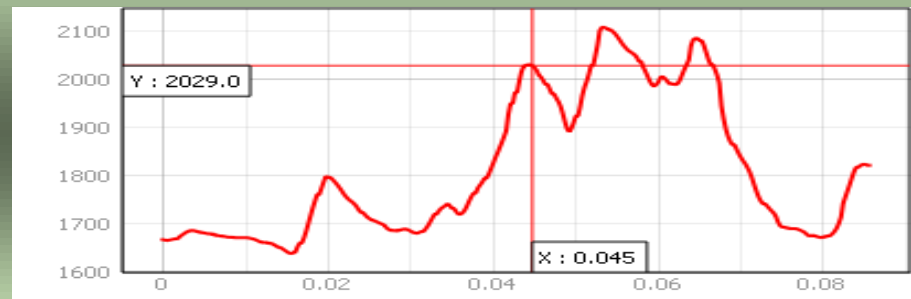
WBR Soil Classification: Leptosols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: E02Seeiso119**

**Location:** Ha-Seeiso, Mafeteng

**Lab #:** 306-309



**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Very few  
Slope class: Gentle sloping  
Flooding: No  
Erosion type: Gully  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Moderately drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Sampling date: 1/12/2018

**Profile description A-Horizon (0-33cm)**

Colour moist:10YR 4/2  
Colour dry:10YR 3/2  
Structure type:Crumby, sub-angular blocky  
Structure size: Very fine/ thin  
Mottles: No  
Root presence: Few  
pHsoil: 6.95  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (33-106cm)**

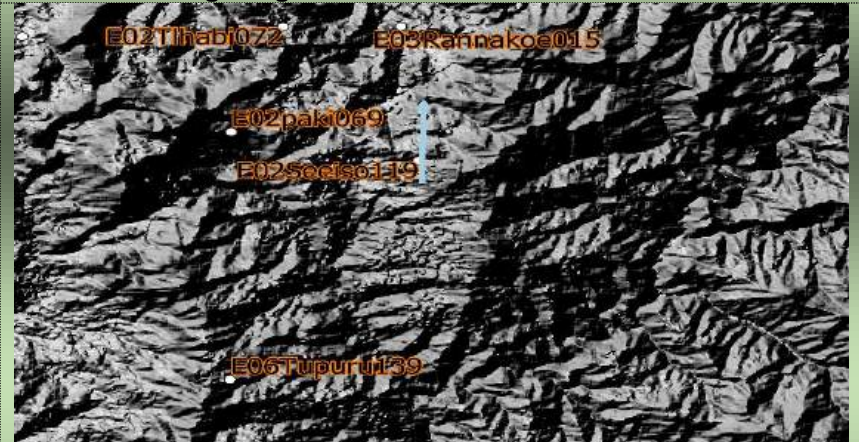
Colour moist: 10YR 5/2,10YR 4/3,10YR 3/1  
Colour dry:10YR 3/2,10YR 3/3,10YR 2/1  
Structure type: Sub angular blocky, granular  
Structure size: Very fine/thin, medium  
Mottles:No  
Root presence: few  
pHsoil: 7.24  
Carbonate reaction: No detectable visible

Machache Series

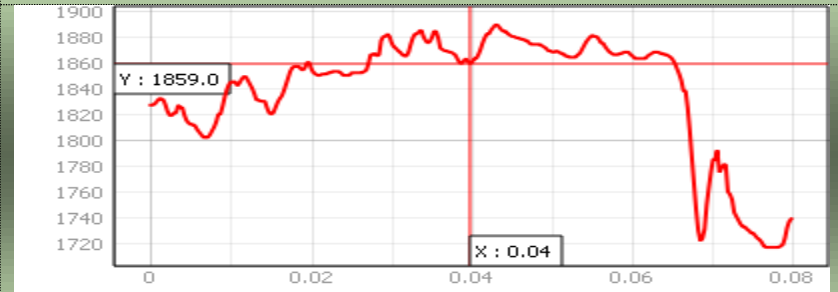
**WBR Soil Classification:** Vertic Fluvic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha- Tlhabi, Mafeteng



Profile ID: E02Tlhabi072

Lab #: 290-293

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Few  
Slope class: Strongly sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Not used  
Crop: None  
Landcover: Shrubland  
Sampling date: 5/12/2018

**Profile description A-Horizon (0-39cm)**

Colour moist: 10YR6/3, 10YR5/6  
Colour dry: 10YR3/3, 10YR3/4  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles: No  
Root presence: Abundant  
pHsoil: 5.34  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (39-120cm)**

Colour moist: 10YR7/3, 10YR5/3, 5YR5/8  
Colour dry: 10YR5/6, 10YR3/4, 5YR4/4  
Structure type: Sub-angular blocky  
Structure size: Medium, very fine/thin  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few  
pHsoil: 5.38  
Carbonate reaction: No detectable visible

Not yet

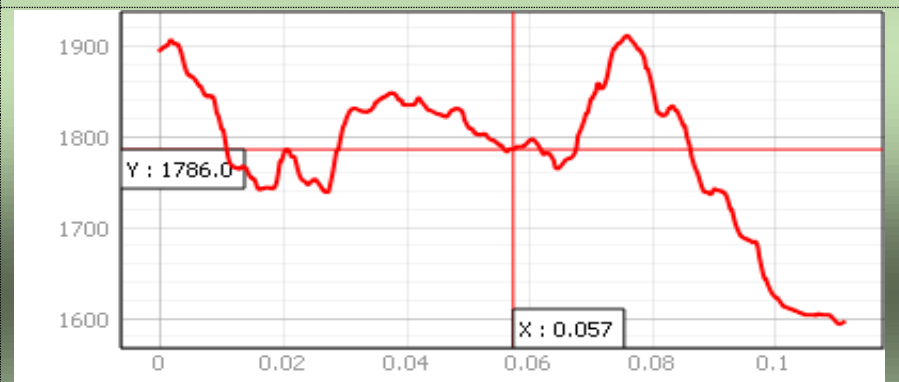
WBR Soil Classification: Cambisols



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

**Profile ID: E03Rannakoe015**

**Lab #:** 298-301

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Many  
Slope class: Sloping  
Flooding: No  
Erosion type: None  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Imperfectly drained  
Soil temputre: Mesic  
Landuse: Not used  
Crop: Rangeland grasses  
Landcover: Barrenland  
Sampling date: 1/12/2018

**Profile description A-Horizon (0-61cm)**

Colour moist:10YR6/2,10YR7/3  
Colour dry:10YR3/2,10YR5/4  
Structure type:Massive,crumby,masive  
Structure size: None  
Mottles:No  
Root presence: Few, common  
pHsoil: 6.37  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (61-110cm)**

Colour moist: 10YR6/3  
Colour dry: 10YR4/3  
Structure type: Sub angular blocky  
Structure size: Coarse/thick  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few  
pHsoil: 5.6  
Carbonate reaction: No detectable visible

**Location:** Ha- Rannakoe, Mafeteng



Tsakholo Series

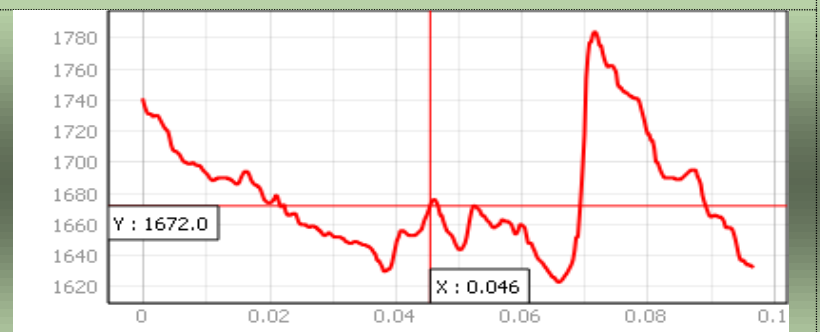
**WBR Soil Classification:** Vertic Planosols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

Location: Ha- Khalienyane

Profile ID: E04Khalienyane046

Lab #: 314-317



**Surface and climate characteristics**

surfacerock:  
Coarse fragments: Very few  
Slope class: Very strong gentle  
Flooding: No  
Erosion type: Yes  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Impfectly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-48cm)**

Colour moist: 10YR6/3  
Colour dry: 10YR3/3, 10YR4/3  
Structure type: Granular  
Structure size: Very fine/thin, medium  
Mottles:No, yes  
Mottle type: Depletion  
Root presence: Common,few  
pHsoil: 6.32  
Carbonate reaction: No detectable visible

**Profile description B-Horizon ( 48-104cm)**

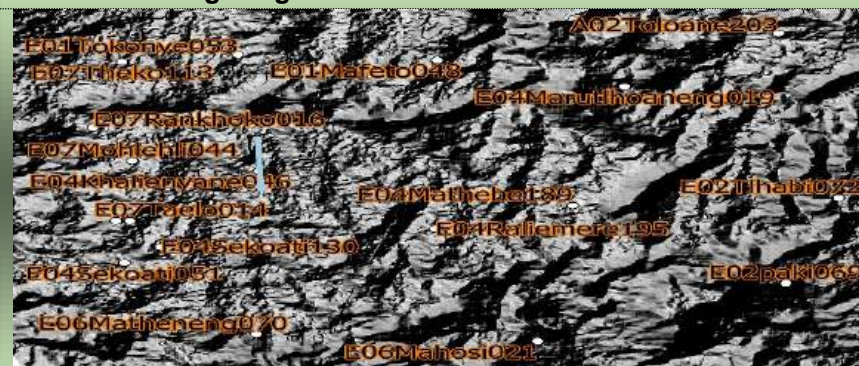
Colour moist: No dry soil colour  
Colour dry:10YR5/4, 2.5Y6/3,2.5Y5/3  
Structure type: Crumby, sub angular blocky  
Structure size: Very fine/thin, medium  
Mottles:Yes  
Mottle type: Concentrations  
Root presence: none  
pHsoil: 6.84  
Carbonate reaction: No detectable visible

Not yet

WBR Soil Classification: Fluvisols



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

**Profile ID: E04kotoanyane200**

**Location:** Ha-Kotonyane, Mafeteng

**Lab #:** 5-8

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments:  
Slope class: Nearly Level  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempreture: Mesic  
Landuse: Settlement  
Crop: Maize  
Landcover: Construction (settlement)  
Sampling date: 10/10/2018

**Profile description A-Horizon (0-24cm))**

Colour moist: 10YR 4/4, 10YR4/3  
Colour dry: 10YR 3/3, 10YR2/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Few  
pHsoil: 7.35  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (24-79cm)**

Colour moist: 10YR 5/8, 10YR 5/6  
Colour dry: 10YR 3/6, 10YR 4/6  
Structure type: Crumby  
Structure size: Very fine/thin, medium  
Mottles: No, yes  
Mottle type: Concretions  
Root presence: Few, none  
pHsoil: 7.96  
Carbonate reaction: No detectable visible



Matela Series

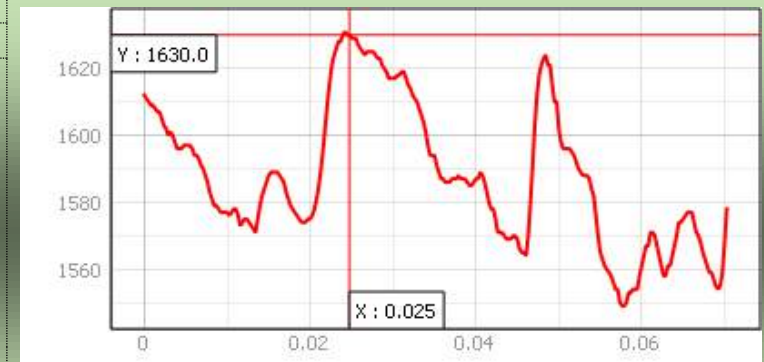
**WBR Soil Classification: Lixisols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E04Marutlhoaneng019**

**Lab #: 383-386**

**Location: Marutlhoaneng, Mafeteng**

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments:  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Other  
Crop: None  
Landcover: Grassland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-26cm)**

Colour moist: None  
Colour dry: 10YR3/4  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles: Yes  
Mottle type: Nodules  
Root presence: Abundant  
pHsoil: 8.21  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (26-73cm)**

Colour moist: None  
Colour dry: 2.5Y4/2, 10YR3/2, 10YR4/6  
Structure type: Sub angular blocky, angular blocky  
Structure size: coarse/ thick  
Mottles: Yes  
Mottle type: concentrations, concretions  
Root presence: Common, few  
pHsoil: 7.19  
Carbonate reaction: No detectable visible



Not yet

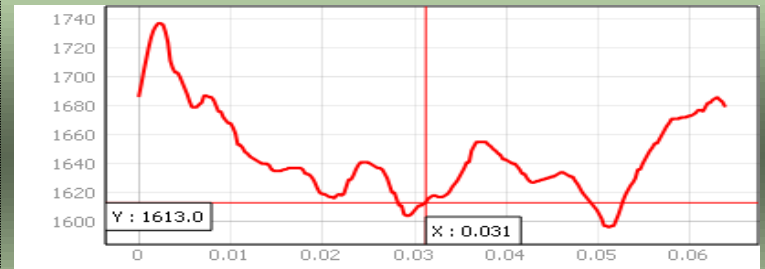
**WBR Soil Classification: Albic Planosols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E04Mathebe189**

**Lab #: 387-389**

**Location:** Ha- Mathebe, Mafeteng

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Common  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil temperture: Mesic  
Landuse: Not used  
Crop: Rangeland grasses  
Landcover: Barrenland  
Sampling date: 1/12/2018

**Profile description A-Horizon (0-19cm)**

Colour moist: 10YR6/3  
Colour dry: 10YR4/4  
Structure type: Crumbly  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Common  
pHsoil: 5.82  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (19-50cm)**

Colourmoist: 5Y6/4, 5Y5/4  
Colour dry: 5Y5/4, 5Y4/4  
Structure type: Angular blocky, Sub angular blocky  
Structure size: Coarse/thick, medium  
Mottles: Yes  
Mottle type: Concentrations, depletion  
Root presence: Few, none  
pHsoil: 7.59  
Carbonate reaction: No detectable visible.



Not yet

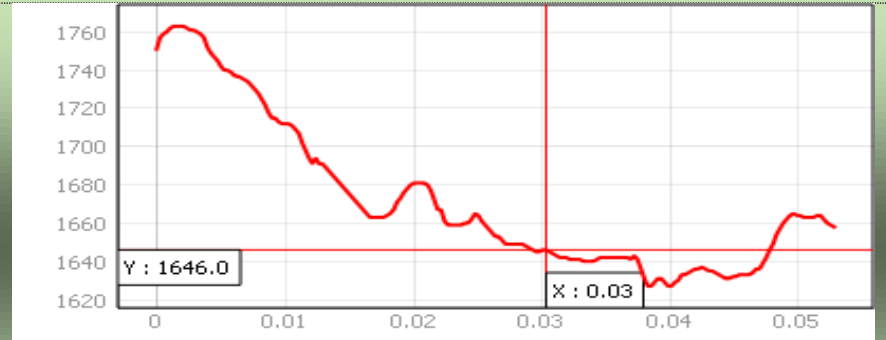
**WBR Soil Classification:** Columnic Planosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha- Raliemere, Mafeteng

Profile ID: E04Raliemere195

Lab #: 266-269

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Few  
Slope class: Slopy  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Sampling date:1/12/2018

**Profile description A-Horizon (0-60cm)**

Colour moist:10YR6/3,10YR 6/4  
Colour dry:10YR4/3,10YR5/4  
Structure type: Crumby  
Structure size: Very fine/thin  
Mottles: Yes  
Mottle type: Concentrations, depletion  
Root presence: Many  
pHsoil: 6.06  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (60-130cm)**

Colour moist: None  
Colour dry: 5Y6/2  
Structure type: Sub angular blocky  
Structure size: Medium  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few  
pHsoil: 7.02  
Carbonate reaction: No detectable visible



Not yet

WBR Soil Classification: Fluvic Planosols



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

**Profile ID: E04Sakane018**

**Lab #:** 16-19

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Many  
Slope class: Strongly sloping  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop: Rangeland natural grasses  
Landcover: Grassland  
Sampling date: 9/10/2018

**Profile description A-Horizon (0-47cm)**

Colour moist:10YR 5/3, 7.5YR4/3  
Colour dry:7.5YR 4/3, 7.5YR 3/3  
Structure type: Granular  
Structure size: Medium  
Mottles: No  
Root presence: Few  
pHsoil: 6.82  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (47-103cm)**

Colour moist:10YR 4/2,10YR 5/2  
Colour dry: 10YR 3/2  
Structure type: Sub angular blocky  
Structure size: Medium  
Mottles: Yes  
Mottle type: Depletion  
Root presence: Few  
pH soil: 6.51. Carbonate reaction: No detectable visible

**Location:** Ha-Sakane, Mafeteng



Not yet

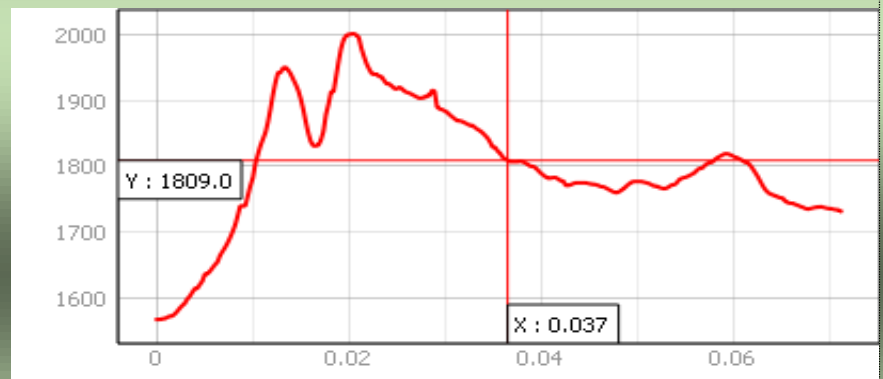
**WBR Soil Classification:** Haplic Luvisols (Clayic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Sekoati, Mafeteng

Profile ID: E04Sekoati051

Lab #: 379-382



#### Surface and climate characteristics

Surfacerock:  
Coarse fragments: Few  
Slope class: Gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: Not used  
Crop: None  
Landcover: Grassland  
Sampling date: 9/10/2018

#### Profile description A-Horizon (0-37cm)

Colour moist:10YR 6/4, 10YR 5/4  
Colour dry:10YR 5/4,10YR 4/4  
Structure type: Granular,crumby  
Structure size: Very fine/ thin  
Mottles: No, yes  
Mottle type:Depletion  
Root presence: Many,few  
pHsoil: 6.05  
Carbonate reaction: No detectable visible

#### Profile description B-Horizon (37-130cm)

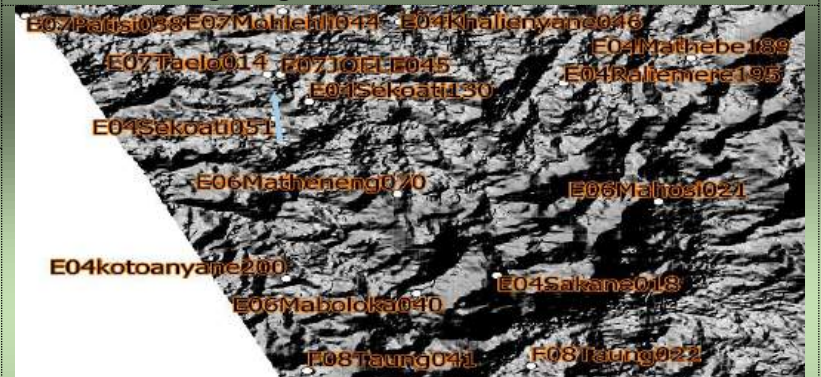
Colour moist:None,10YR 5/3,10YR 5/4,10YR 6-3  
Colour dry:10YR 5/6,10YR 4/3,10YR 5-4, 10YR 5/2  
Structure type: Sub- angular blocky, crumby,granular  
Structure size: Medium, veryfine/thin  
Mottles:Yes  
Mottle type: Depletion, concentrations  
Root presence: None, few  
pHsoil: 6.46  
Carbonate reaction: No detectable visible

Not yet

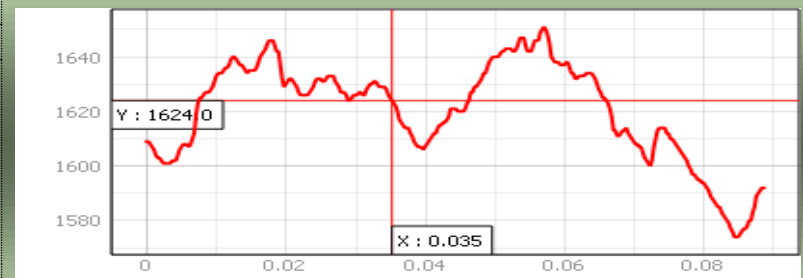
WBR Soil Classification: Albic Planosols (Vertic)



#### Remote sensing image



#### Relief Hill-shade



#### Soil profile location in the landscape

**Profile ID: E04Sekoati130**

**Location:** Ha-Sekoati, Mafeteng

**Lab #:** 326-329

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Many  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type: Yes  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Very poorly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Wheat  
Land cover : Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-20cm)**

Colour moist: 10YR6/3  
Colour dry: 10YR5/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: Yes  
Mottle type: Nodules  
Root presence: Common  
pHsoil: 5.24  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (20-140cm)**

Colour moist:None,10YR6/2  
Colour dry:2.5Y6/2,10YR4/2,10YR6/2 10YR2/1  
Structure type:Angular blocky,crumby,granular, sub-angular blocky  
Structuresize: Very fine/thin,coarse/thick  
Mottles:Yes  
Mottletype: Concentrations ,concretions  
Rootpresence: None,few  
pHsoil:6.11  
Carbonatereaction: No detectable visible



Not yet

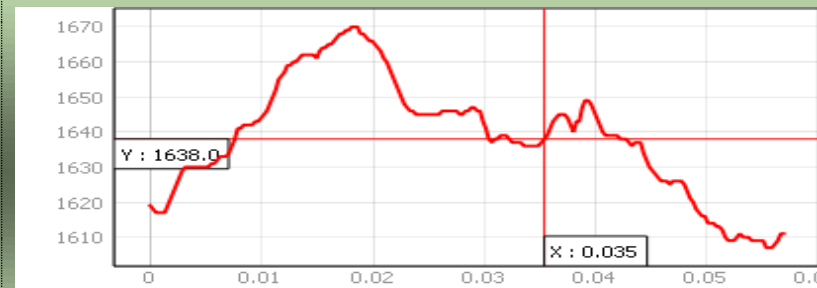
**WBR Soil Classification:** Magniferic Albic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Maboloka, Mafeteng



Not yet

WBR Soil Classification: Haplic Abruptic Luvisols

Profile ID: E06Maboloka040

Lab #: 368-370

### Surface and climate characteristics

surfacerock:  
Coarse fragments: Few  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Very poorly drained  
Soil tempreture: Mesic  
Landuse: Not used  
Crop: None  
Landcover: Barrenland  
Sampling date: 10/10/2018

### Profile description A-Horizon (0-12cm)

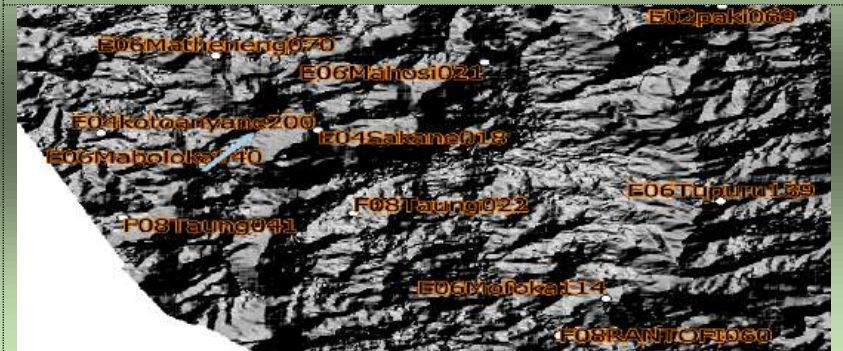
Colour moist: 10YR6/2  
Colour dry: 10YR4/2  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Mottle type:  
Root presence: Few  
pHsoil: 8.2  
Carbonate reaction: No detectable invisible

### Profile description B-Horizon (12-41cm)

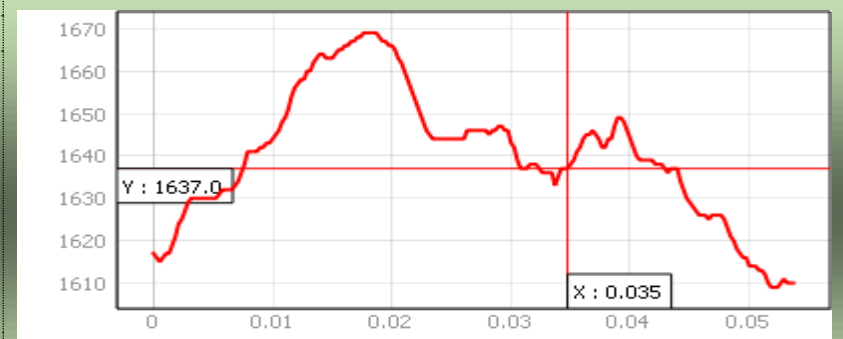
Colour moist: 10YR4/2, 10YR4/3  
Colour dry: 10YR4/1, 10YR3/2  
Structure type: Crumbly  
Structure size: Medium  
Mottles: Yes  
Mottle type: Concretions  
Root presence: None  
pHsoil: 10.06  
Carbonate reaction: No detectable visible



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

Location: Ha- Mahosi, Mafeteng

Profile ID: E06Mahosi021

Lab #: 372-375



#### Surface and climate characteristics

Surfacerock:  
Coarse fragments: Common  
Slope class: Gentle Sloping  
Flooding: No  
Erosion type: Rill  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: No crops  
Land cover: Fallow  
Sampling date: 9/10/2018

#### Profile description A-Horizon (0-33cm)

Colour moist: 10YR7/3  
Colour dry: 10YR5/4  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Mottle type:  
Root presence: Common  
pHsoil: 8.03  
Carbonate reaction: No detectable visible

#### Profile description B-Horizon (33-100cm)

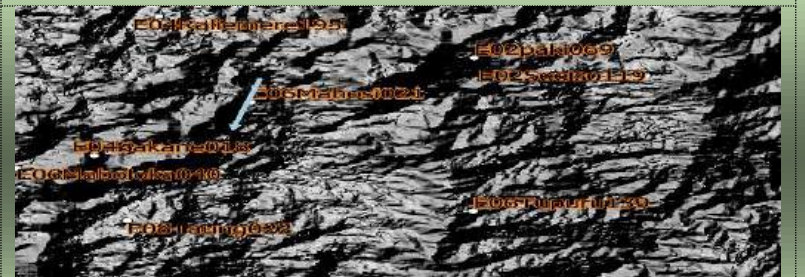
Colour moist: 2.5YR6/3, 2.5Y5/1 10YR4/2,N  
Colour dry: 2.5YR5/2, 2.5Y2.5/1, 10YR3/ 2, 10YR3/ 2  
Structure type: Sub angular blocky, granular  
Structure size: Medium, very fine/thin  
Mottles: Yes  
Mottle type: Concentrations, nodules  
Root presence: None, few, common  
pHsoil: 7.16  
Carbonate reaction: No detectable visible

Not yet

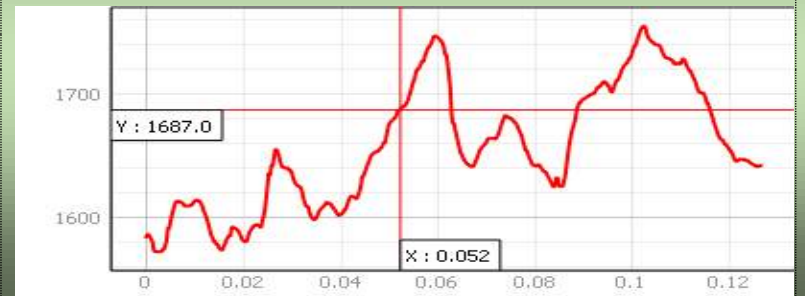
WBR Soil Classification: Haplic Luvisols  
(Fluvis)



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

Location: Matheneng, Mafeteng

Profile ID: E06Matheneng070

Lab #: 346-349



**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Few  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Moderately drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Peas, none  
Land cover : Rainfed agriculture  
Sampling date: 9/10/2018

**Profile description A-Horizon (0-42cm)**

Colour moist: 10YR 4/3  
Colour dry: 10YR 2/2  
Structure type: Crumbly, Sub- angular blocky  
Structure size: Very fine/thin, coarse/thick  
Mottles: No  
Mottle type:  
Root presence: Common, few  
pHsoil: 6.79  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (42-130cm)**

Colour moist:None, 7.5YR 3/2  
Colour dry:5YR 4/4,7.5YR 2.5/2  
Structure type: Granular  
Structure size: Medium,coarse/ thick  
Mottles: No  
Mottle type:  
Root presence: None  
pHsoil: 6.97  
Carbonate reaction: No detectable visible

Not yet

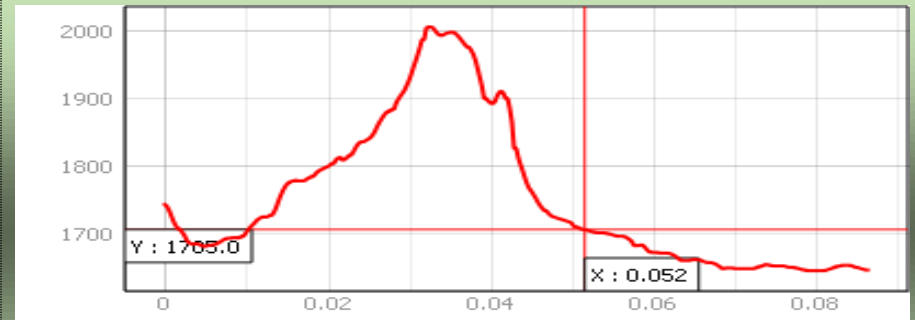
WBR Soil Classification: Plinthisols  
(Clayic)



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

**Profile ID: E06Mofoka114**

**Lab #:** 338-341

**Location:** Ha-Mofoka, Mafeteng

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments:  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks:No  
Surface-drainage: Moderately drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: None  
Land cover: Rainfed agriculture  
Sampling date: 9/10/2018

**Profile description A-Horizon (0-29cm)**

Colour moist: 10YR7/4  
Colour dry: 10YR4/3  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles:  
Mottle type:  
Root presence: Many  
pHsoil: 7.27  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (29-148cm)**

Colour moist: 2.5Y7/4, 10YR6/4, 2.5Y7/4  
Colour dry: 2.5Y5/3, 10YR3/6, 2.5Y5/3  
Structure type: Angular blocky, granular  
Structure size: Medium, very fine/thin, angular blocky  
Mottles: Yes  
Mottle type: Concentrations, nodules  
Root presence: none, common few  
pHsoil: 6.45  
Carbonate reaction: No detectable visible

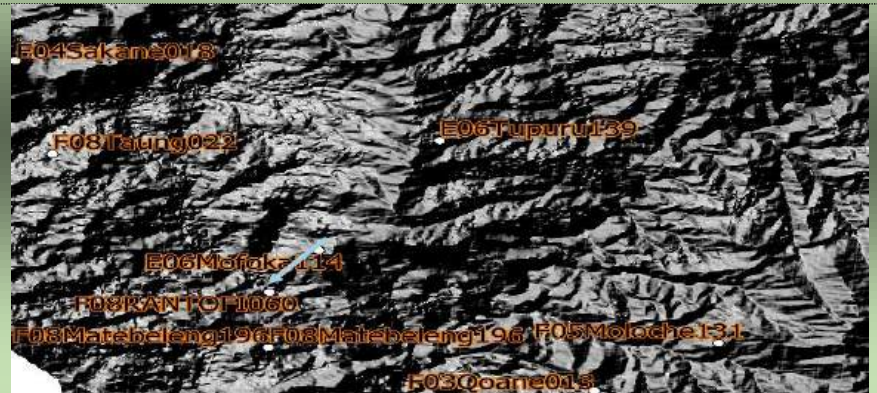


**Not yet**

**WBR Soil Classification:** Ferralic Abruptic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Tupuru, Mafeteng

Profile ID: E06Tupuru139

Lab #: 393



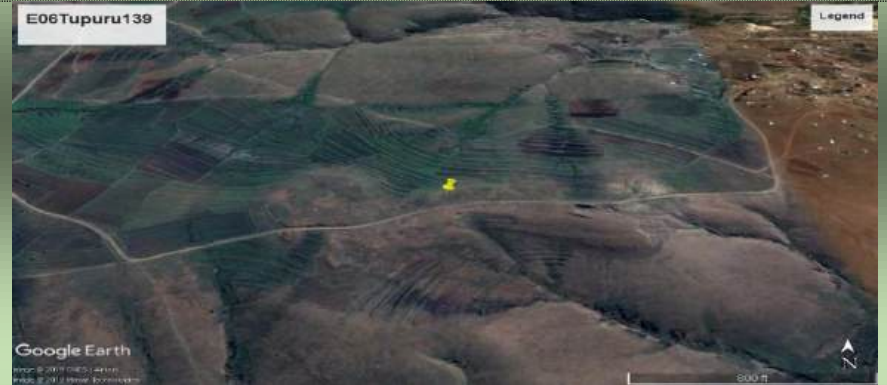
Rocky soil with no soil profile

Not yet

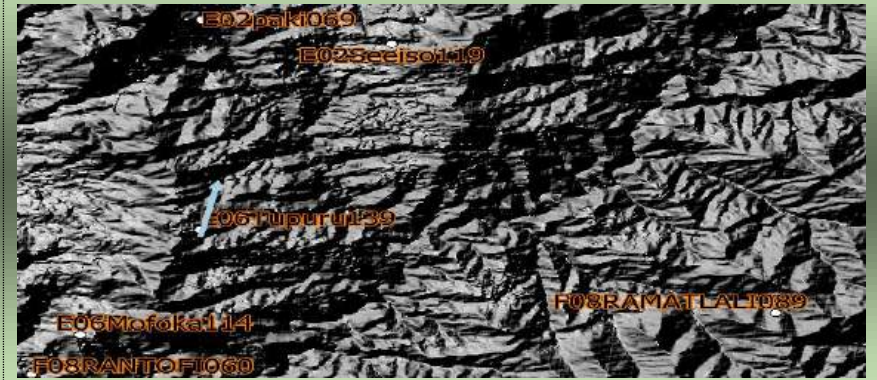
WBR Soil Classification: Skeletic Leptosols

**Surface and climate characteristics**

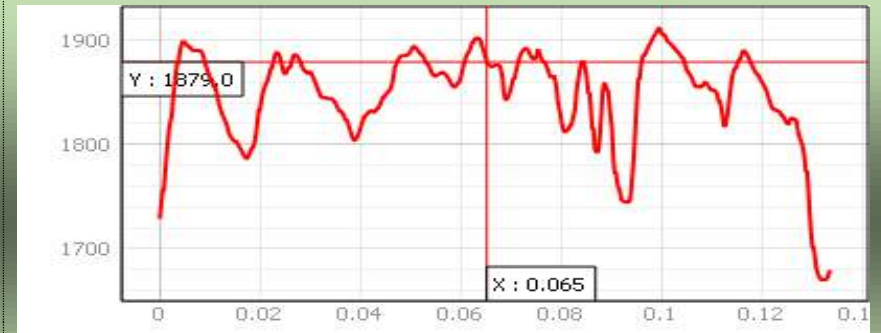
Surfacerock:  
Coarse fragments: Abundant  
Slope class: Gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Well drained  
Soil temp: Mesic  
Landuse: Mixed  
Crop: Sorghum  
Land cover: Rainfed agriculture  
Sampling date: 1/12/2018



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

Location: Jimson, Mafeteng

Profile ID: E07Jimson199

Lab #: 302-305



**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Common  
Slope class: Level  
Flooding: No  
Erosion type: Sheet  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Imperfectly drained  
Soil tempure: Mesic  
Landuse: Cropland  
Crop: Wheat  
Land cover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-44cm)**

Colour moist: 10YR7/3, 10YR7/3  
Colour dry: 10YR4/3, 10YR5/4  
Structure type: Crumbly, massive  
Structure size: Very fine/thin, none  
Mottles: Yes  
Mottletype: Concentrations  
Root presence: Many, common, many  
pHsoil: 6.78  
Carbonatereaction: No detectable visible

**Profile description B-Horizon (44-130cm)**

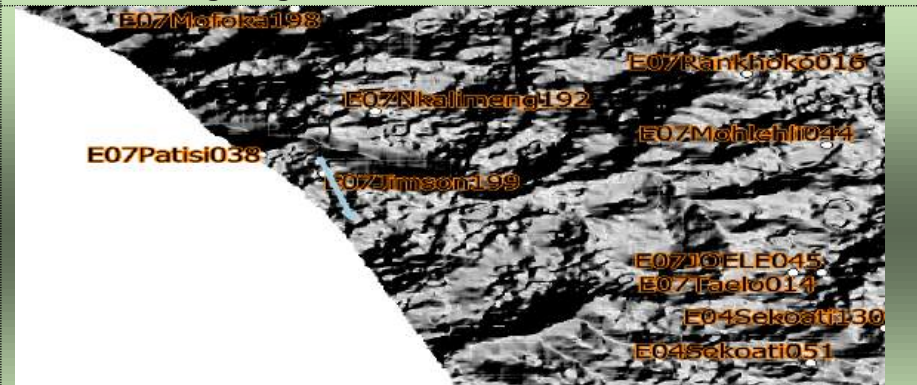
Colour moist: None  
Colour dry: 10YR4/4, 10YR5/3  
Structure type: Angular blocky  
Structure size: Coarse/thick, medium  
Mottles: Yes  
Mottle type: Concentrations, depletion  
Root presence: None, few  
pHsoil: 7.9  
Carbonate reaction: Strong visible effervescence. Bubbles form a low foam, no detectable visible.

Not yet

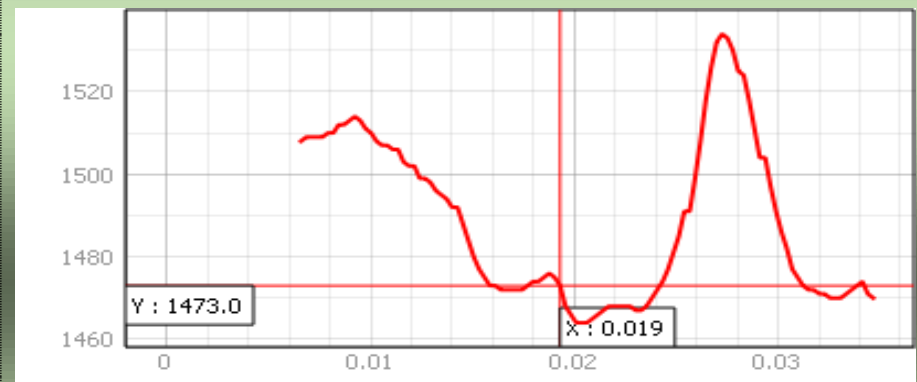
WBR Soil Classification: Haplic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E07JOELE045**

**Lab #:** 310-313

**Location:** Ha- Joele, Mafeteng

**Surface and climate characteristics**

surfacerock:  
Coarse fragments: Common  
Slope class: Slopy  
Flooding: No  
Erosion type:  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-31cm)**

Colour moist: 10YR5/4, 10YR 5/3  
Colour dry: 10YR 4/3, 10YR 3/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Abundant, common  
pHsoil: 6.95  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (31-135cm)**

Colour moist: None  
Colour dry: 2.5Y 5/2, 2.5Y 4/3, 10YR 5/6  
Structure type: Masive, crumby  
Structure size: coarset medium  
Mottles: Yes  
Mottle type: Concretions, concentrations  
Root presence: None, few  
pHsoil: 5.75  
Carbonate reaction: No detectable visible

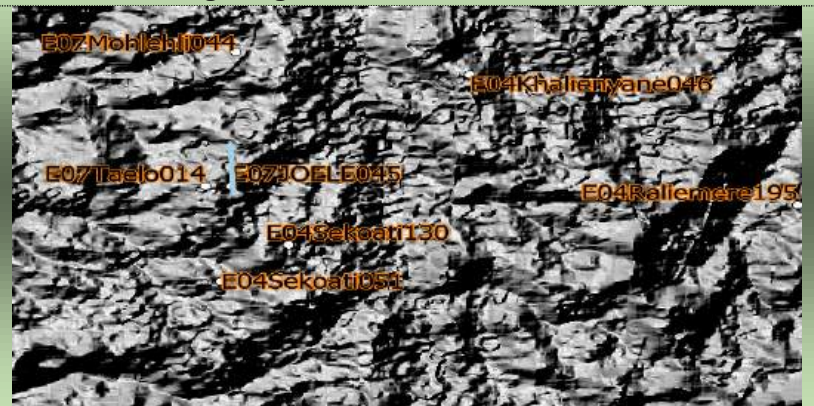


Not yet

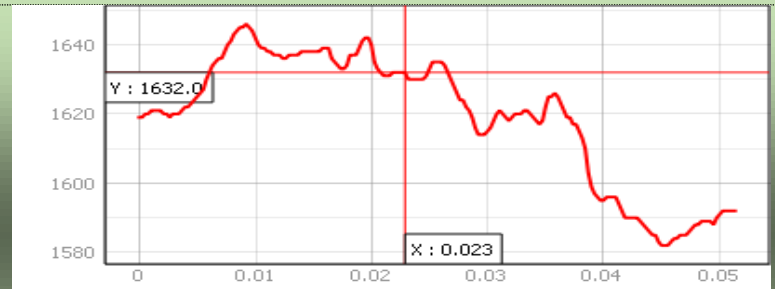
**WBR Soil Classification:** Plinthic Abruptic Luvisols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: E07Leteketa201**

**Lab #: 330-332**

**Surface and climate characteristics**

surfacerock:  
Coarse fragments: Dominant  
Slope class: Nearly level  
Flooding: None  
Erosion type: Gully  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil temputre: Mesic  
Landuse: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-41cm)**

Colour moist: 10YR 5/4, 10YR4/3  
Colour dry: 10YR 3/6, 10YR 3/3  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Many  
pHsoil: 5.8  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (41-135cm)**

Colour moist: 2.5Y 5/3, 10YR 5/3, 10YR4/3  
Colour dry: 2.5Y 5/2, 10YR 3/4, 10YR 3/2  
Structure type: Prismatic, granular, granular  
Structure size: Medium, veryfine/thin  
Mottles: Yes, no  
Mottle type: Depletion, concretions  
Root presence: None, few  
pHsoil: 6.6  
Carbonate reaction: No detectable visible

**Location:** Ha- Leteketa, Mafeteng

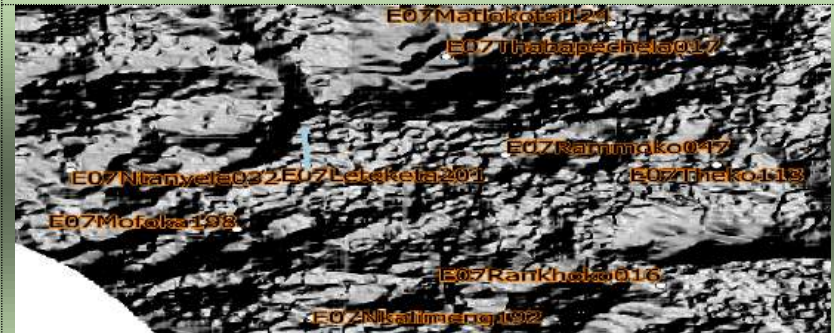


Not yet

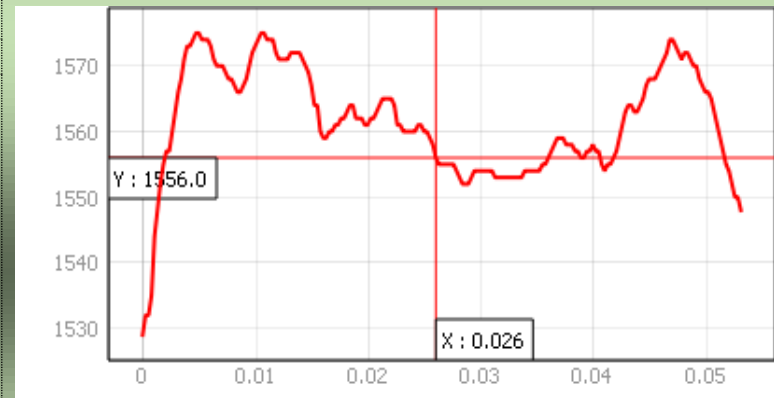
**WBR Soil Classification:** Planosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E07Matlokotsi124**

**Location:** Ha-Matlokotsi, Mafeteng

**Lab #:** 350-353



**Surface and climate characteristics**

Surfacerock:  
Coarse fragments:  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil temputre: Mesic  
Landuse: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-11cm)**

Colour moist: 10YR 4/3  
Colour dry: 10YR 3/2  
Structure type: Crumby  
Structure size: Very fine/ thin  
Mottles: No  
Mottle type:  
Root presence: Common  
pHsoil: 6.77  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (11-58cm)**

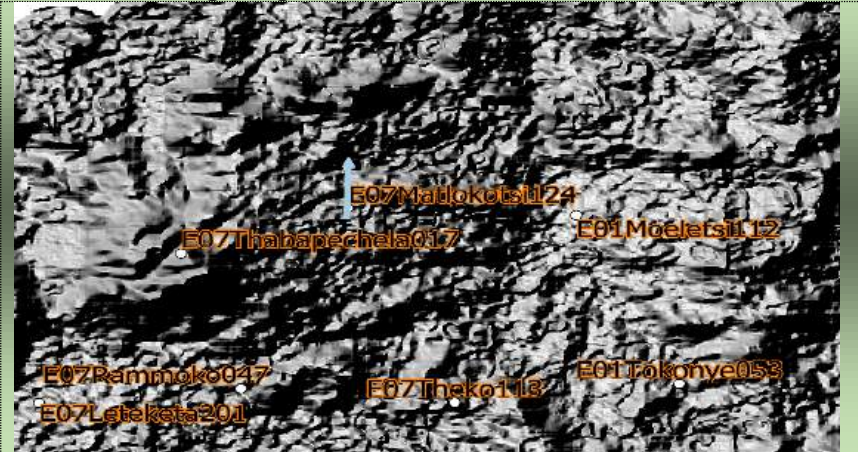
Colour moist: None  
Colour dry: 10YR 3/1, 2.5Y 3/2  
Structure type: Prismatic  
Structure size: Very fine/thin  
Mottles: Yes  
Mottle type: Depletion  
Root presence: Few, none  
pHsoil: 7.51  
Carbonate reaction: No detectable visible

Not yet

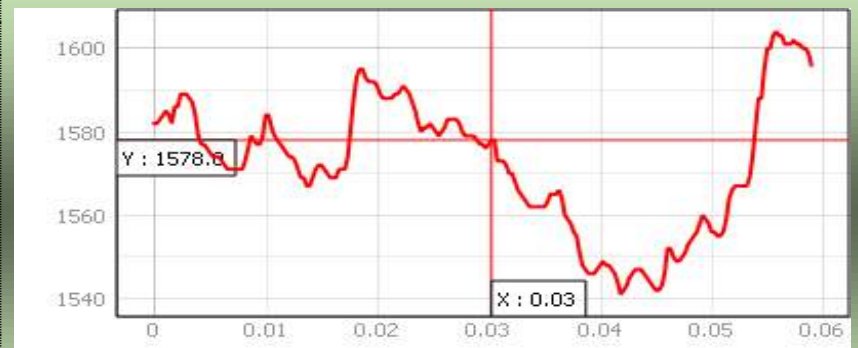
**WBR Soil Classification:** Albic Planosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E07Mofoka198**

**Lab #: 274-277**

**Location:** Ha-Mofoka, Mafeteng

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Dominant  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: Other  
Crop: Cereals(maize)  
Land cover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-29cm)**

Colour moist: 10YR 6/3, 10YR 6/2  
Colour dry: 10YR 4/3, 10Yr 4/3  
Structure type: Crumby  
Structure size: Very fine/thin  
Mottles: No  
Mottle type:  
Root presence: Many, few  
pHsoil: 8.51  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (29-75cm)**

Colour moist: None  
Colour dry: 10YR 3/2, 2.5Y 4/2  
Structure type: Angular blocky  
Structure size: coarse/thick  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few, none  
pHsoil: 7.52  
Carbonate reaction: No detectable visible

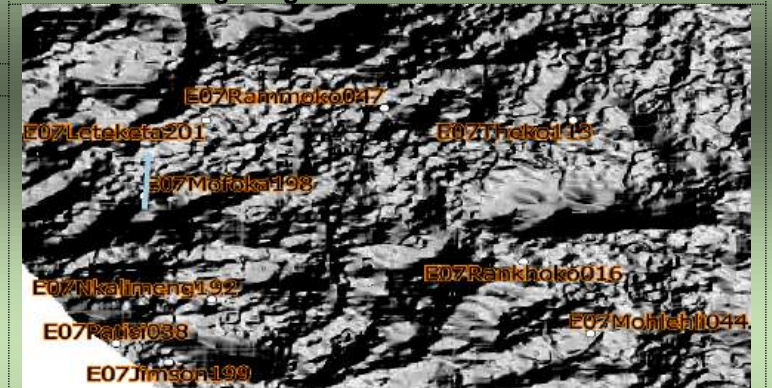


Not yet

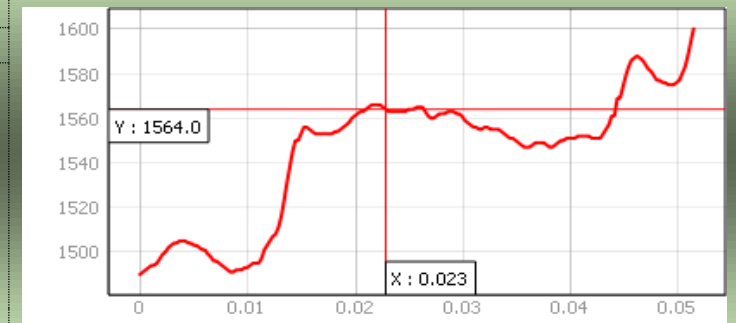
**WBR Soil Classification:** Albic Planosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Mohlehli, Mafeteng



Not yet

WBR Soil Classification: Planosols

Profile ID: E07Mohlehli044

Lab #: 390-392

#### Surface and climate characteristics

surfacerock:  
Coarse fragments: Dominant  
Slope class: Gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: Yes  
Surface-drainage: Very poorly drained  
Soil tempture: Mesic  
Landuse: Not used  
Crop: None  
Landcover: Barrenland  
Sampling date: 19/10/2018

#### Profile description A-Horizon (0-13cm)

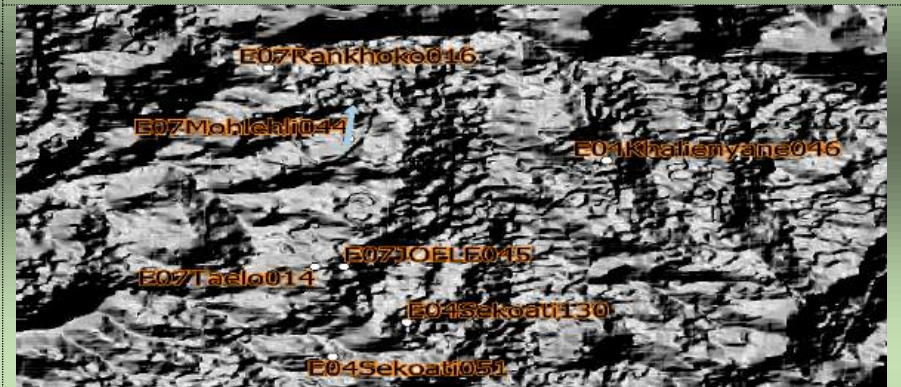
Colour moist: None, 10YR6/4  
Colour dry: 10YR3/3, 10YR4/4  
Structure type: Sub-angular blocky, granular  
Structure size: Very fine/thin  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Common  
pHsoil: 5.65  
Carbonate reaction: No detectable visible

#### Profile description B-Horizon (13-44cm)

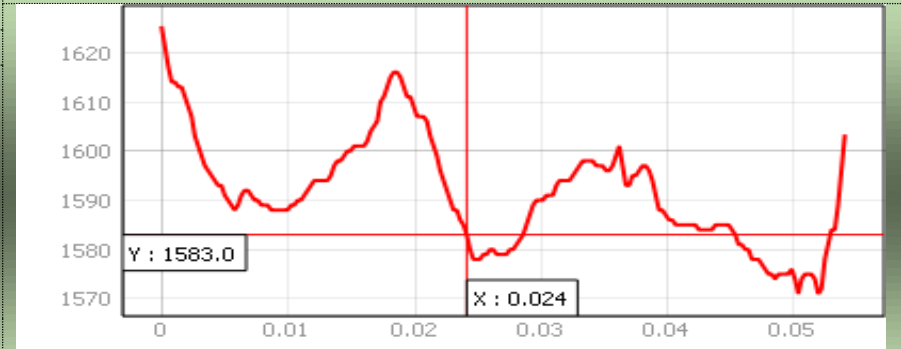
Colour moist: None  
Colour dry: 10YR3/2  
Structure type: Angular blocky  
Structure size: Coarse/ thick  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: Few  
pH soil: 7.1  
Carbonate reaction: No detectable visible



#### Remote sensing image



#### Relief Hill-shade

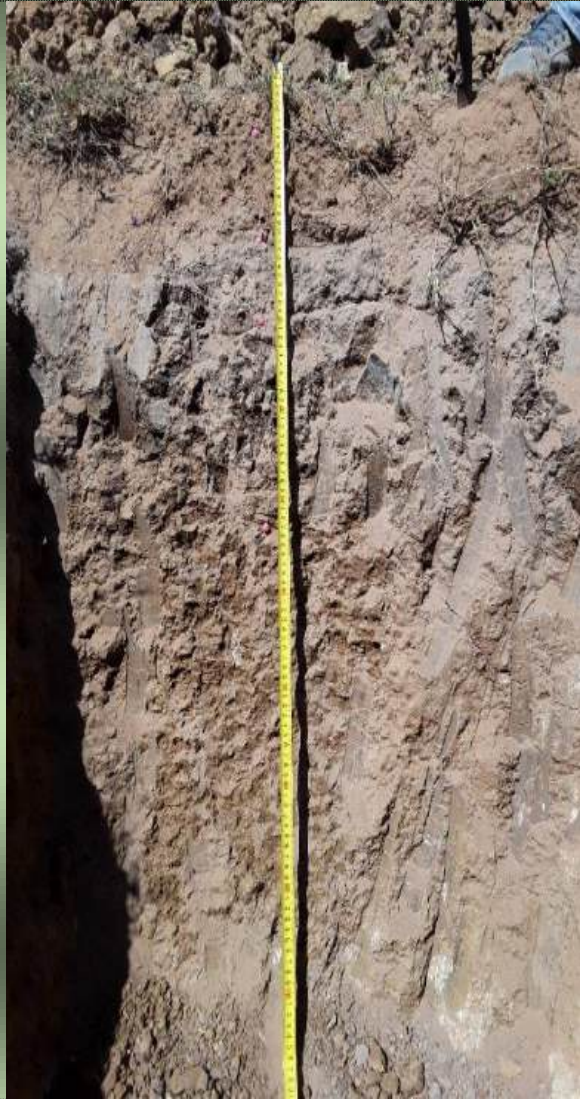


#### Soil profile location in the landscape

**Profile ID: E07Nkalimeng192**

**Location:** Ha-Nkalimeng, Mafeteng

**Lab #:** 318-321



**Surface and climate characteristics**

surfacerock:  
Coarse fragments: Many  
Slope class: Gentle sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Not used  
Crop: None  
Landcover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-19cm)**

Colour moist: 10YR 5/3, 10YR5/3  
Colour dry: 10YR 4/3, brown  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Mottle type:  
Root presence: Few, many  
pHsoil: 8.47  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (19-103cm)**

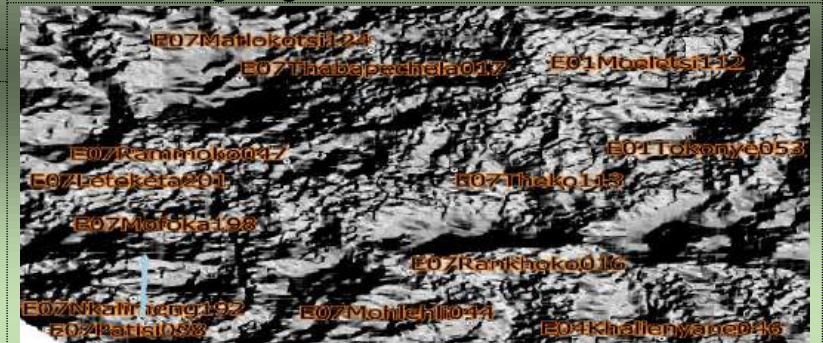
Colour moist: 10YR 4/4, 10YR 3/1, 7.5YR 3/2  
Colour dry: 10YR 4/4, 10YR 2/2, 7.5YR, 2.5/1  
Structure type: Crumby, prismatic  
Structure size: Medium  
Mottles: Yes  
Mottle type: Depletion, concretions  
Root presence: None, few  
pHsoil: 8.45  
Carbonate reaction: Extremely strong reaction. Thick foam forms quickly, no detectable visible, audible effervescence

Not yet

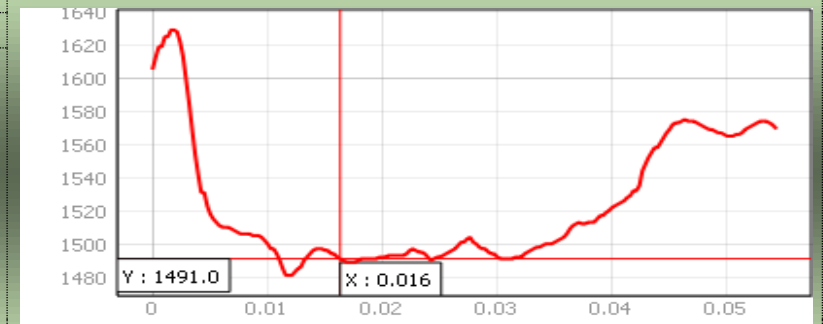
**WBR Soil Classification:** Columnic Planosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E07Ntanyele032**

**Location:** Ha- Ntanyele, Mafeteng

**Lab #:** 262-265



**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Many  
Slope class: Strongly sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Moderately drained  
Soil temperature: Mesic  
Landuse: Rangeland  
Crop: None  
Landcover: Grassland  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-22cm)**

Colour moist: 10YR4/2, 10YR4/3  
Colour dry: 10YR3/2, 10YR3/2  
Structure type: Sub angular blocky  
Structure size: Medium, very fine/ thin  
Mottles: No  
Mottle type:  
Root presence: Many, abundant  
pHsoil: 6.8  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (22-130cm)**

Colour moist: None, 2.5Y3/1  
Colour dry: 10YR4/4, 2.5Y2.5/1, 10YR3/3  
Structure type: Massive, sub-angular blocky  
Structure size: None, Very coarse/ thick, coarse/thick  
Mottles: Yes, no  
Mottle type: Concentrations  
Root presence: None, common  
pH soil: 7.54.  
Carbonate reaction: Visible effervescence, non detectable visible,

Not yet

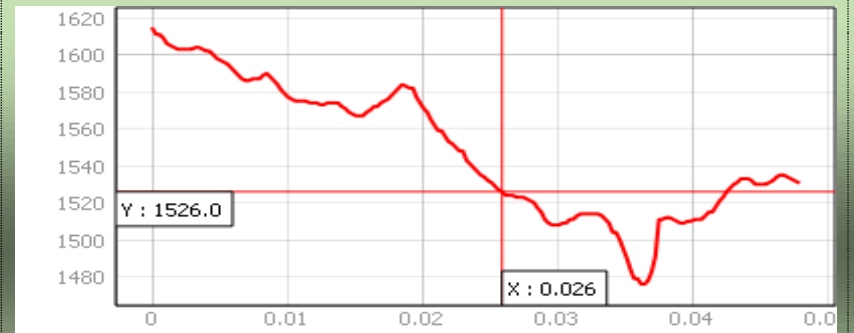
**WBR Soil Classification:** Calcic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha- Patisi, Mafeteng



Not yet

Profile ID: E07Patisi038

Lab #: 334-337

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Few  
Slope class: Very gentle sloping  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Fodder  
Land cover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-39cm)**

Colour moist:10YR6/4,10YR5/3, 10YR4/3  
Colour dry:10YR3/3,10YR3/3,10YR3/3  
Structure type:crumby, sub angular blocky  
Structure size: Very fine/thin, medium  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: few  
pHsoil: 6.93  
Carbonate reaction: No detectable visible

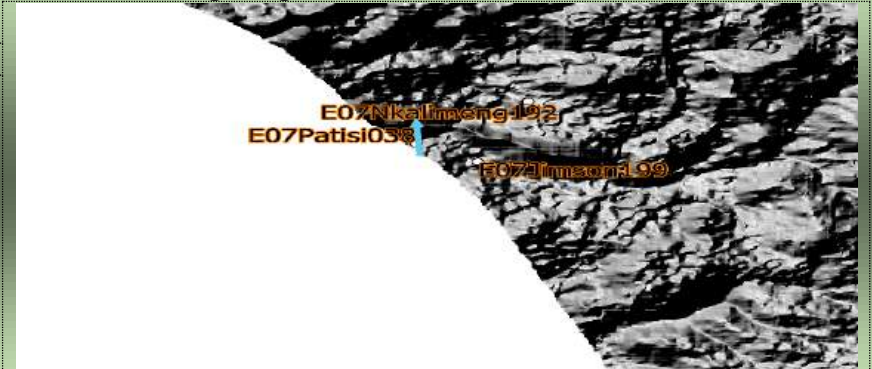
**Profile description B-Horizon (39-140cm)**

Colour moist: None, 7.5YR5/6  
Colour dry: 7.5YR4/4, 7.5YR4/6  
Structure type: Granular, sub- angular blocky  
Structure size: Coarse/ thick  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: None  
pHsoil: 7.07  
Carbonate reaction: No detectable visible

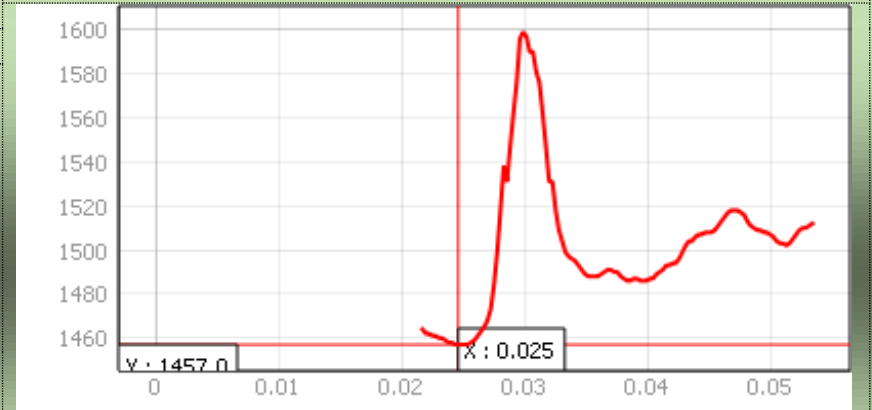
WBR Soil Classification: Ferralic Cambisols



**Remote sensing image**

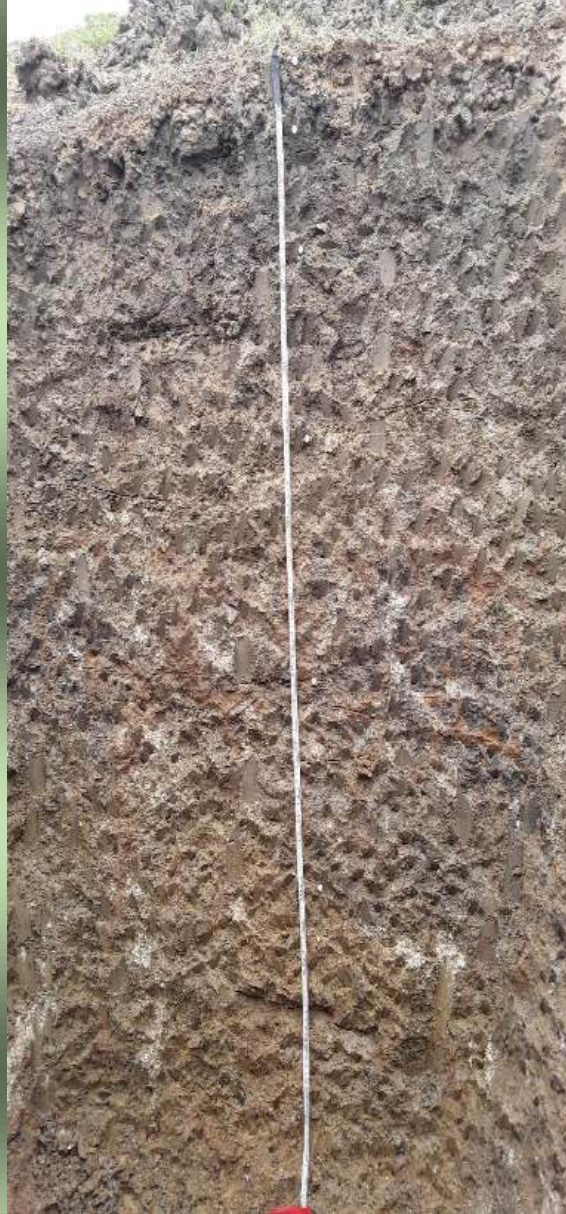


**Relief Hill-shade**



Soil profile location in the landscape

Location: Ha- Rammoko, Mafeteng



Not yet

WBR Soil Classification: Calcic Luvisols

Profile ID: E07Rammoko047

Lab #: 358-361

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments: Abundant  
Slope class: Sloping  
Flooding: No  
Erosion type:  
Surface seal: Yes  
Surface cracks: Yes  
Surface-drainage: Very poorly drained  
Soil tempure: Mesic  
Landuse: other  
Crop: None  
Land cover: Rainfed agriculture  
Sampling date: 19/10/2018

**Profile description A-Horizon (0-12cm)**

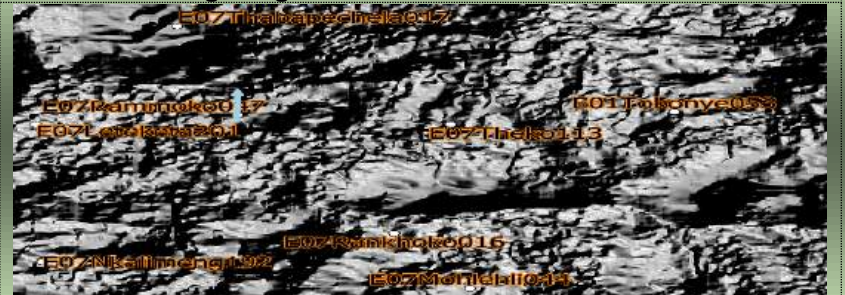
Colour moist: None  
Colour dry: 10YR4/2, 10YR4/4  
Structure type: Angular blocky, crumby  
Structure size: Coarse/ thick, very fine/thin  
Mottles: Yes, no  
Mottle type: Concentrations  
Root presence: Common  
pHsoil: 8.39  
Carbonate reaction: Visible effervescence, strongly visible effervescence. Bubbles forma low foam

**Profile description B-Horizon (12-150cm)**

Colour moist: None  
Colour dry: 5Y5/2, 2.5Y4/4, 5Y5/3, 5Y5/2  
Structure type: Angular blocky  
Structure size: Coarse/ thick  
Mottles: Yes  
Mottle type: Concentrations, concretions  
Root presence: Few, none  
pHsoil: 8.53  
Carbonate reaction: Extremely strong reaction. Thick foam forms quickly, No detectable visible, Strongly visible effervescence. Bubbles form a low foam.



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

**Profile ID: E07Rankhoko016**

**Location:** Ha Ranthoko,mafeteng

**Lab #:** 376-378

**Surface and climate characteristics**

Surfacerock:No  
Coarse fragments:Common  
Slopeclass:Gentle slopy  
Flooding:No  
Surface seal:Yes  
Surface cracks:No  
Surface-drainage:Well drained  
Soil tempture:Mesic  
Landuse:not used  
Crop:None  
Landcover: Grassland  
Date of sampling:19/10/ 2018

**Profile description A-Horizon(0-8cm)**

Colour moist:10YR 5/4  
Colour dry:10YR 3/4  
Structure type:Granular  
Structure size:Very fine /thick  
Mottles:No  
Root presence:abundant  
pHsoil:5.61  
Carbonate reaction: No detectable visible

**Profile description B-Horizon(8-69cm)**

Colour moist:10YR 5/4,10YR 6/3  
Colour dry:10YR 3/4,10YR 3/3  
Structure type:Granular,crumby  
Structure size: Very fine/ thick  
Mottles:No  
Root presence:Few  
pHsoil:5.6  
Carbonate reaction: No detectable visible



Not yet

**WBR Soil Classification:** Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: E07Taelo014**

**Lab #: 282-285**

**Location:** Ha Taelo, Mafeteng

**Surface and climate characteristics**

Surfacerock:No  
Coarse fragments:common  
Slopeclass: Nearly level  
Flooding:No  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Imperfectly drained  
Soil tempture: Mesic  
Landuse:cropland  
Crop:None  
Landcover: Rainfed agriculture  
Date of sampling: 10/12/ 2018

**Profile description A-Horizon(0-39cm)**

Colour moist: None  
Colour dry:10YR3/4  
Structure type: Granular  
Structure size:Very fine/thin  
Mottles: No  
Root presence: Common  
pHsoil:5.79  
Carbonate reaction: No detectable visible

**Profile description B-Horizon( 39-93cm)**

Colour moist:None  
Colour dry:7.5yr4/6  
Structure type: Crumbly, angular blocky  
Structure size: Medium , very fine/ thick  
Mottles:Yes  
Mottle type: concentrations,depletion  
Root presence: few  
pHsoil:6.22  
Carbonate reaction: No detectable visible

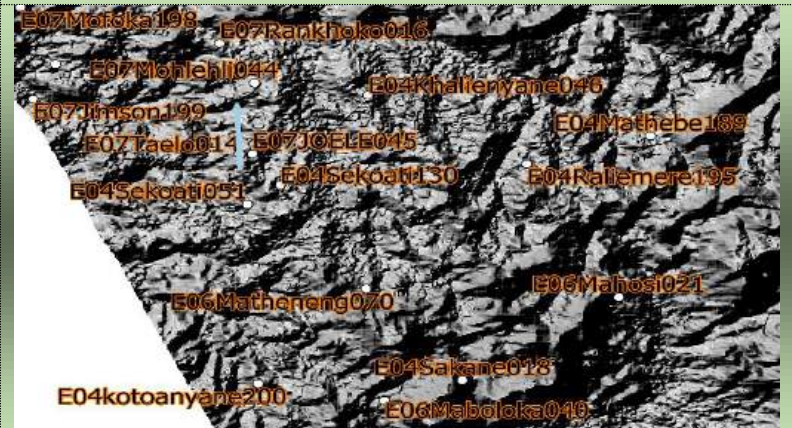


Not yet

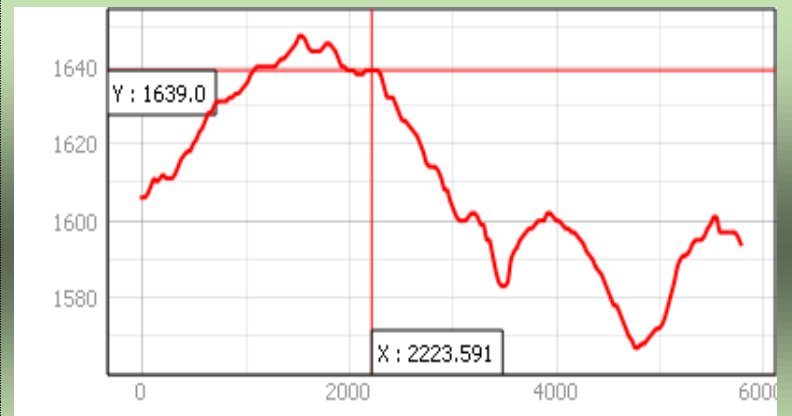
**WBR Soil Classification:** Lixic Fluvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Profile ID: E07Thabapechela017

Location: Thabapechela, Mafeteng

Lab #: 367

Surface and climate characteristics

Surfacerock:No  
Coarse fragments: Dominant  
Slopeclass:steep  
Flooding:No  
Surface seal:No  
Surface cracks:No  
Surface-drainage: Excersively drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop:None  
Landcover:grassland  
Date of sampling: 10/12/2018



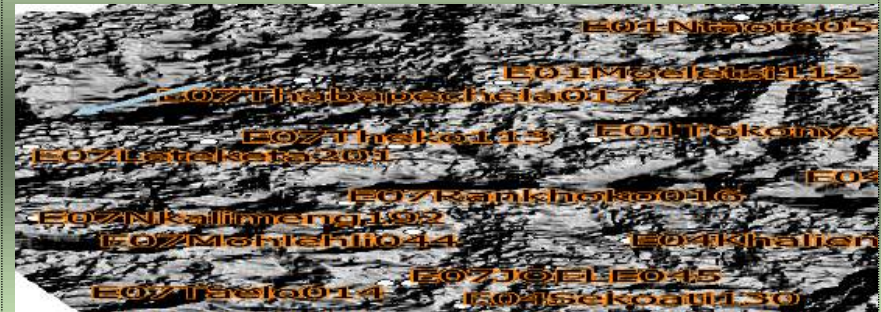
Rocky soil surface with no soil profile

Not yet

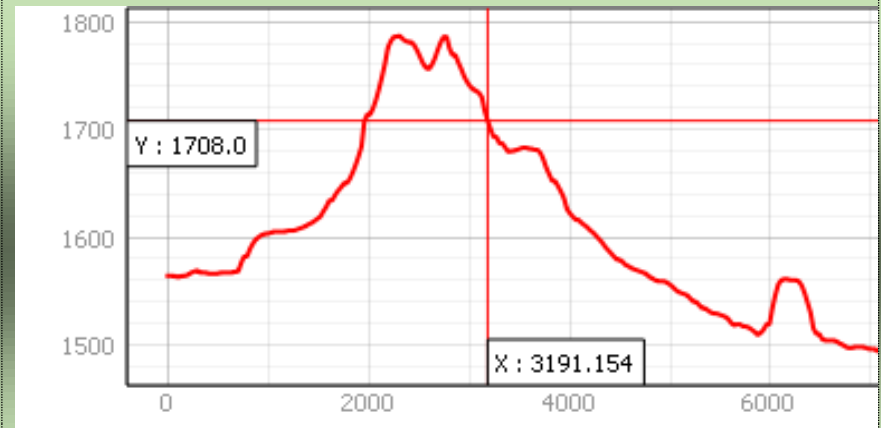
WBR Soil Classification: Leptosols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: E07Theko113**

**Location:** Ha Theko, Mafeteng

**Lab #:** 258-261

**Surface and climate characteristics**

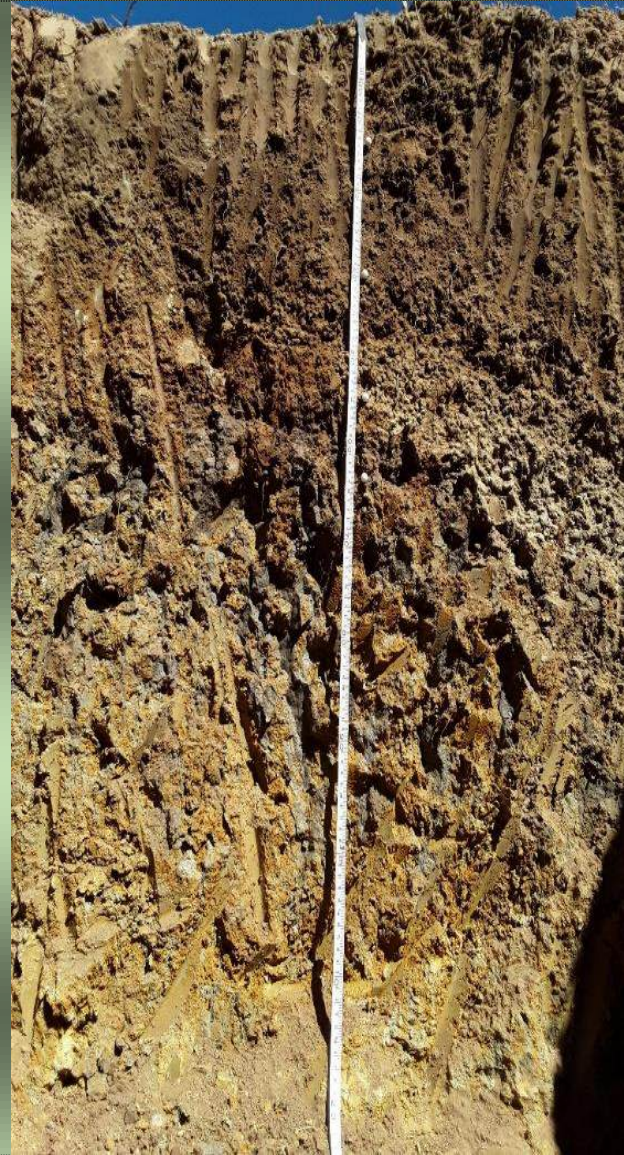
Surfacerock: No  
Slopeclass: Very gentle slopy  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: cropland  
Crop: Maize  
Landcover: Rainfed agriculture  
Date of sampling: 19/10/ 2018

**Profile description A-Horizon(0-23cm)**

Colour moist: 10YR6/3  
Colour dry: 10YR4/3  
Structure type: granular  
Structure size: Very fine/ thin  
Mottles: Yes  
Mottle type: nodules  
Root presence: common  
pHsoil: 6.87  
Carbonate reaction: No detectable visible

**Profile description B-Horizon( 23-122cm)**

Colour dry: 2.5Y6/1, 10YR3/2, 10YR3/2, 2.5Y5/1  
Structure type: platy, granular, blockyb  
Structure size: coarse/thick, vfinet  
Mottles: Yes  
Mottle type: concentrated, nodules, concretions  
Rootpresence: few  
pHsoil: 6.75  
Carbonate reaction: No detectable visible



Not yet

**WBR Soil Classification:** Abruptic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F01Mokopung160**

**Lab #: 216-218**

**Location:** Mokopung,mohales'hoek

**Surface and climate characteristics**

Surfacerock:No  
coarse fragments: dominant  
Slopeclass: steep  
Flooding:No  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Moderately drained  
Soil tempture:Mesic  
Landuse:range  
Crop:None  
Landcover:grassland  
Date of sampling: 18/11/2018

**Profile description A-Horizon(0-21cm)**

Colour moist:10YR3/2  
Colour dry:10YR2/2  
Structure type:crumby  
Structure size:coarset  
Mottles:No  
Rootpresence:Many  
pHsoil:6.77  
Carbonate reaction:No detectable visible

**Profile description B-Horizon(21-49cm)**

Colour moist:10YR7/4,10YR6/6  
Colour dry:10YR3/6,10YR4/6  
Structure type:granular  
Structure size:Very fine/ thin  
Mottles:No  
Rootpresence: Many  
pHsoil:7.35  
Carbonate reaction: No detectable visible



Not yet

**WBR Soil Classification:** Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F01Seberetlane066**

**Lab #: 219**

**Location:** Ha seberetlane, Mohales'hoek

**Surface and climate characteristics**

Surfacerock:Yes  
coarse fragments:Dominant  
Slopeclass:steep  
Flooding:No  
surface seal:No  
surface cracks:No  
surface-drainage:Well drained  
Soil tempture:Mesic  
Landuse:range  
Crop:None  
Landcover:Grassland  
Date of sampling: 19/11/2018

**Profile description A-Horizon**

Colour moist:Yes  
Colour dry:Yes  
Structure type:Granular  
Structure size: Very fine/ thin  
Mottles:No  
Rootpresence: common  
pHsoil:7.23  
Carbonate reaction: No detectable visible



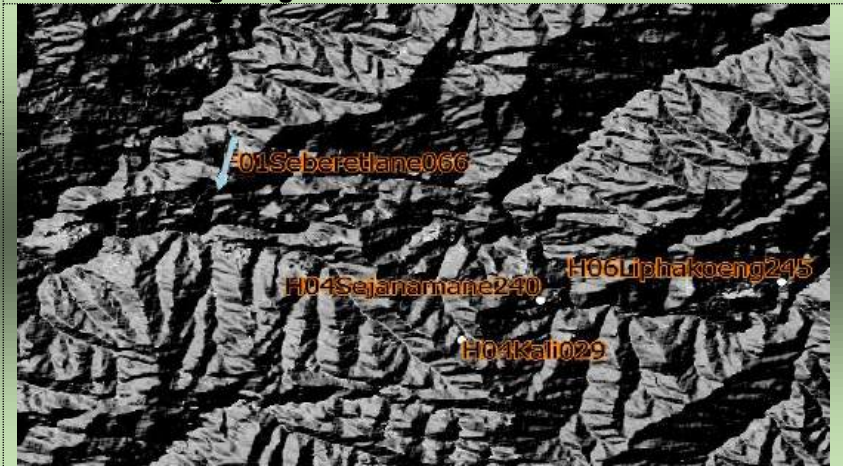
Rock soilsurface with no soil profile

Not yet

**WBR Soil Classification:** Lithic Leptosols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: F03Qoane013**

**Lab #:** 1-4

**Surface and climate characteristics**

Surfacerock:Yes  
Coarse fragments:common  
Slopeclass:slopy  
Flooding:No  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Imperfectly drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop:None  
Landcover: Rainfed agriculture  
Date of sampling: 09/10/2018

**Profile description A-Horizon (0-58cm)**

Colour moist:7.5YR 5/4  
Colour dry:7.5YR 2.5/3  
Structuretype:masive  
Structuresize:Medium,very fine/thin  
Mottles; Yes  
Mottletype:Depletion  
Root presence:common,few  
pHsoil: 6.23  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (58-130cm)**

Colour moist:7.5YR 4/4,None  
Colour dry:5YR 3/3,5YR 4/4  
Structure type:Massive,Crumby  
Structure size: Very fine/ thick,medium  
Mottles:Yes  
Mottle type:depletion  
Rootpresence:few,none  
pHsoil:6.30  
Carbonate reaction: No detectable visible

**Location:** Ha Qoane, Mokaes'hoek



Not yet

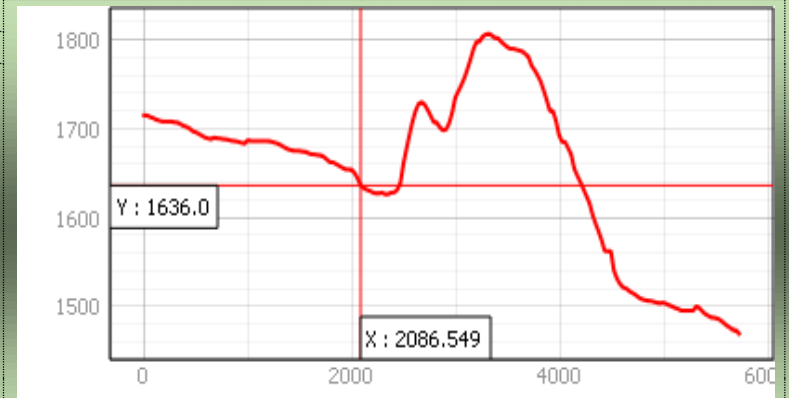
**WBR Soil Classification:** Skeletic Lixisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F04Makhaola128**

**Lab #: 80-82**

**Location:** ha Makhaola, Mohales'hoek

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass:Gentle slopy  
Flooding:No  
Erosion type:sheet  
Surface seal:No  
Scracks:No  
Surface-drainage:Poorly drained  
Soil tempture:Mesic  
Landuse: Cropland  
Crop: Maize and beans  
Landcover: Rainfed agriculture  
Date of sampling: 09/10/ 2018

**Profile description A-Horizon (0-17cm)**

Colour moist: 10YR5/8  
Colour dry: 10YR3/6  
Structure type: Granular  
Structure size: None  
Mottles: No  
Rootpresence:common  
pHsoil:7.66  
Carbonate reaction: No detectable visible

**Profile description B-Horizon(17-60cm)**

Colour moist:7.5YR5/6,7.5YR6/8,  
Colour dry:7.5YR3/4,7.5YR4/4  
Structure type:Granular  
Structure size: Very fine/ thick  
Mottles:Yes  
Mottle type: Concretions,nodules  
Rootpresence: Common,few  
pHsoil:6.78  
Carbonate reaction: No detectable visible



**Not yet**

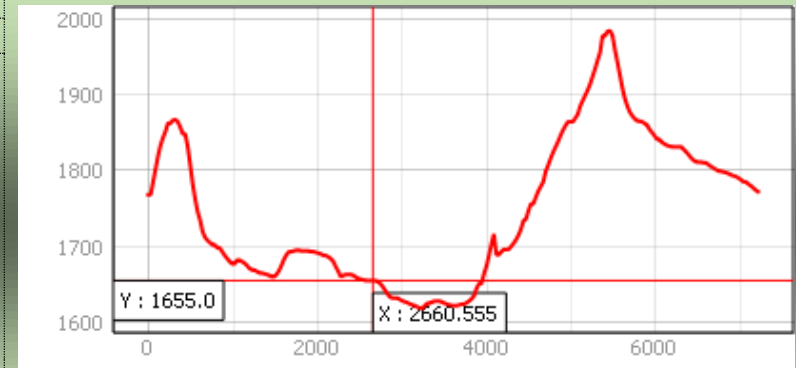
**WBR Soil Classification:** Leptic Fluvisols  
(Arenic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F04Qheku173**

**Location:** Qheku, Mohales'hoek

**Lab #:** 20-22

**Surface and climate characteristics**

Surfacerock: No  
Slopeclass: Very steep  
Flooding: No  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Somewhat excessively drained  
Soil temp: Mesic  
Landuse: range  
Crop: None  
Landcover: shrubland  
Date of sampling: 09/10/ 2018

**Profile description A-Horizon (0-31cm)**

Colour moist: 10YR3/1  
Colour dry: 10YR2/1  
Structure type: Granular  
Structure size: Very fine/ thick  
Mottles: No  
Root presence: Abundant  
pH soil: 6.2  
Carbonate reaction: No detectable visible

**Profile description B-Horizon(31-53cm)**

Colour moist: 10YR3/1  
Colour dry: 10YR2/1  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles: No  
Root presence: Many  
pH soil: 7.32  
Carbonate reaction: No detectable visible



Not yet

**WBR Soil Classification:** Leptic Cambisols (Humic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F04Salemne031**

**Lab #: 83-85**

**Location:** Ha- Salemane, Mohales'hoek

**Surface and climate characteristics**

Surfacerock: Yes  
Coarse fragments: Common  
Slopeclass: Moderately slopy  
Flooding: No  
surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Abandoned cropland  
Landcover: Barrenland  
Date of sampling: 09/10/ 2018

**Profile description A-Horizon 0-11cm()**

Colour moist: 10YR 5/4  
Colourdry: 7.5YR 3/4  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles: Yes  
Mottle type: Depletion  
Rootpresence: Few  
pHsoil: 6.73  
Carbonate reaction: No detectable visible

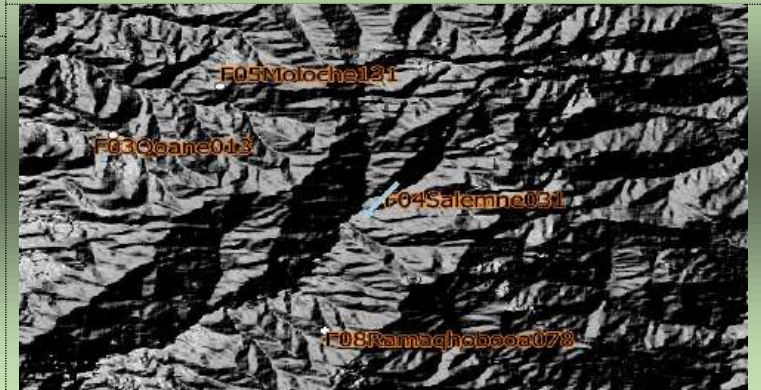


Not yet

**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha Moloche, Mohales'hoek

**Profile ID:** F05Moloche131

**Lab # :** 13-15

**Surface and climate characteristics**

Surfacerock:Yes  
coarse fragments: Abundant  
Slopeclass:Strongly slopy  
Flooding: No  
Surface seal:No  
surface cracks:No  
Surface-drainage:Moderately drained  
Soil temptrue:Mesic  
Landuse:Cropland  
Crop:Sorghum  
Landcover: Rainfed agriculture  
Date of sampling: 09/10/ 2018

**Profile description A-Horizon (0-21cm)**

Colour moist:10YR 4/4  
Colour dry:7.5YR 2.5/3  
Structure type:granular  
Structure size:medium  
Mottles:No  
Rootpresence:few  
pHsoil:7.65  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (21-41cm)**

Colour moist:None  
Colour dry:10YR 2/2  
Structure type:granular  
Structure size:coarset  
Mottles:None  
Rootpresence:few  
pHsoil:7.67  
Carbonate reaction: No detectable visible

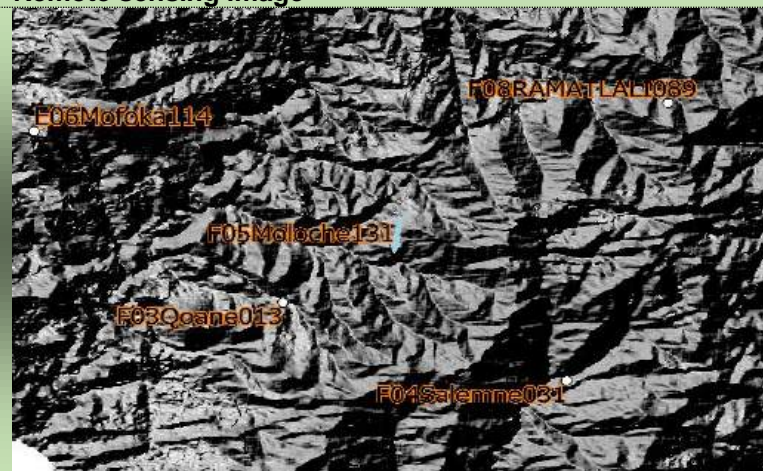


Not yet

**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F08Matebeleng196**

**Location:** Matebeleng, Mohales'hoek

**Lab #:** 164-165

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass:Gentle slopy  
Flooding:No  
Surface seal:No  
surface cracks:No  
Surface-drainage:Strongly drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop: Abandoned  
Landcover: Rainfed agriculture  
Date of sampling: 28/09/ 2018

**Profile description A-Horizon ( 0-42cm)**

Colour moist:10YR7/4  
Colour dry:10YR6/3  
Structure type: sgrain  
Structure size:vfinet  
Mottles:No  
Rootpresence: many  
pHsoil:8.27  
Carbonate reaction: No detectable visible

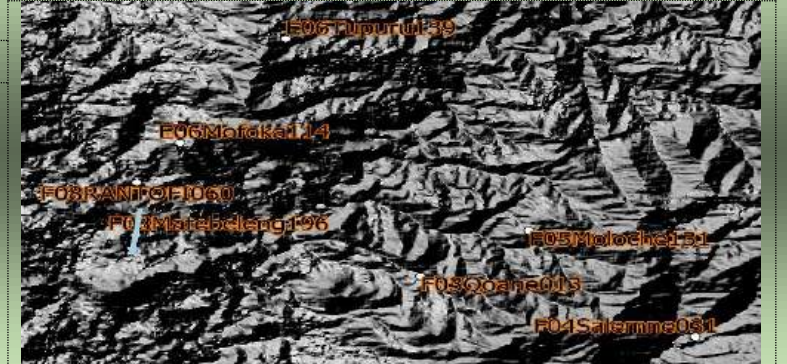


Not yet

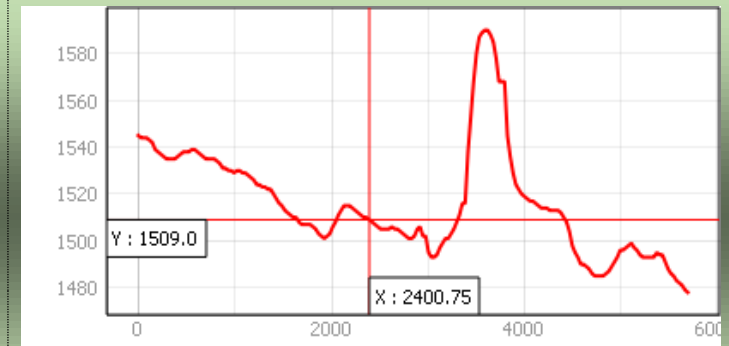
**WBR Soil Classification:** Leptic Fluvisols (Arenic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F08Ramaqhobooa078**

**Location:** Ha Ramaqhobooa, Mhales'hoek

**LAB #:** 33-34

**Surface and climate characteristics**

Surfacerock: Yes  
coarse fragments: many  
Slopeclass: Slopy  
Flooding: Yes  
Erosion type: Rill  
surface seal: No  
surface cracks: No  
Surface-drainage: Well drained  
Soil tempreture: Mesic  
Landuse: range  
Crop: None  
Landcover: grassland  
Date of sampling: 10/10/ 2018

**Profile description A-Horizon (0-10cm)**

Colour moist: 7.5YR3/4  
Colour dry: 7.5YR2.5/2  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles: No  
Mottle type: None  
Rootpresence: Many  
pHsoil: 6.7  
Carbonate reaction: No detectable visible

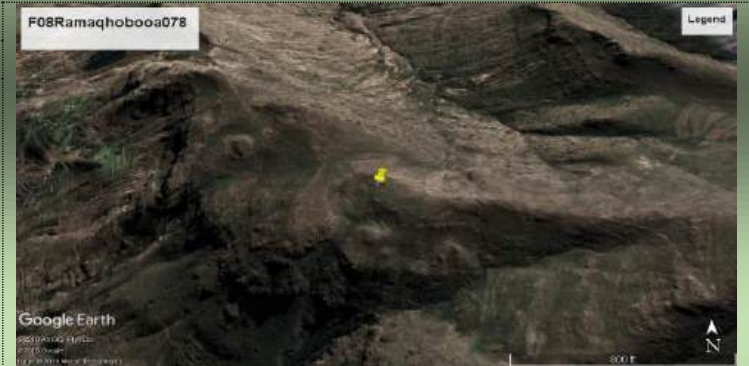
**Profile description B-Horizon (10-32cm)**

Colour moist: 5YR3/2  
Colour dry: 5YR2.5/2  
Structure type: crumby  
Structure size: Medium  
Mottles: No  
Rootpresence: Common  
pHsoil: 7.33  
Carbonate reaction: No detectable visible

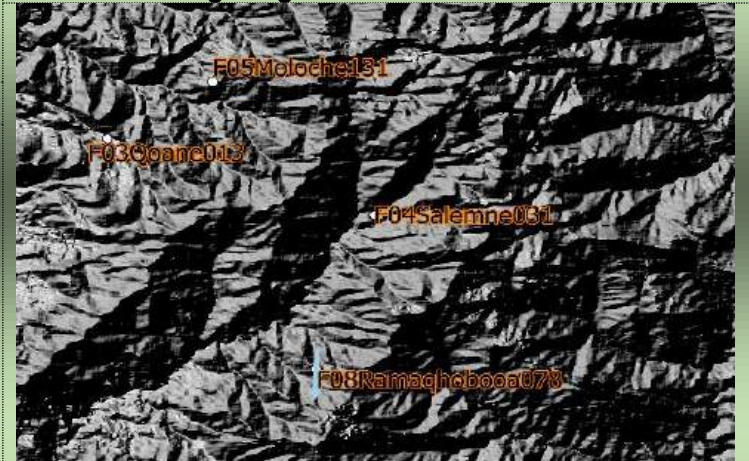


**NOT YET**

**WBR Soil Classification:** Rhodic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F08RAMATLALI089**

**Location:** Ha Ramatlali, Mohales'hoek

**Lab #:** 26-28

**Surface and climate characteristics**

Surfacerock:Yes  
coarse fragments: Many  
Slopeclass:Steep  
Flooding:No  
Erosion type:Sheet  
surface seal:No  
surface cracks:No  
Other surface-drainage:Well drained  
Soil tempture:Mesic  
Landuse:range  
Crop:None  
Landcover:shrubland  
Date of sampling: 10/10/ 2018

**Profile description A-Horizon (0-6cm)**

Colour moist:10YR3/1  
Colour dry:10YR2/1  
Structure type:granular  
Structure size:medium  
Mottles:No  
Rootpresence:Common  
pHsoil:7.28  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (6-29cm)**

Colour moist:10yr 3/2 very dark grayish brown  
Colour dry:10yr 2/2 very dark brown  
Structure type:Granular  
Structure size:medium  
Mottles:No  
Rootpresence:few  
pHsoil:7.42  
Carbonate reaction:No detectable visible



Not yet

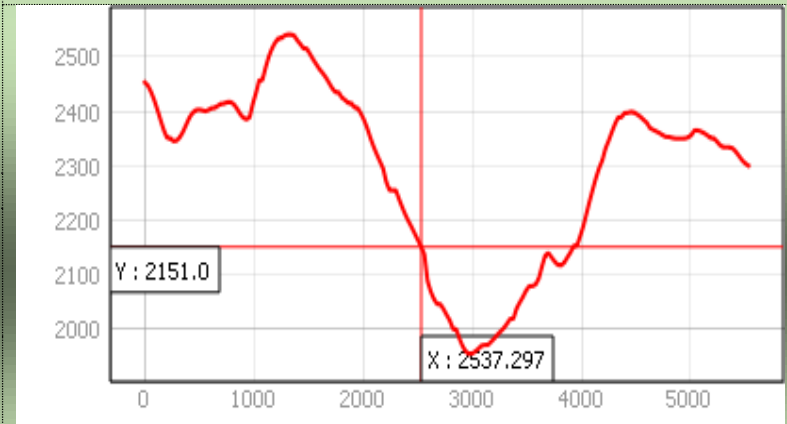
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: F08RANTOFI060**

**Location:** Ha Rantofi, Mohales'hoek

**Lab #:** 144-147

**Surface and climate characteristics**

Surfacerock:Yes  
Coarse fragments:very few  
Slopeclass:gente slopy  
Flooding:No  
surface seal:Yes  
surface cracks:No  
Surface-drainage:Imperfectly drained  
Soil tempture:Mesic  
Landuse:range  
Crop:Maize  
Landcover:grassland  
Date of sampling: 28/09/ 2018

**Profile description A-Horizon (0-34cm)**

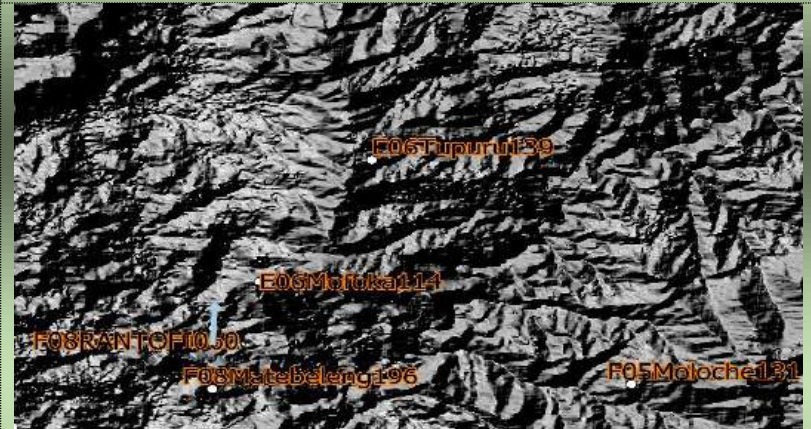
Colour moist:10YR5/6  
Colour dry:10YR4/4  
Structure type: sub- angular blocky  
Structure size: Very fine/ thin  
Mottles:No  
Rootpresence:few  
pHsoil: 7.17  
Carbonreact: No detectable visible

**Profile description B-Horizon (34-105cm)**

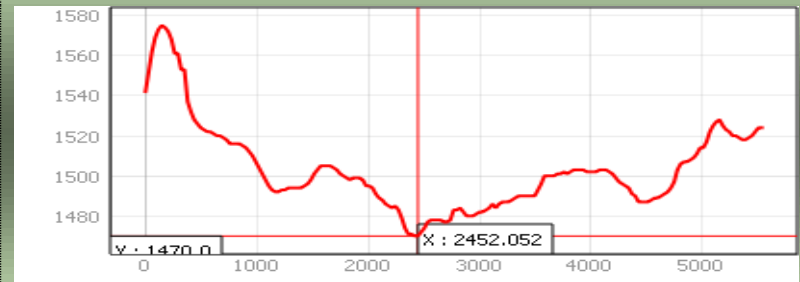
Colour moist:5YR4/4,5Y,5YR3/3,10YR5/6  
Colour dry:5YR3/3 ,5Y4/1,5YR3/4,10YR5/8  
Structure type: Angular blocky,prismatic  
Structure size:medium,coarse/thick,very coarse/thick  
Mottles:No,Yes  
Mottle type: Nodules  
Rootpresence: Few,none  
pHsoil:8.0  
Carbonate reaction: No detectable visible



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Not yet

**WBR Soil Classification:** Abruptic Lixisols

**Profile ID: F08Taung022**

**Lab #: 170-173**

**Location:** Taung, Mohales'hoek

**Surface and climate characteristics**

Surfacerock:No  
Slope class:Gentle slopy  
Flooding:No  
surface seal:No  
surface cracks:No  
Surface-drainage:Imperfectly drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop:Maize  
Landcover:barrenland  
Date of sampling: 28/09/2018

**Profile description A-Horizon(0-64cm)**

Colour moist:10yr6/2  
Colour dry:10yr5/3  
Structure type:Granular  
Structure size: Very fine/ thick  
Mottles:No; Rootpresence:Common  
pHsoil:7.75  
Carbonate reaction: No detectable visibl

**Profile description B-Horizon (64-153cm)**

Colour moist:10yr7/4 ,2.5y6/6,10yr7/4  
Colour dry:10yr6/2,2.5y6/6,10yr5/4  
Structure type:prismatic  
Structure size:vcoarset,coarset  
Mottles:Yes  
Mottle type: concentrations  
Rootpresence: none,few  
pHsoil:8.02  
Carbonate reaction: No detectable visible

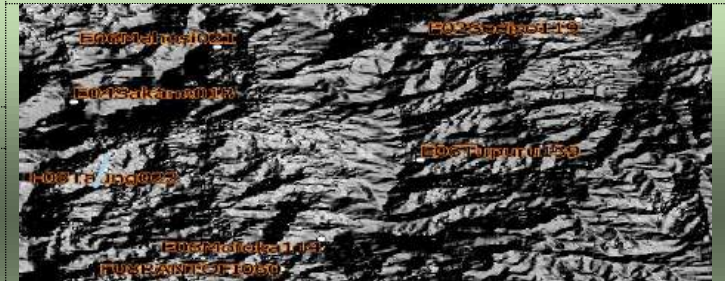


Not yet

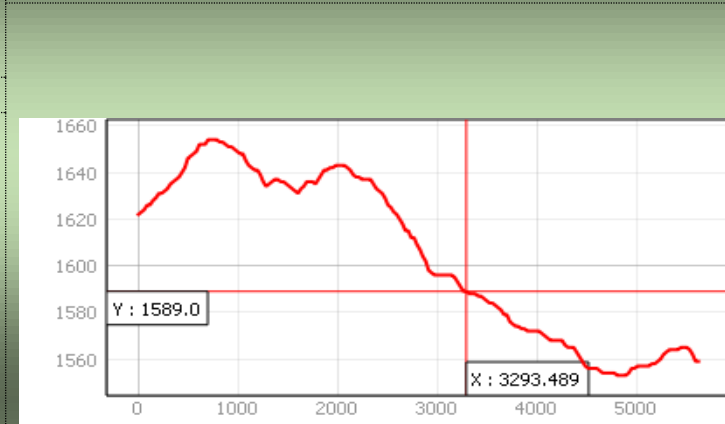
**WBR Soil Classification:** Ferralic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: FO6MAKOE159**

**Location:** Ha Makoe, Maseru

**Lab #:** 106

**Surface and climate characteristics**

Surfacerock:Yes  
coarse fragments:Abundant  
Slopeclass:Steep  
Flooding:No  
Erosion type:sheet  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Strongly drained  
Soil tempture:Mesic  
Landuse:range  
Crop:None  
Landcover:shrubland  
Date of sampling: 28/09/2018

**Profile description A-Horizon (0-26cm,)**

Colour moist:10YR5/3  
Colour dry:10YR3/2  
Structure type:Granular  
Structure size: Very fine/ thin  
Mottles:No  
Rootpresence: Common  
pHsoil: 7.15  
Carbonate reaction:No detectable visible



Not yet

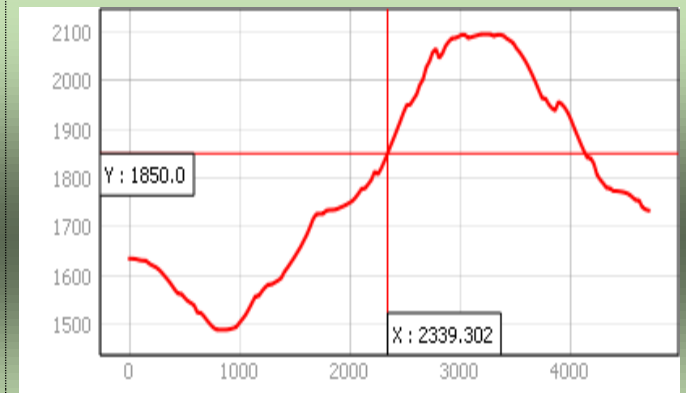
**WBR Soil Classification:**Skeletal Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Taung, Mohaleshoek



Not yet

WBR Soil Classification: Abruptic Luvisols

Profile ID: F08Taung041

Lab #: 166-168

**Surface and climate characteristics**

Surfacerock:  
Coarse fragments:  
Slope class: Gentle sloping  
Flooding: No  
Erosion type: sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Imperfectly drained  
Soil tempature: Mesic  
Landuse: Cropland  
Crop: Maize  
Land cover: Rainfed agriculture  
Sampling date: 28/9/2018

**Profile description A-Horizon (0-59cm)**

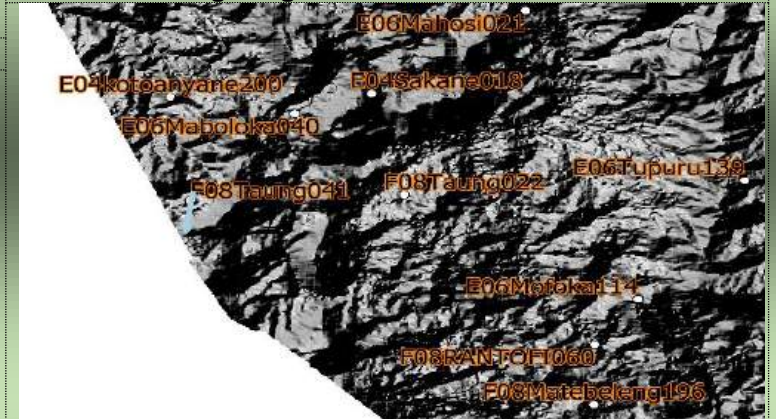
Colour moist: 10yr5/4 yellowish brown, 10yr7/3 very pale brown  
Colour dry: 10yr 3¼ , 10yr6/4  
Structure type: Granular  
Structure size: Medium, very fine/thin,  
Mottles: No, Yes  
Mottle type: Concretions  
Root presence: Few  
pHsoil: 7.59  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (59-153cm)**

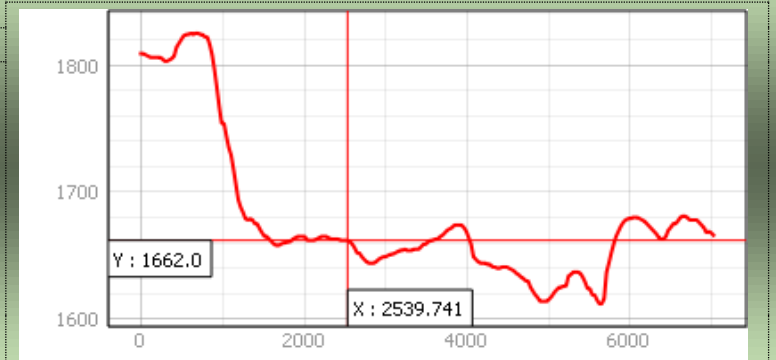
Colour moist: 10yr7/4 , 2.5y6/6  
Colour dry: 10yr6/2, 2.5y6/6, 10yr5/4  
Structure type: Prismatic  
Structure size: Very coarse /thick  
Mottles: Yes  
Mottle type: Concentrations  
Root presence: None  
pHsoil: 8.02  
Carbonate reaction: No detectable visible



**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

Location: Ha- Lenyatsa,Quthing

Profile ID: G01Lenyatsa167

Lab #: 189-191

### Surface and climate characteristics

Surfacerock:No  
coarse fragments:Common  
Slopeclass: Moderately slopy  
Flooding:No  
Erosion type:Rill  
Surface seal:No  
Surface cracks:No  
Surface-drainage: Well drained  
Soil tempture:Mesic  
Landuse: range  
Crop:None  
Landcover: Shrubland  
Date of sampling: 28/09/ 2018

### Profile description A-Horizon (0-47cm)

Colour moist:10YR3/1  
Colour dry:10YR2/1  
Structure type:Granular  
Structure size: Very fine/ thin  
Mottles: No  
Root presence:Many  
pHsoil:8.62  
Carbonate reaction: No detectable visible

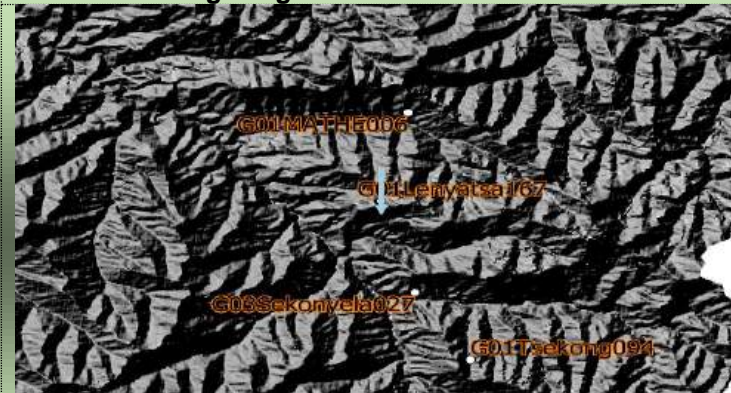


Not yet

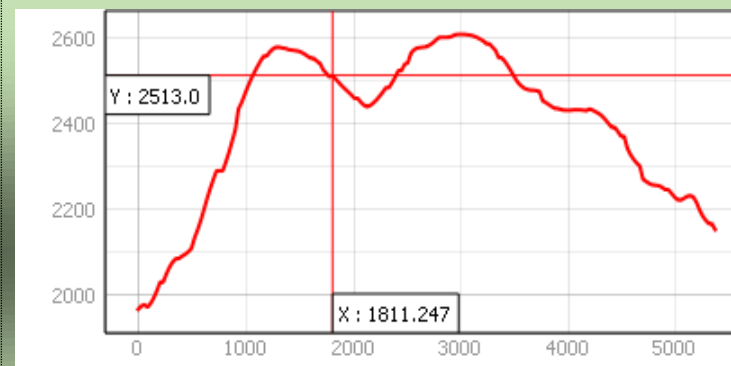
WBR Soil Classification: Skeletic Leptic Cambisols



### Remote sensing image



### Relief Hill-shade



Soil profile location in the landscape

**Profile ID: G01MATHE006**

**Lab #: 177-179**

**Location:** Ha Mathe, Quthing

**Surface and climate characteristics**

Surfacerock: No  
Slopeclass: moderate slopy  
Flooding: No  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: range  
Crop: None  
Landcover: shrubland  
Date of sampling: 28/09/ 2018

**Profile description A-Horizon (0-11cm)**

Colour moist: 10YR3/1  
Colour dry: 10YR2/1  
Structure type: Crumby  
Structure size: Medium  
Mottles: None  
Rootpresence: Many  
pHsoil: 8.44  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (11-59cm)**

Colour moist: 10YR3/1  
Colour dry: 10YR2/1  
Structure type: Sub- angular blocky  
Structure size: Coarse/thick  
Mottles: Yes  
Mottle type: Depletion, Concentrations  
Rootpresence: Common  
pHsoil: 8.01  
Carbonate reaction: No detectable visible

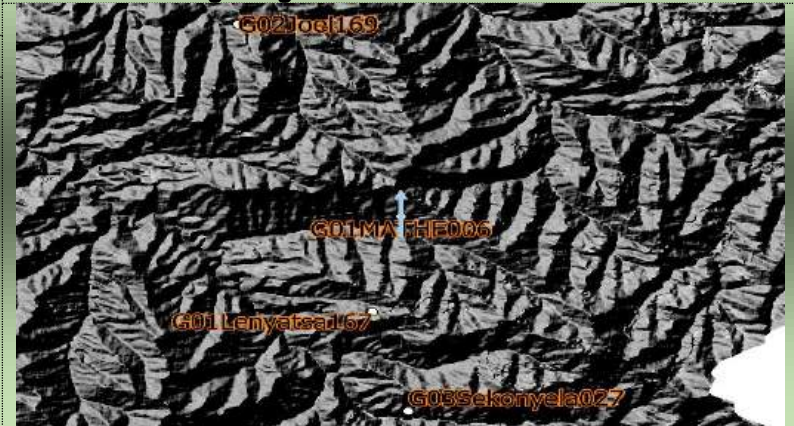


Not yet

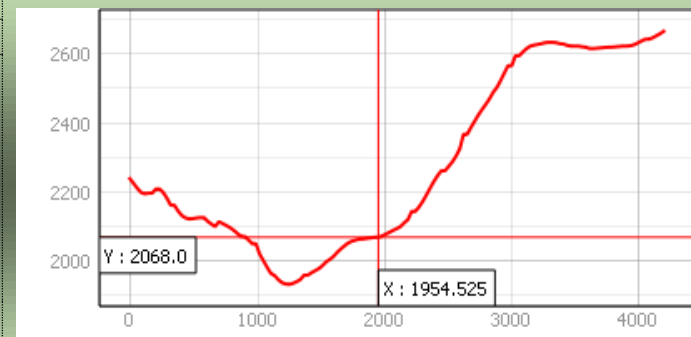
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: G01Tsekong094**

**Location:** Tsekong, Quthing

**Lab # :** 197

**Surface and climate characteristics**

Surfacerock:Yes  
coarse fragments:Abundant  
Slopeclass:Steep  
Flooding:No  
Erosion type:Rill  
Surface seal:No  
Surface cracks:No  
Surface drainage:Slowly drained  
Soil tempture:me  
Landuse:range  
Crop:Rangeland grasses  
Landcover:shrubland  
Date of sampling: 28/09/ 2018

**Profile description A-Horizon (0-10cm)**

Colour moist: 10YR3/1  
Colour dry: 10YR2/1  
Structure type: Crumby  
Structure size:Very fine/thin  
Mottles: No  
Rootpresence: Many  
pHsoil: 7.93  
Carbonate reaction: No detectable visible

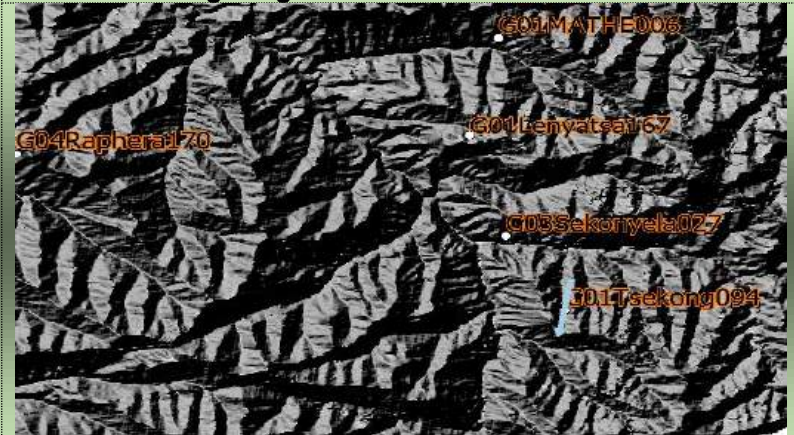


Popa Rocklands

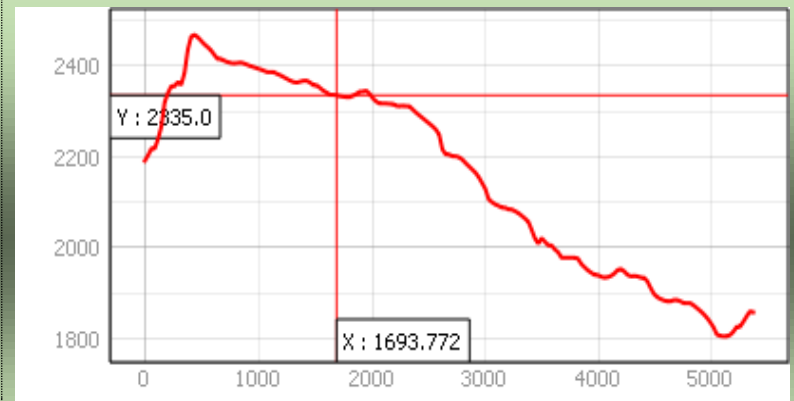
**WBR Soil Classification:** Skeletic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Profile ID: G02Joel169

Location: Ha Joelle, Quthing

Lab #: 180-181

**Surface and climate characteristics**

Surfacerock: Yes  
coarse fragments: Abundant  
Slopeclass: steep  
Flooding: No  
Erosion type: Rill  
surface seal: No  
surface cracks: No  
Surface-drainage: Moderately drained  
Soil tempture: Mesic  
Landuse: Range  
Crop: Grasses  
Landcover: Grassland  
Date of sampling: 28/09/ 2018

**Profile description A-Horizon (0-31cm)**

Colour moist: None  
Colour dry: 10YR2/2  
Structure type: Granular  
Structure size: Very fine/thin  
Mottles: No  
Rootpresence: Abundant  
pHsoil: 7.46  
Carbonate reaction: No detectable visible



Popa

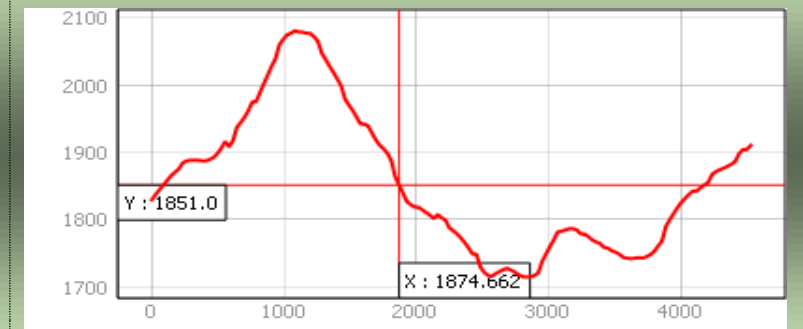
WBR Soil Classification: Skeletic Leptic Cambisols



Remote sensing image



Relief Hill-shade



Soil profile location in the landscape

**Profile ID: G03Masenkane028**

**Lab #: 185-188**

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass:strongly sloping  
Flooding:No  
surface seal:No  
surface cracks:No  
Surface-drainage:Well drained  
Soil tempture:Mesic  
Landuse:cropland  
Crop:Maize  
Landcover: rainfed agriculture  
Date of sampling: 28/09/2018

**Profile description A-Horizon(0-32cm)**

Colour moist:10YR4/1  
Colour dry:10YR2/2  
Structure type:Granular  
Structure size: Very fine/ thin  
Mottles:No  
Rootpresence:common  
pHsoil:8.11  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (32-150cm)**

Colour moist:10YR7/1,10YR3/4  
Colour dry:10YR4/1,10YR2/2  
Structure type: Single grain ,granular, Sub-angular blocky  
Structure size:Medium, Very fine/ thin  
Mottles: No  
Rootpresence: None ,common  
pHsoil:8  
Carbonate reaction :No detectable visible

**Location:** Ha Masenkane,Quthing



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**WBR Soil Classification:** Skeletic Fluvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: G03Raseeng056**

**Location:** Ha Raseeng, Quthing

**Lab #:** 214

**Surface and climate characteristics**

Surfacerock: Yes  
Coarse fragments: dominant  
Slopeclass: Strongly sloping  
Flooding: No  
Erosion type: Yes  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Very Poorly drained  
Soil tempreture: Frigid  
Landuse: Rangeland  
Crop: None  
Landcover: grassland  
Date of sampling: 28/09/2018

**Profile description A-Horizon (0-21cm)**

Colour moist: 10YR4/3  
Colour dry: 10YR3/2  
Structure type: Crumby  
Structure size: Very fine/ thin  
Mottles: No  
Rootpresence: Many  
pHsoil: 8.6  
Carbonate reaction: No detectable visible

**Profile description B-Horizon(21-38cm)**

Colour dry: None (rock)  
Structure type: Sub-Angular blocky  
Structure size: Extremely coarse  
Mottles: No  
Rootpresence: none  
pHsoil: 0  
Carbonate reaction: No detectable visible

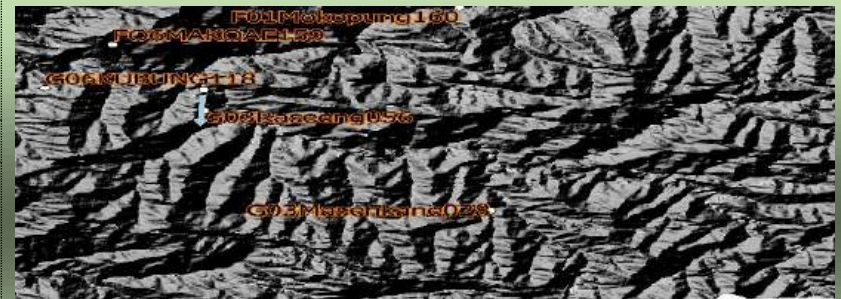


Popa Rockland

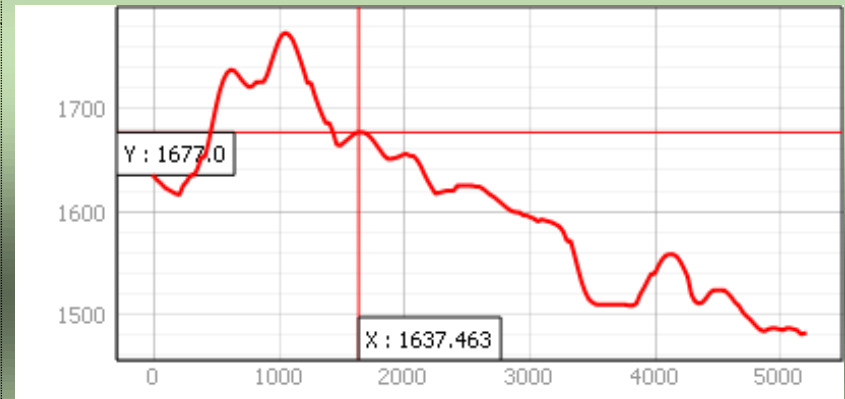
**WBR Soil Classification:** Skeletic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: G03Sekonyela027**

**Location:** Ha Sekonyela, Quthing

**Lab #:** 174-176

**Surface and climate characteristics**

Surfacerock: No  
coarse fragments: Common  
Slopeclass: Moderate sloping  
Flooding: No  
Erosion type: Rill  
surface seal: No  
surface cracks: No  
Surface-drainage: Poorly drained  
Soil tempture: Mesic  
Landuse: Range  
Crop: None  
Landcover: Grassland  
Date of sampling: 28/09/ 2018

**Profile description A-Horizon(0-33cm)**

Colour moist: 10YR5/1  
Colour dry: 10YR3/1  
Structure type: Granular  
Structure size: Very fine/ thin  
Mottles: No  
Root presence: abundant  
pHsoil: 8.34  
Carbonate reaction: No detectable visible



Matsana Series

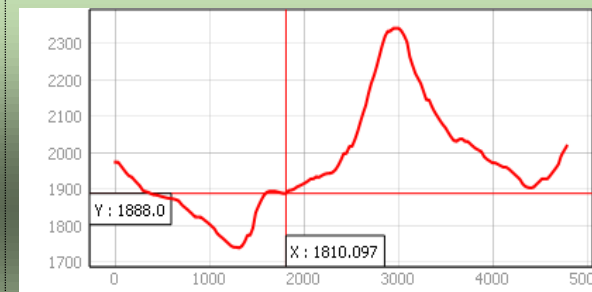
**WBR Soil Classification:** Skeltic Cambic Phaeozems



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: G04FTC117**

**Location:** FTC, Quthing

**Lab #:** 198-200



**Surface and climate characteristics**

Surfacerock:No  
Slopeclass: Gentle sloping  
Flooding: No  
Surface seal: No  
Surface cracks:No  
Surface-drainage:Well drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop:Rangeland  
Landcover:grassland  
Date of sampling: 28/09/2018

**Profile description A-Horizon ( 0-23cm)**

Colour moist:None  
Colour dry:7.5YR3/3  
Structure type:granular  
Structure size: Very fine/ thin  
Mottles: No  
Rootpresence:common  
pHsoil: 6.42  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (23-56cm)**

Colour moist:None  
Colour dry:5YR3/4,5YR3/3  
Structure type:crumbly  
Structure size: Medium  
Mottles:None  
Rootpresence:few  
pHsoil:6.56  
Carbonate reaction: No detectable visible

**Not yet**

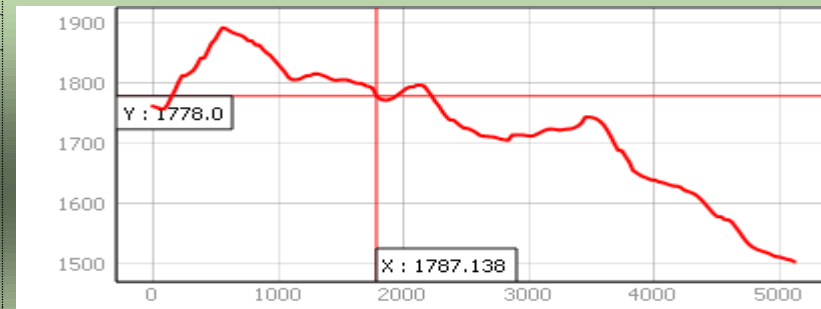
**WBR Soil Classification:** Fluvic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: G04Khohlong164**

**Location:** Khohlong, Quthing

**Lab #:** 192-195

**Surface and climate characteristics**

Surfacerock: Yes  
coarse fragments: abundant  
Slopeclass: steep  
Flooding: No  
Surface seal: No  
Surface cracks: No  
Surface drainage: Strongly drained  
Soil tempture: Mesic  
Landuse: range  
Crop: Grasses  
Landcover: shrubland  
Date of sampling: 28/09/2018

**Profile description A-Horizon( 0-37cm)**

Colour moist: 10YR3/2  
Colour dry: 10YR2/2  
Structure type: Granular  
Structure size: medium  
Mottles: No  
Rootpresence: Many  
pHsoil: 6.94  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (37-150cm)**

Colour moist: None  
Colour dry: 10YR2/1, 10YR2/2  
Structure type: Granular, crumby  
Structure size: Medium, vfinet  
Mottles: None  
Rootpresence: few, common  
pHsoil: 7.02  
Carbonate reaction: No detectable visible

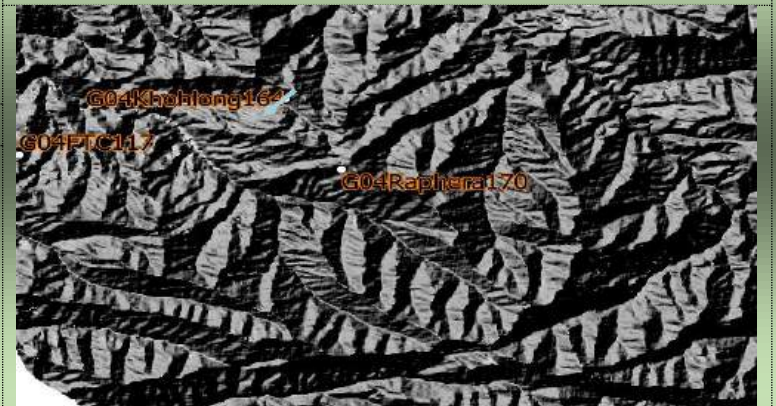


Not yet

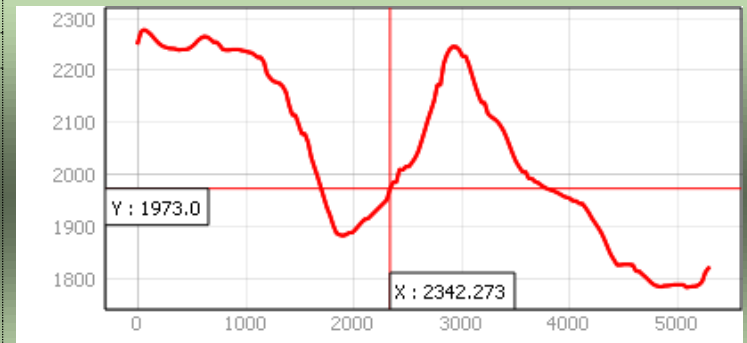
**WBR Soil Classification:** Skeletic Fluvic Phaeozeems



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: G04Raphera170**

**Location:** Ha Raphera, Quthing

**LaB #:** 182-184

**Surface and climate characteristics**

Surfacerock: Yes  
coarse fragments: common  
Slopeclass: Steep  
Flooding: No  
Erosion type: Sheet  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Slowly drained  
Soil temputre: Mesic  
Landuse: rangeland  
Crop: Rangeland grasses  
Landcover: grassland  
Date of sampling: 28/09/2018

**Profile description A-Horizon (0-50cm)**

Colour moist: 10YR3/1  
Colour dry: 10YR2/1  
Structure type: granular  
Structure size: medium  
Mottles: None  
Rootpresence: abundant  
pHsoil: 7.72  
Carbonate reaction: No detectable visible



**NOT YET**

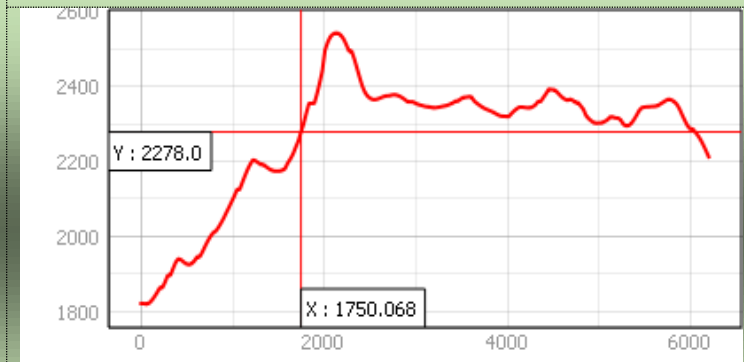
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: G06KUBUNG118**

**Location:** Kubung, Quthing

**Lab #:** 196

**Surface and climate characteristics**

Surfacerock: Yes  
Slopeclass: Very gentle slopy  
Flooding: No  
Surface seal: Yes  
Surface cracks: No  
Surface-drainage: Imperfectlydrained  
Soil tempture: Mesic  
Landuse: not used  
Crop: Maize or Soghurm  
Landcover: Rainfed agriculture  
Date of sampling: 28/09/2018

**Profile description A-Horizon (0-21cm)**

Colour moist: 5YR4/3  
Colour dry: 5YR3/3  
Structure type: crumby  
Structure size: Very fine/thin  
Mottles: None  
Rootpresence: Many  
pHsoil: 8.13  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (21-30cm)**

Colour moist: None  
Colour dry: None  
Structure type: Masive  
Structure size: Extremely coarse  
Mottles: No  
Rootpresence: None  
pHsoil: 0  
Carbonate reaction: No detectable visible

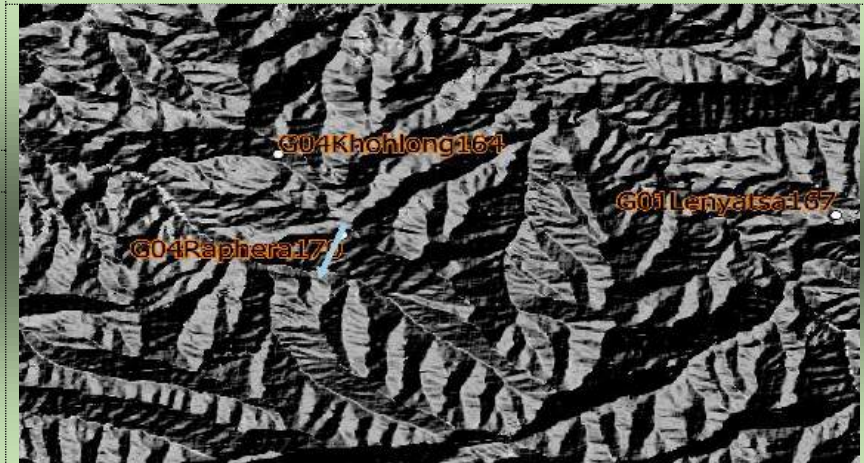


Not yet

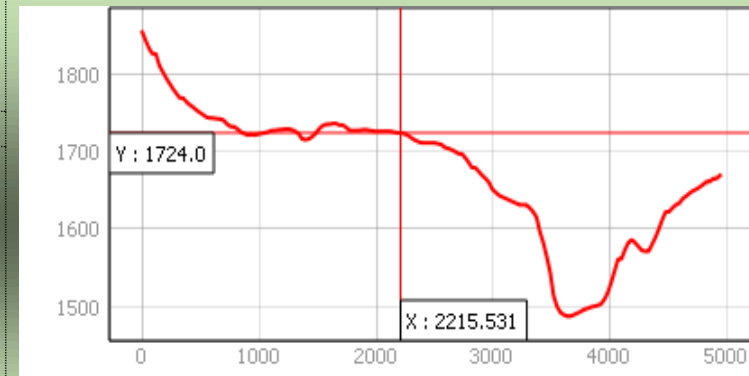
**WBR Soil Classification: Skeletic Leptosols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: GO3MOELING059**

**Location:** Moeling, Quthing

**Lab #:** 215

**Surface and climate characteristics**

Surfacerock: Yes  
Coarse fragments: Many  
Slopeclass: Slopy  
Flooding: No  
Erosion type: Yes  
surface seal: Yes  
surface cracks: Yes  
Surface-drainage: Very Poorly drained  
Soil tempture: Mesic  
Landuse: Rangeland  
Crop: None  
Landcover: grassland  
Date of sampling: 28/09/2018

**Profile description A-Horizon (0-5cm)**

Colour moist: 5YR3/4  
Colour dry: 5YR3/3  
Structure type: crumby  
Structure size: vfinet  
Mottles: None  
Rootpresence: few  
pHsoil: 7.8  
Carbonate reaction: No detectable visible

**Profile description B-Horizon (5-48cm)**

Colour moist: None  
Colour dry: None  
Structure type: Masive  
Structure size: Extremely coarse  
Mottles: No  
Rootpresence: none  
pHsoil: 9.0  
Carbonate reaction: No detectable visible



Not yet

**WBR Soil Classification:** Lithic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: H01Leropong239**

**Location:** Leropong,qachas'nek

**Lab #:** 240-243

**Surface and climate characteristics**

Surfacerock:No  
Slopeclass: Slopy  
Flooding:No  
Erosion type: Sheet  
Surface seal:No  
Surface cracks:No  
Surface-drainage:Imperfectly drained  
Soil tempture:Mesic  
Landuse:mixed  
Crop:Wheat  
Landcover: Rainfed agriculture  
Date of sampling: 18/11/2018

**Profile description A-Horizon (0-35cm)**

Colour moist: 5/4 10YR yellowish brown, 4/6 10YR dark yellowish brown  
Colour dry: 3/4 10YR dark yellowish brown,3/3 10YR dark brown  
Structure type: crumby  
Structure size: Very fine/thin  
Mottles:0  
Mottle type:  
Root presence: many  
pHsoil: 6.01  
Carbonate reaction: No detectable visible

**Profile description B-Horizon(35-129 cm)**

Colour moist: 4/4 7.5YR strong brown  
Colour dry: 4/6 7.5YR strong brown  
Structure type: Angular blocky  
Structure size: Coarse/thick  
Mottles: Yes  
Mottle type:Nodules  
Root presence: Few  
pHsoil: 6.86  
Carbonate reaction:No detectable visible

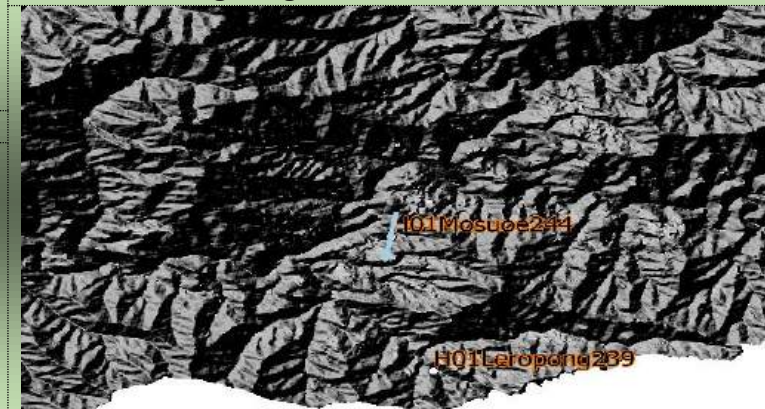


Not yet

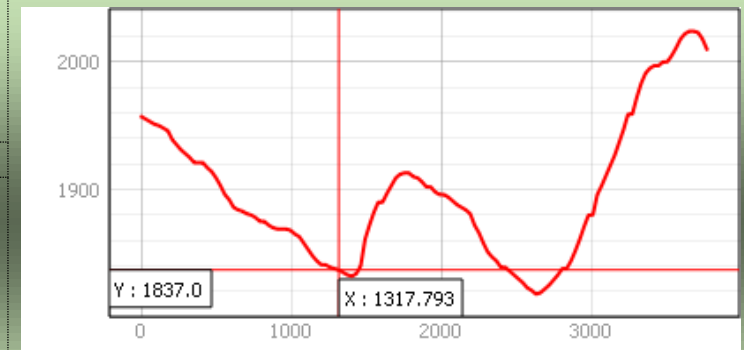
**WBR Soil Classification: Albic Luvisols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: H01Mapakising241**

**Location:** Mapakiseng, Qachas'nek

**Lab #:** 220-223



**Surface and climate characteristics**

Surfacerock: No  
Coarse fragments: Many  
Slopeclass: Gentle slopy  
Flooding: No  
Erosion type: None  
Surface seal: No  
Surface cracks: No  
Surface-drainage: Moderately drained  
Soil tempture: Mesic  
Landuse: Cropland  
Crop: Beans  
Landcover: Rainfed agriculture  
Date of sampling: 19/11/2018

**Profile description A-Horizon (0-17cm)**

Colour moist: 10YR3/2, 10YR4/3  
Colour dry: 10YR3/2  
Structure type: Crumby  
Structure size: Very fine/thin  
Mottles: Yes  
Mottle type: Nodules  
Rootpresence: Many  
pHsoil: 6.74  
Carbonate reaction : No detectable visible

**Profile description B-Horizon (17-122cm)**

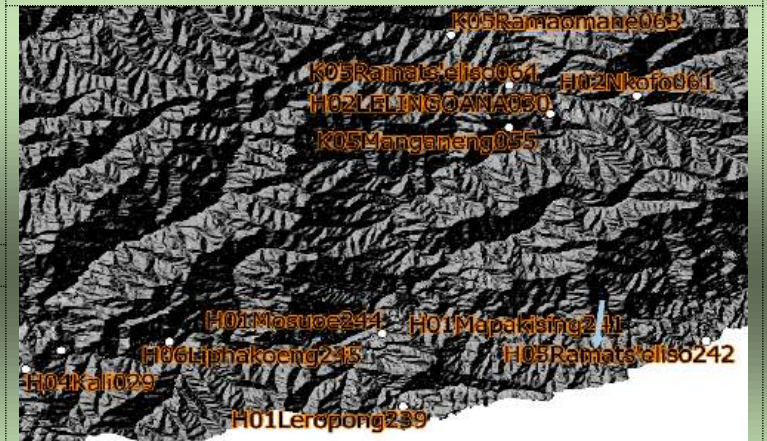
Colour moist: 2.5YR4/6, 10YR3/2  
Colour dry: 5YR3/4, 10YR2/2, 7.5YR2.5/2  
Structure type: Crumby, Sub- angular blocky  
Structure size: Medium  
Mottles: No, Yes  
Mottle type: Nodules  
Rootpresence: none, many;  
pHsoil: 6.13  
Carbonate reaction: No detectable visible

Not yet

**WBR Soil Classification:** Skeletic  
Manganiferic Luvisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: H01Mosuo244**

**Lab #: 224-227**

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: Very few  
Slope Class: Sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 19/11/2018

**Profile description A-Horizon (0-17cm)**

Colour moist: 7.5YR4/3, 7.5YR5/3  
Colour dry: 7.5YR3/3  
Structure type: Crumby  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Common, Abundant  
pH: 6.63  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (17-121cm)**

Colour moist: 5YR4/3, 5YR6/3, 7.5YR2.5/3  
Colour dry: 5YR3/3, 7.5YR2.5/3  
Structure type: Crumby, Sub-angular blocky  
Structure size: Medium, Very fine/ thin  
Mottles: No  
Root presence: Common, Few  
pH: 6.96  
Carbonate reaction: No detectable visible or audible effervescence

**Location: Ha-Mosuo, Qacha**

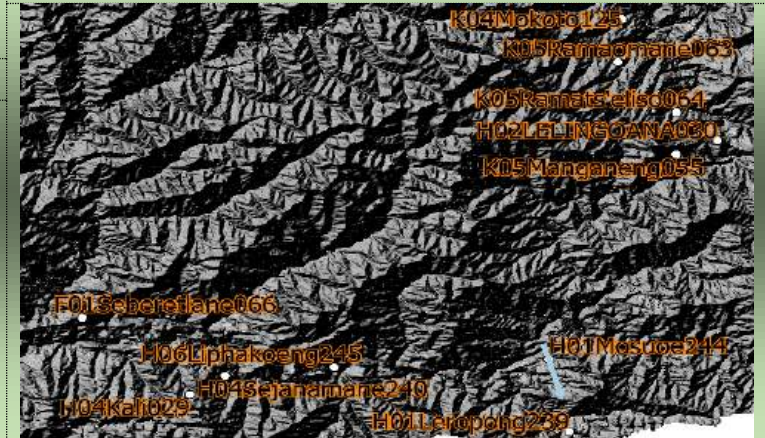


**Not yet**

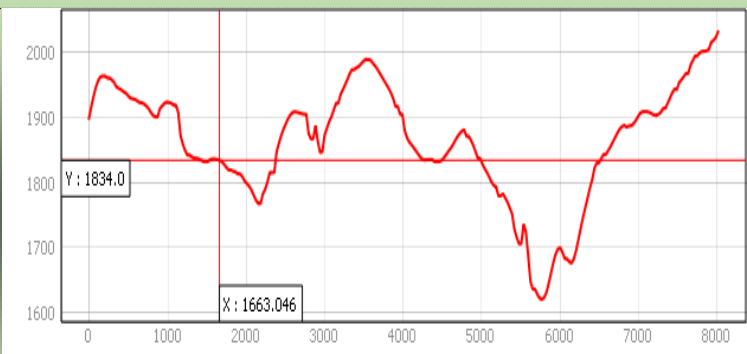
**WBR Soil Classification: Lixisols (Densic)**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: H02Lelingoana030**

**Lab #:** 253

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Dominant  
Slope Class: Moderately sloping  
Flooding: No  
Erosion types: Rill  
Surface seal: No  
Surface cracks: No  
Surface drainage: Excessively drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 18/11/2018

**Profile description A-Horizon (0-45cm)**

Colour moist: 10YR3/3  
Colour dry: 10YR2/2  
Structure type: Crumby  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Many, Common  
pH: 6.14  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Lelingoana, Qacha



Not yet

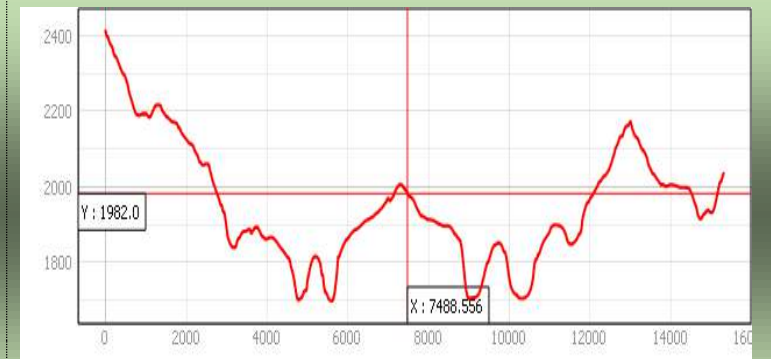
**WBR Soil Classification:** Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: H02Nkofo061**

**Lab #: 252**

**Surface and climate characteristics**

Surface rock: Yes  
Coarse fragment: Abundant  
Slope Class: Steep  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 18 2018

**Location: Ha-Nkofo, Qacha**



**Rocky soil surface with no soil profile**

**Not yet**

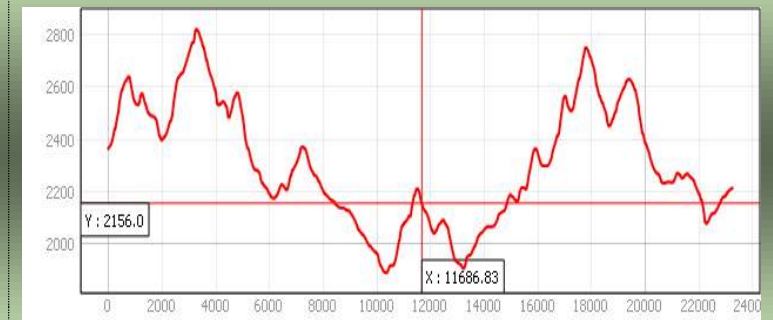
**WBR Soil Classification: Skeletic Leptosols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha-Kali, Qacha

**Profile ID: H04Kali029**

**Lab #:** 128-131

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: Very Few  
Slope Class: Strongly sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat poorly (imperfectly) drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Beans and Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 28/09/2018

**Profile description A-Horizon (0-16cm)**

Colour moist: 10YR3/2  
Colour dry: 10YR3/2  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Few  
pH: 8.85  
Carbonate reaction: No detectable visible or audible effervescence

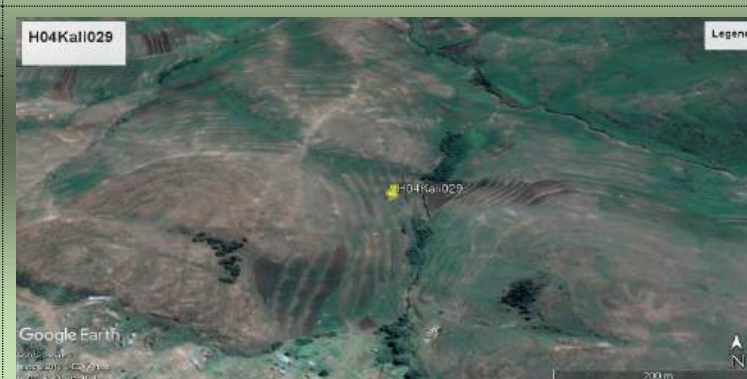
**Profile description B-Horizon (16-44cm)**

Colour moist: 10YR3/2  
Colour dry: 10YR3/2  
Structure type: Angular blocky  
Structure size: Medium  
Mottles: No  
Root presence: Few  
pH: 8.27  
Carbonate reaction: No detectable visible or audible effervescence



Nkau Series

**WBR Soil Classification:** Haplic Phaeozems (Clayic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: H04Sejanamane240**

**Lab #:** 244-247

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 18/11/2018

**Profile description A-Horizon (0-37cm)**

Colour moist: 5YR4/4  
Colour dry: 5YR3/3  
Structure type: Granular, crumby  
Structure size: Very fine/ thin  
Mottles: No  
Root presence: Few, abundant  
pH: 8.17  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (37-69cm)**

Colour moist: 5YR4/4  
Colour dry: 5YR3/3  
Structure type: Angular blocky  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Few  
pH: 8.23  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Sejanamane, Qacha



Not yet

**WBR Soil Classification:** Leptic Luvisols

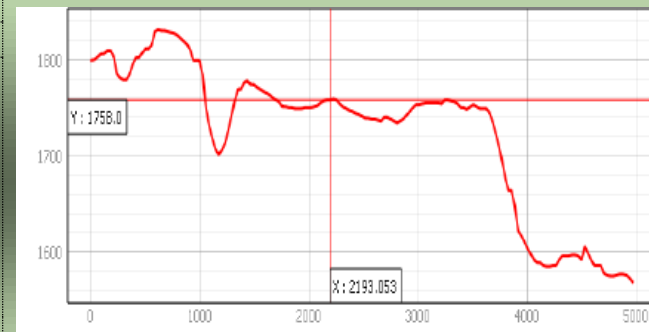
H04Sejanamane240



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

Location: Ha-Ramats'eliso, Qacha

Profile ID: H05Ramats'eliso242

Lab #: 228-251

#### Surface and climate characteristics

Surface rock: No  
Coarse Fragment: None  
Slope Class: Level  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Very poorly drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 18/11/ 2018

#### Profile description A-Horizon (0-17cm)

Colour moist: 10YR2/3  
Colour dry: 10YR2/2  
Structure type: Crumby  
Structure size: Medium  
Mottles: No  
Root presence: Abundant  
pH: 5.93  
Carbonate reaction: No detectable visible or audible effervescence

#### Profile description B-Horizon (17- 41cm)

Colour moist: 10YR2/1  
Colour dry: 10YR2/1  
Structure type: Angular blocky  
Structure size: Medium  
Mottles: No  
Root presence: Moderate  
pH: 6.7  
Carbonate reaction: No detectable visible or audible effervescence

Not yet

WBR Soil Classification: Gleyic Cambisols (Humic)

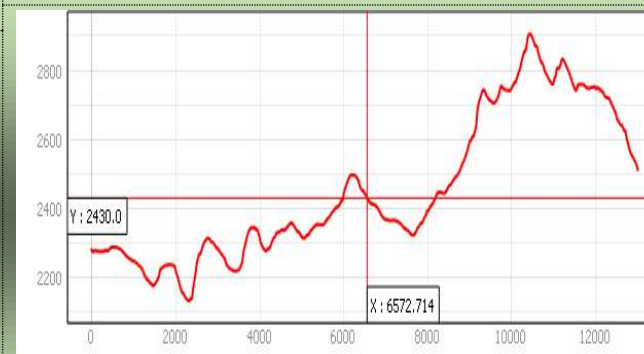
Profile ID: H05Semenyane011



#### Remote sensing image



#### Relief Hill-shade



#### Soil profile location in the landscape

Location: Ha-Semenyane, Qacha

Lab #: 236-239

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: None  
Slope Class: Strongly sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: well drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Cereals  
Land cover: Rain fed Agriculture  
Sampling Date: 19/11/2018

**Profile description A-Horizon (0-36cm)**

Colour moist: 10YR2/1  
Colour dry: 10YR2/1  
Structure type: Granular  
Structure size: Medium  
Mottles: Yes  
Mottle Type: Nodules  
Root presence: Many, Common  
pH: 6.5  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (36-150cm)**

Colour moist: 10YR3/3, 10YR2/1  
Colour dry: 10YR3/4, 10YR2/1  
Structure type: Massive, Crumby  
Structure size: **None**  
Mottles: Yes, None  
Mottle Type: Concentration  
Root presence: None, Common, Few  
pH: 5.0  
Carbonate reaction: No detectable visible or audible effervescence

Profile ID: H06Liphakoeng245



Not yet

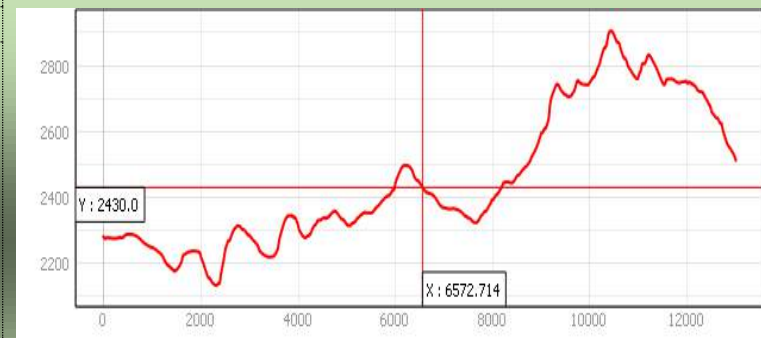
WBR Soil Classification: Skeletic Cambic Phaeozems



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha-Liphakoeng, Qacha

**Lab #:** 232-235

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Very few  
Slope Class: Nearly level  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Sorghum  
Land cover: Rain fed Agriculture  
Sampling Date: 18/11/2018

**Profile description A-Horizon (0-26cm)**

Colour moist: 10YR2/1, 10YR3/2  
Colour dry: 10YR2/1, 10YR2/2  
Structure type: Angular blocky, Crumby  
Structure size: Very coarse/ thick, Medium  
Mottles: No  
Root presence: Few  
pH: 5.63  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (26-73cm)**

Colour moist: 10YR3/2, 10YR2/1  
Colour dry: 10YR3/2, 10YR2/1  
Structure type: Angular blocky Prismatic  
Structure size: Coarse/ thick, Very coarse/ thick  
Mottles: No  
Root presence: Few  
pH: 6.07  
Carbonate reaction: No detectable visible or audible effervescence

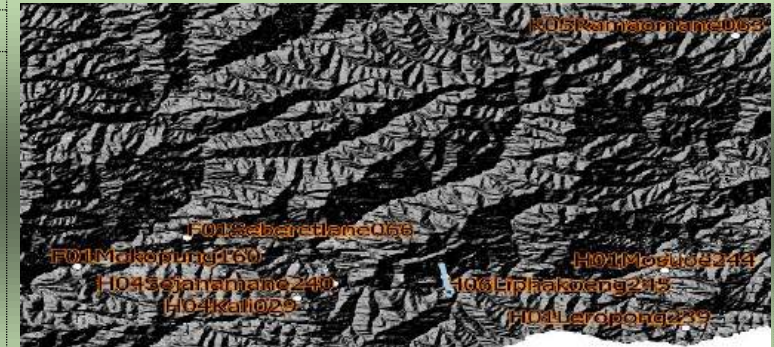
Not yet

**WBR Soil Classification:** Fluvisols (Geoabruptic, Clayic)

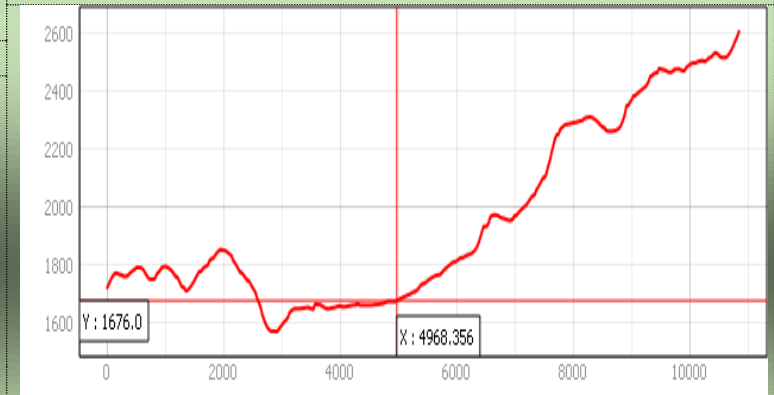
**Profile ID:** J01Taung172



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Ha-Taung, Mokhotlong

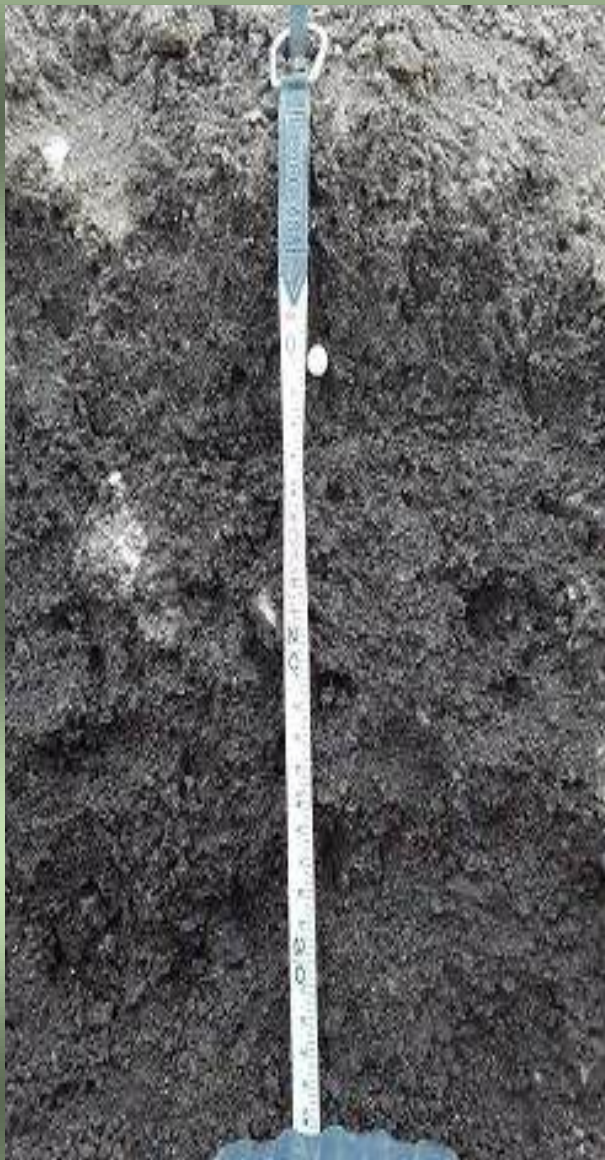
**Lab #:** 103-104

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Dominant  
Slope Class: Sloping  
Flooding: No  
Erosion types: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed agriculture  
Sampling Date: 30/10/ 2018

**Profile description A-Horizon (0-37cm)**

Colour moist: 10YR4/3  
Colour dry: 10YR2/2  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Few  
pH: 6.2;  
Carbonate reaction: No detectable visible or audible effervescence



Popa Series

**WBR Soil Classification:** Skeletic Leptic Cambisols

**Profile ID:** J02Lisaleng182

**Lab #:** 91

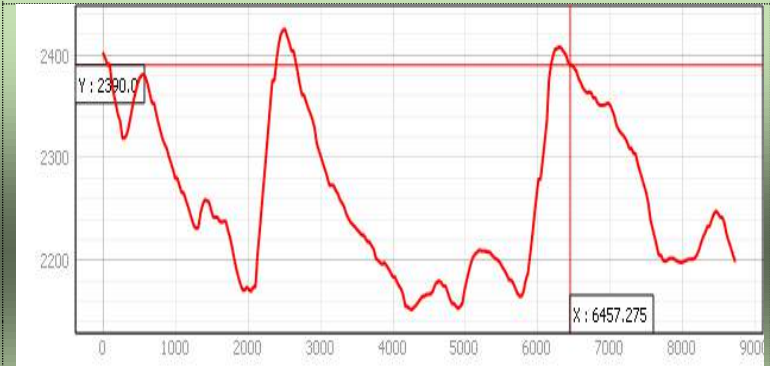
**Location:** Ha-Lisaleng, Mokhotlong



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**





**Surface and climate characteristics**

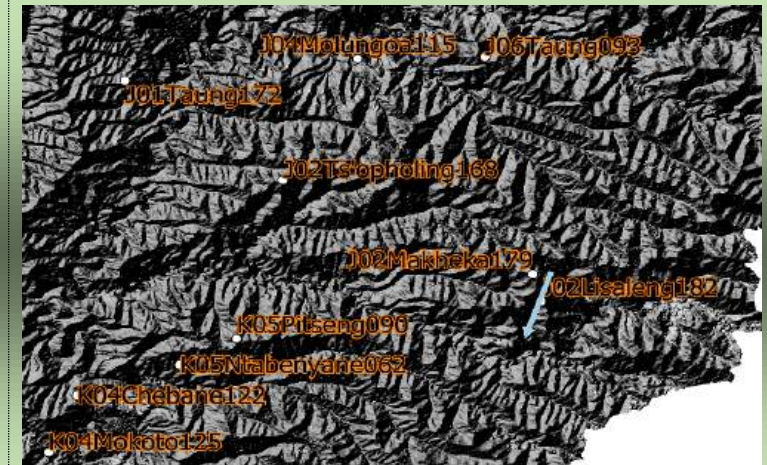
Surface rock: Yes  
 Coarse fragment: Common  
 Slope Class: Moderately sloping  
 Flooding: No  
 Erosion types: None  
 Surface seal: No  
 Surface cracks: No  
 Surface drainage: Somewhat excessively drained  
 Soil temperature: Mesic  
 Land use: Rangeland  
 Crop: Grasses  
 Land cover: Grassland  
 Sampling Date: 30/10/ 2018

Rocky soil surface with no soil profile

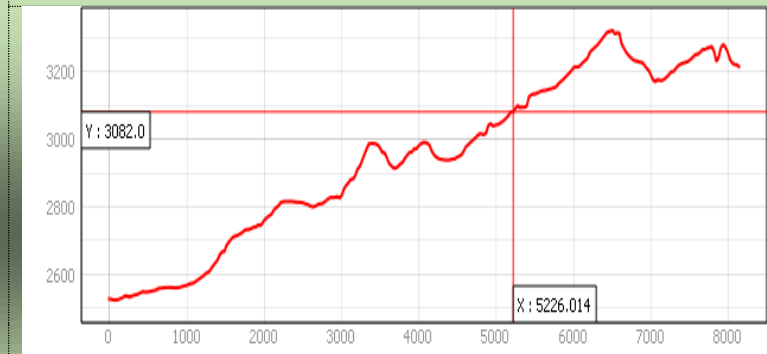
Not yet

WBR Soil Classification: Skeletic Leptosols

**Remote sensing image**



**Relief Hill-shade**



Soil profile location in the landscape

**Location:** Ha-Makheka, Mokhotlong

**Profile ID:** J02Makheka179

**Lab #:** 107-109

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Abundant  
Slope Class: Sloping  
Flooding: No  
Erosion types: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Range  
Crop: None  
Land cover: Grassland  
Sampling Date: 30/10/2018

**Profile description A-Horizon (0-49cm)**

Colour moist: 10YR4/3  
Colour dry: 10YR2/2  
Structure type: Granular, Sub-angular bloky  
Structure size: Very fine/thin  
Mottles: No  
Root presence: Abundant  
pH: 6.55  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (49-58cm)**

Colour moist: **None**  
Colour dry: 7.5YR3/4  
Structure type: Sub-angular blocky  
Structure size: Medium  
Mottles: No  
Root presence: Few  
pH: 6.23  
Carbonate reaction: No detectable visible or audible effervescence

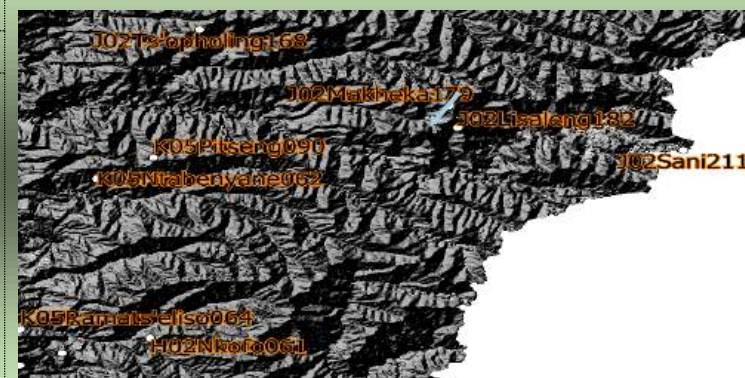


Popa Series

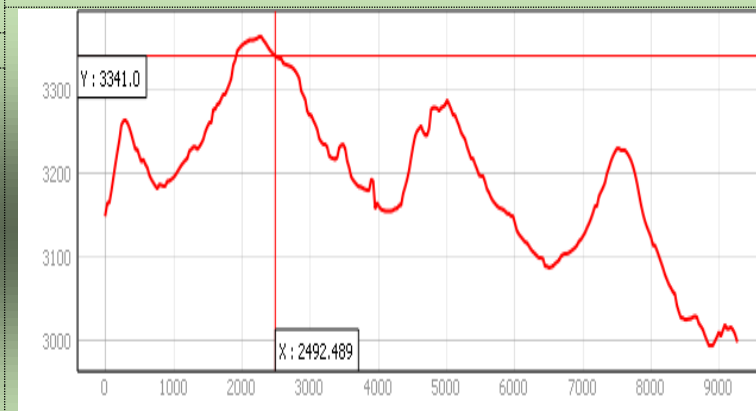
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Location:** Sani, Mokhotlong

**Profile ID:** J02Sani211

**Lab #:** 100-101

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Abundant  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: Grasses  
Land cover: Grassland  
Sampling Date: 30/10/ 2018

**Profile description A-Horizon (0-20cm)**

Colour moist: **None**  
Colour dry: 10YR2/2, 10YR5/8  
Structure type: Crumby  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Many, Common  
pH: 5.75  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (20-35cm)**

Colour moist: **None**  
Colour dry: 10Y4/6  
Structure type: Granular  
Structure size: Medium  
Mottles: No  
Root presence: Many, Common  
pH: 5.62  
Carbonate reaction: No detectable visible or audible effervescence



Popa Series

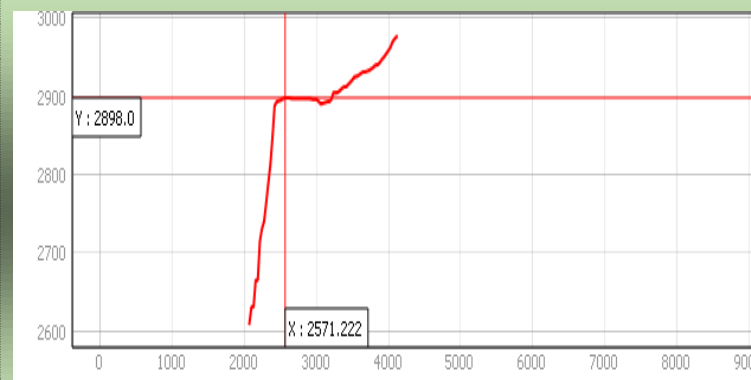
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: J02Ts'opholing168**

**Lab #: 92-94**

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Many  
Slope Class: Very steep  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 30/10/ 2018

**Profile description A-Horizon (0-18cm)**

Colour moist: **None**  
Colour dry: 10YR2/1  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Abundant  
pH: 6.52  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (18-58cm)**

Colour moist: **None**  
Colour dry: 10YR2/1, 10YR2/2  
Structure type: Granular  
Structure size: Medium  
Mottles: No  
Root presence: Many, Few  
pH: 6.3  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Ts'opling, Mokhotlong

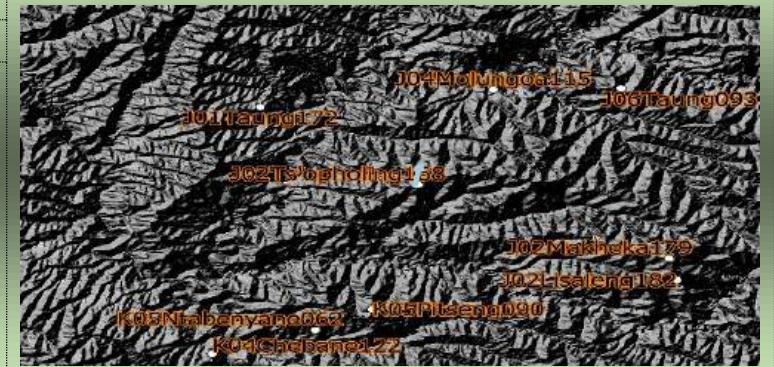


Popa Series

**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: J04Mantsieng177**

**Lab #:** 105-106

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Few  
Slope Class: Steep  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 30/10/2018

**Profile description A-Horizon (0-11cm)**

Colour moist: **None**  
Colour dry: 10YR2/4, 10YR5/8  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Abundant  
pH: 6.05  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (11-51cm)**

Colour moist: **None**  
Colour dry: 10YR2/1  
Structure type: Angular blocky  
Structure size: Medium  
Mottles: No  
Root presence: Few  
pH: 6.26  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Mantsieng, Mokhotlong



Popa Series

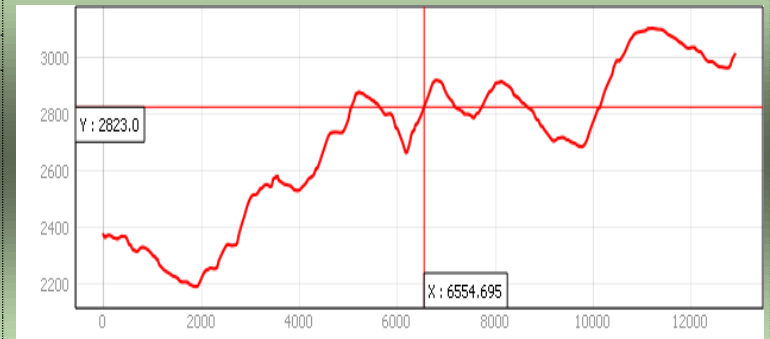
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**



**Profile ID: J04Molungoa115**

**Lab #: 86**

**Surface and climate characteristics**

Surface rock: No  
Coarse fragment: Dominant  
Slope Class: Moderately sloping  
Flooding: No  
Erosion types: Rill  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 30/10/2018

**Location:** Ha-Molungoa, Mokhotlong



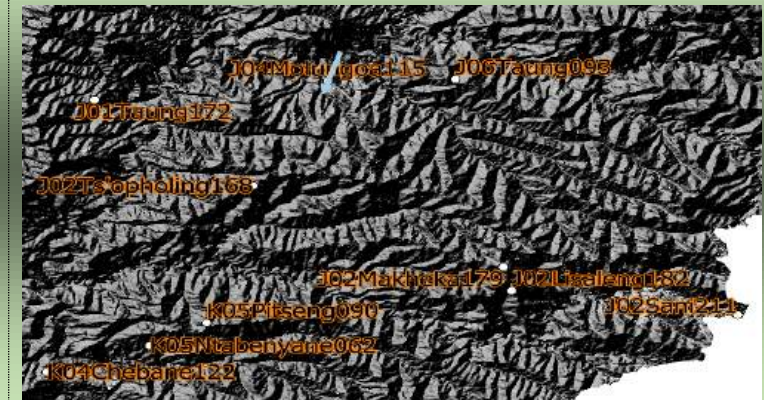
**Rocky soil surface with no soil profile**

Popa Rockland

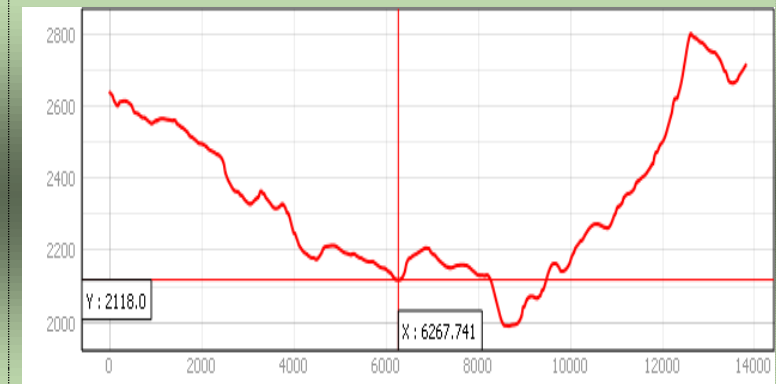
**WBR Soil Classification:** Skeletic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: J04Motheo012**

**Lab #: 98-99**

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Common  
Slope Class: Steep  
Flooding: No  
Erosion types: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 30/10/ 2018

**Profile description A-Horizon (0-21cm)**

Colour moist: **None**  
Colour dry: 10YR2/1  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Abundant  
pH: 6.46  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (21-51cm)**

Colour moist: 10YR5/3, 10YR7/8  
Colour dry: 10YR4/4, 10YR5/8  
Structure type: Crumbly  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Common  
pH: 6.08  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Motheo, Mokhotlong



Popa Series

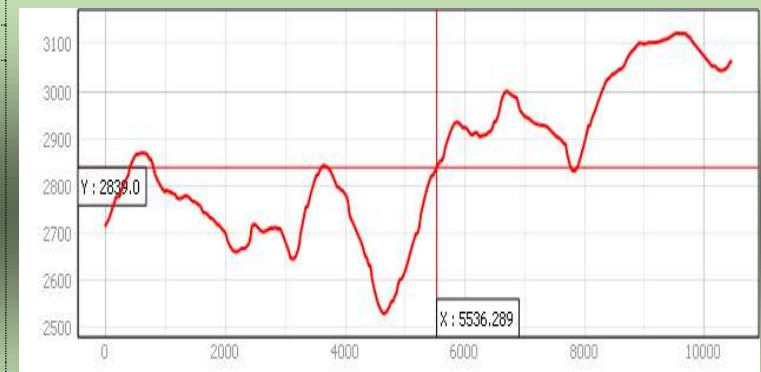
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: J05Makhabane009**

**Lab #:** 87-90

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: Very few  
Slope Class: Gently sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat excessively drained  
Soil temperature: Mesic  
Land use: Cropland  
Crop: Maize  
Land cover: Rain fed Agriculture  
Sampling Date: 30/10/2018

**Profile description A-Horizon (0-30cm)**

Colour moist: 10YR2/2  
Colour dry: 10YR2/2  
Structure type: Crumbly  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Few  
pH: 6.79  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (30-160+ cm)**

Colour moist: None  
Colour dry: 7.5YR3/3, 7.5YR2.5/3  
Structure type: Granular  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Few, None  
pH: 7.83  
Carbonate reaction: No detectable visible or audible effervescence, Visible effervescence

**Location:** Ha-Makhabane, Mokhotlong



Not yet

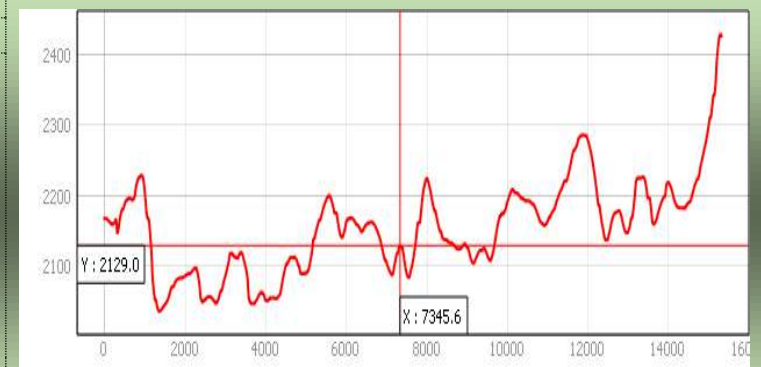
**WBR Soil Classification:** Fluvisols (Arenic)



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: J05Paneng010**

**Lab #:** 102

**Surface and climate characteristics**

Surface rock: Yes  
 Coarse fragment: Many  
 Slope Class: Moderately sloping  
 Flooding: No  
 Erosion types: None  
 Surface seal: No  
 Surface cracks: No  
 Surface drainage: Somewhat excessively drained  
 Soil temperature: Mesic  
 Land use: Settlement  
 Crop: Rangeland grasses  
 Land cover: Construction  
 Sampling Date: 30/10/2018

**Location:** Ha-Paneng, Mokhotlong



**Rocky soil surface with no soil profile**

Popa Rockland

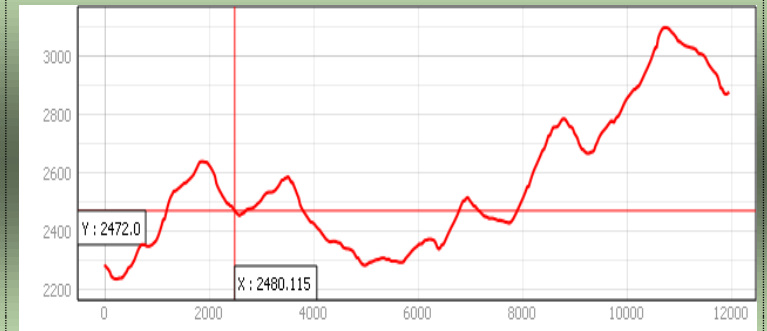
**WBR Soil Classification:** Skeletic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: J06Taung093**

**Lab #:** 96-97

Surface rock: Yes  
Coarse Fragment: Many  
Slope Class: Steep  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Other  
Crop: None  
Land cover: Grassland  
Sampling Date: 30 Oct 2018

**Profile description A-Horizon (0-19cm)**

Colour moist: 10YR4/2  
Colour dry: 10YR2/2  
Structure type: Granular  
Structure size: Medium  
Mottles: No  
Root presence: Many, Common  
pH: 6.88  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Taung, Mokhotlong

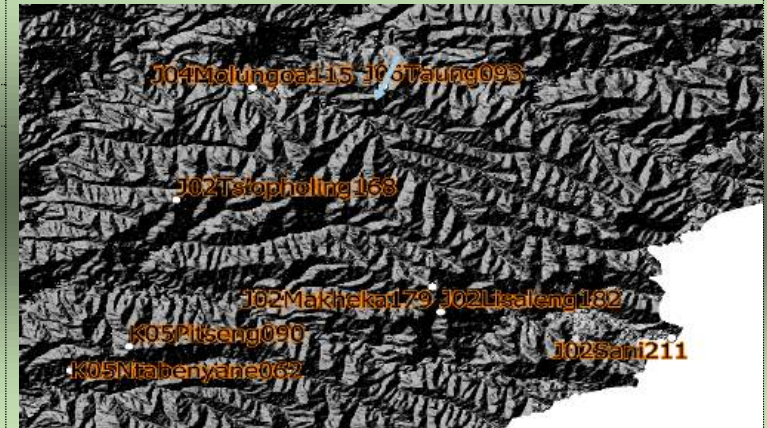


**Not yet**

**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K03Matsooana007**

**Lab #:** 445-446

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Few  
Slope Class: Moderately sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Shrubland  
Sampling Date: 18/11/ 2018

**Profile description A-Horizon (0-24cm)**

Colour moist: 7.5YR3/2, **None**  
Colour dry: 7.5YR2.5/1, 10YR2/1  
Structure type: Crumby, Sub-angular blocky  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Abundant, Common  
pH: 6.58  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Mats'ooana, Thaba-Tseka

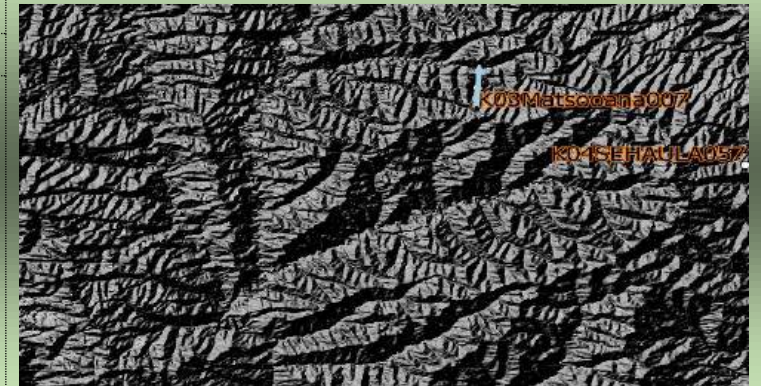


Popa Series

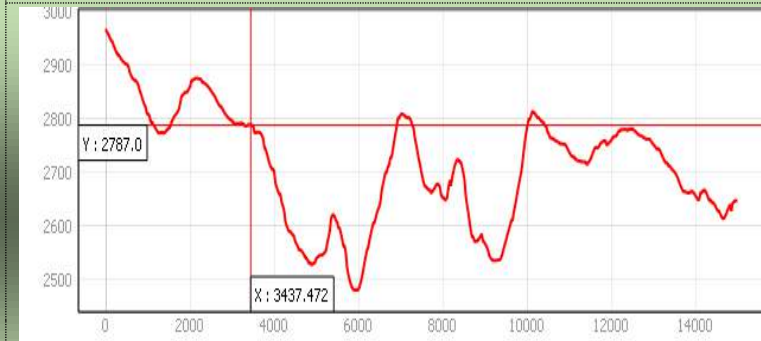
**WBR Soil Classification:** Skeletic Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K04Chebane122**

**Lab #: 438**

**Surface and climate characteristics**

Surface rock: Yes  
Coarse fragment: Dominant  
Slope Class: Moderately sloping  
Flooding: No  
Erosion types: Rill  
Surface seal: No  
Surface cracks: No  
Surface drainage: Excessively drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Barrenland  
Sampling Date: 19/11/ 2018

**Location: Ha-Chebane, Thaba-Tseka**



Popa Series

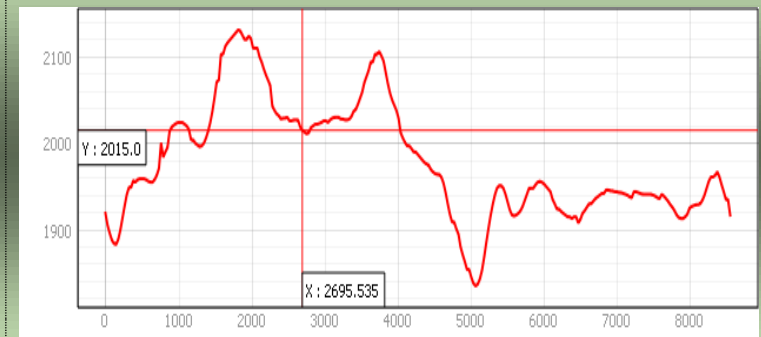
**WBR Soil Classification: Skeletic Leptosols**



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K04Mokoto125**

**Lab #:** 443-44

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: Dominant  
Slope Class: Strongly sloping  
Flooding: No  
Erosion types: Rill  
Surface seal: No  
Surface cracks: No  
Surface drainage: Moderately drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 21 Nov 2018

**Profile description A-Horizon (0-38cm)**

Colour moist: 10YR4/4, 10YR5/8  
Colour dry: 10YR2/2, 10YR3/2  
Structure type: Granular  
Structure size: very fine/ thin, Medium  
Mottles: No  
Root presence: Abundant, Common  
pH: 7.03  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Mokoto, Thaba-Tseka



Popa Series

**WBR Soil Classification:** Leptic Cambisols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K04Mokotoane005**

**Lab #:** 441

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: Common  
Slope Class: Flat  
Flooding: No  
Erosion types: Sheet  
Surface seal: Yes  
Surface cracks: No  
Surface drainage: Excessively drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 18/11/2018

**Profile description A-Horizon (0-20cm)**

Colour moist: 10YR4/3  
Colour dry: 10YR2/2  
Structure type: Crumbly, Sub-angular blocky  
Structure size: very fine/ thin, Medium  
Mottles: No  
Root presence: Many, Common  
pH: 6.37  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Mokotoane, Thaba-Tseka

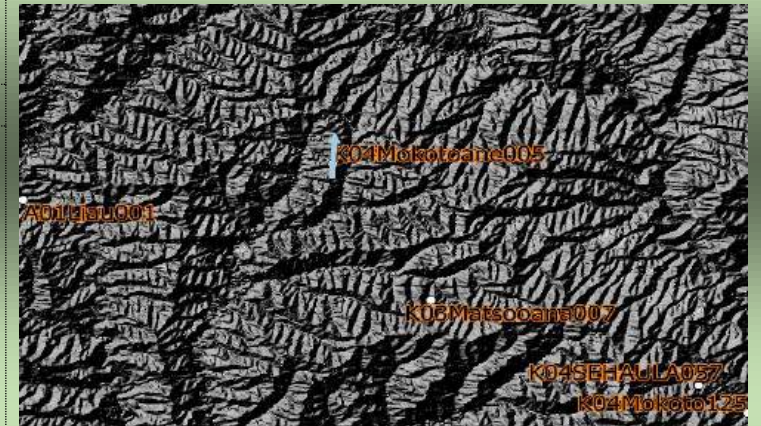


Popa Series

**WBR Soil Classification:** Cambic Mollic Skeletic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K04SEHAULA057**

**Lab #:** 442

**Surface and climate characteristics**

Surface rock: Yes  
Coarse fragment: Abundant  
Slope Class: Steep  
Flooding: No  
Erosion types: Sheet  
Surface seal: No  
Surface cracks: No  
Surface drainage: Very poorly drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 18/11/ 2018

**Location:** Ha-Sehaua, Thaba-Tseka



**Rocky soil surface with no soil profile**

**Popa Rockland**

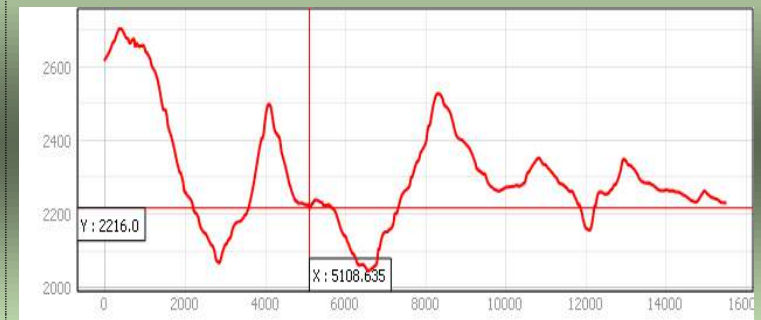
**WBR Soil Classification:** Skeltic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K05Manganeng055**

**Lab #:** 447-448

**Surface and climate characteristics**

Surface rock: Yes  
Coarse Fragment: Few  
Slope Class: Strongly sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Mixed farming  
Crop: Fruit trees  
Land cover: Fallow  
Sampling Date: 19/11/2018

**Profile description A-Horizon (0-3cm)**

Colour moist: 7.5YR3/3  
Colour dry: 7.5YR2.5/3  
Structure type: Crumbly  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Many  
pH: 6.59  
Carbonate reaction: No detectable visible or audible effervescence

**Profile description B-Horizon (3-19cm)**

Colour moist: 7.5YR4/3  
Colour dry: 7.5YR2.5/3  
Structure type: Crumbly  
Structure size: very fine/ thin  
Mottles: No  
Root presence: Common  
pH: 6.74  
Carbonate reaction: Extremely strong reaction.  
Thick foam forms quickly

**Location:** Ha-Manganeng, Thaba-Tseka

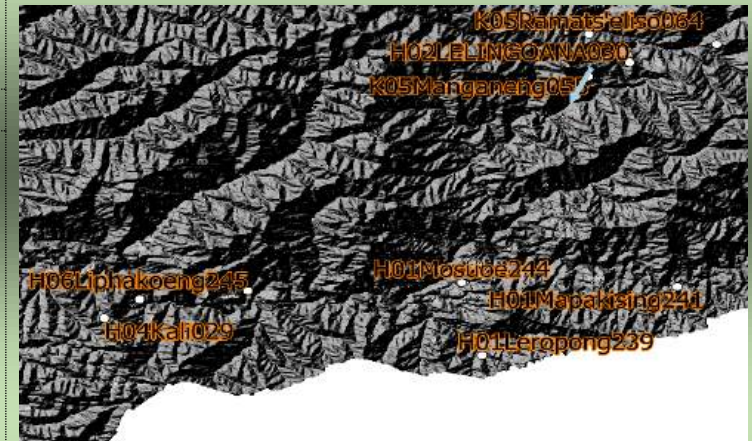


Popa Series

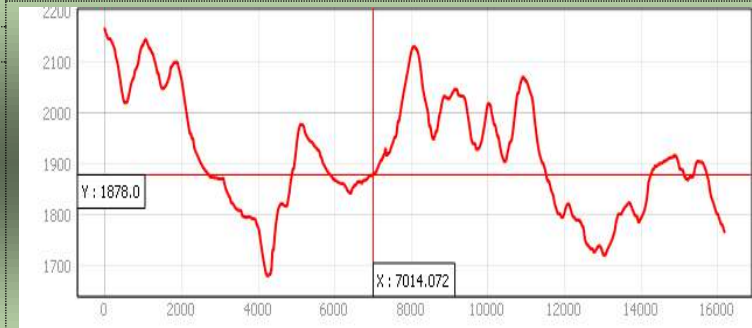
**WBR Soil Classification:** Cambic Mollic Kithic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K05Ntabenyane062**

**Lab #: 163**

**Surface and climate characteristics**

Surface rock: Yes  
 Coarse fragment: Abundant  
 Slope Class: Steep  
 Flooding: No  
 Erosion types: Sheet  
 Surface seal: No  
 Surface cracks: No  
 Surface drainage: Somewhat excessively drained  
 Soil temperature: Mesic  
 Land use: Rangeland  
 Crop: Rangeland grasses  
 Land cover: Grassland  
 Sampling Date: 30/10/2018

**Location:** Ha-Ntabenyane, Thaba-Tseka



**Rocky soils surface with no soils profile**

**Popa Rockland**

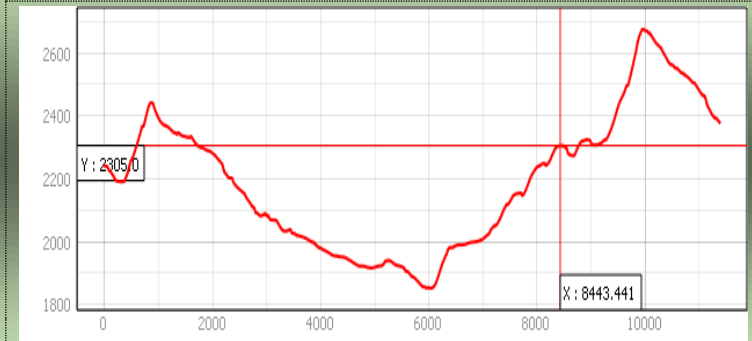
**WBR Soil Classification:** Skeletic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K05Pitseng090**

**Lab #: 439**

**Surface and climate characteristics**

Surface rock: Yes  
Coarse fragment: Dominant  
Slope Class: Very steepy  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Somewhat excessively drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 30/10/2018

**Location:**Pitseng, Thaba-Tseka



**Rocky soils surface with no soil profile**

Popa Series

**WBR Soil Classification:** Skeletic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K05Ramaomane063**

**Lab #:** 440

**Surface and climate characteristics**

Surface rock: No  
Coarse Fragment: Dominant  
Slope Class: Moderately sloping  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Excessively drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Barrenland  
Sampling Date: 19 Nov 2018

**Profile description A-Horizon (0-5cm)**

Colour moist: 10YR4/3  
Colour dry: 10YR3/3  
Structure type: Angular blocky  
Structure size: Coarse/thick  
Mottles: No  
Root presence: Common  
pH: 6.36  
Carbonate reaction: No detectable visible or audible effervescence

**Location:** Ha-Ramaomane, Thaba-Tseka

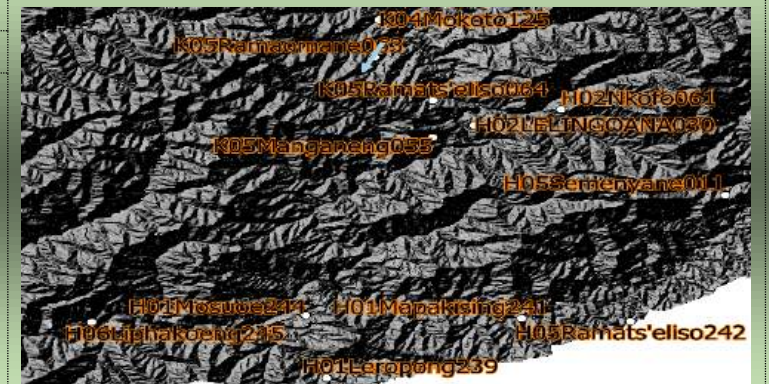


Popa Rockland

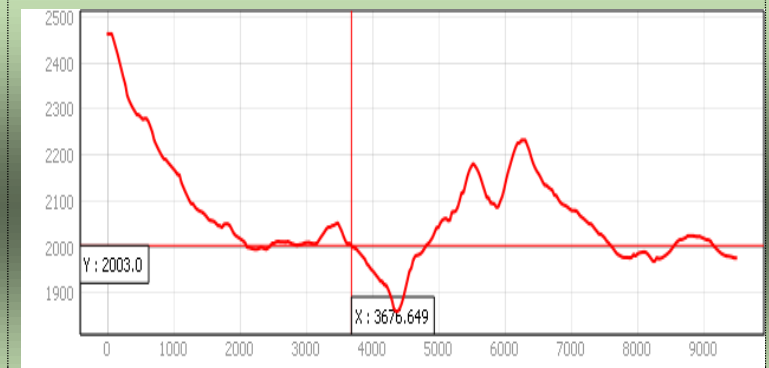
**WBR Soil Classification:** Skeltic Leptosols



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

**Profile ID: K05Ramats'eliso064**

**Lab #: 453**

**Surface and climate characteristics**

Surface rock: Yes  
Coarse fragment: Abundant  
Slope Class: Steep  
Flooding: No  
Erosion types: None  
Surface seal: No  
Surface cracks: No  
Surface drainage: Well drained  
Soil temperature: Mesic  
Land use: Rangeland  
Crop: None  
Land cover: Grassland  
Sampling Date: 21/11/2018

**Location: Ha-Ramats'eliso, Thaba-Tseka**



**Rocky soil surface with no soil profile**

Popa Rockland

**WBR Soil Classification: Skeletic Leptosols**

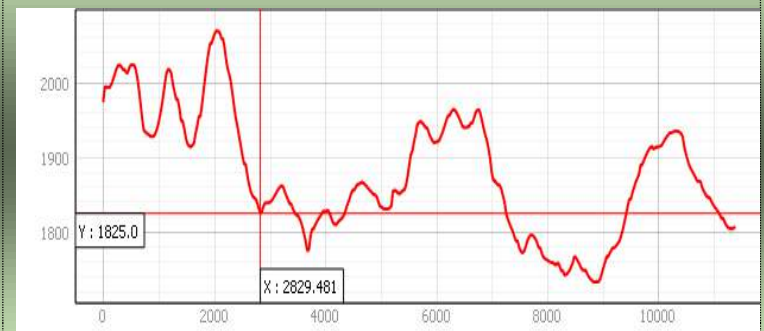
K05Ramats'eliso064



**Remote sensing image**



**Relief Hill-shade**



**Soil profile location in the landscape**

