

## ***MOLLISOLS***

### **Soil Profile Description (ID 1)**

#### **Information on the site :**

Soil Classification: USDA (1990): Clayey-skeletal, mixed, calcareous, thermic Family of Lithic Haploxerolls (HDFB)  
ACSAD: MXH L 4 c : Lithic Haploxerolls  
FAO/UNESCO: LPm : mollic Leptosol

#### Location:

Coordinates: Geographical : 35.93830 E/ 32.42139 N  
JTM: 400151 E/ 588413 N  
Elevation: 690 m asl  
Landform: Position: Rocky middle slope  
Land System : 8/10 (Dissected limestone plateau with deep colluvial mantles ) – 8.8.1 [GIS]  
Land Facet: 4 (Steep slopes on bedrock, colluvial pockets )  
Microrelief: Class: Slightly uneven (25-50 cm)  
Type: other  
Slope: moderately steep (20%) , convex to NW  
Land Use : 3.3 Nat.grazing  
Plant /Crop: Grass, Thistle  
Climate:Mean annual precipitation:  
Mean annual temperature: Air : 16.7° C / Soil (50cm): 19.6° C  
Soil moisture regime: Xeric  
Precipitation zone: 300-350 mm p.a.

#### **GENERAL INFORMATON ON THE SOIL:**

Geology: Limestone [q5 Fluv.deposits, sand, loess (Bender 1968)]  
Parent Material: Bedrock-fresh  
Drainage: Surface Runoff: Rapid  
Soil Drainage Class:  
Surface Cover: Rock (25 %)  
Surface Feature: Litter (20 %)  
Soil Surface Conditions:  
Erosion: Slight sheet erosion  
Soil Depth: 40 cm (Lithic contact)  
Diagnostic Horizon or Property: Mollic epipedon at 0 cm

#### **PROFILE DESCRIPTION:**

0-15	cm	Brown (7.5 YR 5/4) dry and dark brown (7.5 YR 3/4) moist; gravelly silty clayloam; strong medium crumb; dry moderately hard; common very fine (<0.5 mm) tubular pores; many very fine (<1 mm) fibrous roots; 25 % irregular hard limestone fine gravel (2-5 mm); strong reaction to HCl; clear smooth boundary to:
15-40	cm	Brown (7.5 YR 5/4) dry and brown (7.5 YR 4/4) moist; extremely gravelly silty clayloam; strong medium crumb; dry moderately hard; many very fine (<0.5 mm) tubular pores; common reaction to HCl; abrupt wavy boundary to :
40+	cm	Lithic contact to limestone

## Soil Profile Description (ID 2)

### Information on the site :

Soil Classification: USDA (1990): Loamy-skeletal, mixed, calcareous, hyperthermic Family of Lithic Haploxerolls (HDFB)  
ACSAD: MXH 1 2 c: Lithic Haploxeroll  
FAO/UNESCO: LPm : Mollic Leptosol

Location: 5.4km W of Center Kufr Rakib

Coordinates: Geographical : 35.63481 E/ 32.46710 N  
JTM: 371672 E/ 593806 N

Elevation: 143 m asl

Landform: Position: Convex crest  
Land System : 8/1 (Deeply dissected uplands and gorges with colluvial mantles)--8.1.0 [GIS]  
Land Facet: 1 (Narrow convex crests and limestone outcrops)

Microrelief: Class: Very uneven (100-200 cm)  
Type: Undulating

Slope: Sloping (12 % ) , convex to W

Land Use : 3.3 Nat. grazing

Plant /Crop: Kalkh (61) ,Gosalan (53) ,Homimah (40): 60% groundcover

Climate: Mean annual precipitation:  
Mean annual temperature: Air : 20.1° C / Soil (50cm): 23.0° C  
Soil moisture regime: Ustic  
Precipitation zone: 400-450 mm p.a.

### GENERAL INFORMATION ON THE SOIL:

Geology: Sedimentary chemic./organ. : Limestone [q1 sst, calc.sst,conglom,LST ( Bender 1968 )]  
Parent Material: Bedrock-fresh  
Drainage: Surface Runoff: Very rapid  
Soil Drainage Class: Somewhat excessive  
Surface Cover : Rock (75 %)  
Surface Feature : Litter (30 %)  
Soil Surface Conditions: Dry /Moderately hard  
Erosion : Moderate undifferentiated erosion  
Soil Depth : 47 cm (Lithic contact )  
Diagnostic Horizon or Property: Mollic epipedon at 5 cm

### PROFILE DESCRIPTION :

- |       |    |   |
|-------|----|---|
| 0 - 5 | cm | Very dark grayish brown (10YR 3/2 ) dry and very dark brown (10YR 2/2 ) moist; clayloam; moderat medium sub angular blocky; dry moderately hard; moist friable; slightly sticky; non-plastic; many very fine (<0.5 mm) spherical pores; many fine (1-2 mm) fibrous roots; 20% sub-rounded hard limestone gravel (5-20 mm); moderate moderately thick coating of pores; strong reaction to HCL; clear smooth boundary to:  |
| 5-19  | cm | Very dark grayish brown (10YR 3/2 ) dry and very dark brown (10YR 2/2 ) moist; clayloam; moderat medium sub angular blocky; dry moderately hard; moist friable; slightly sticky; non-plastic; many very fine (<0.5 mm) spherical pores; many fine (1-2 mm) fibrous roots; 15% sub-rounded hard limestone gravel (5-20 mm); moderate moderately thick coating of pores; violent reaction to HCL; clear smooth boundary to:   |
| 19-47 | cm | Dark brown (10YR 3/3 ) dry and very dark grayish brown (10YR 3/2 ) moist; extremely stony silty clayloam; moderat medium subangular blocky; dry moderately hard; moist friable; slightly sticky; non-plastic; many (>20 %) small (<5 mm) distinct mottles (10YR 3/1); many fine (0.5-2 mm) spherical pores; many very fine (<1 mm) fibrous roots; 60% sub-rounded hard limestone stones (75-250 mm); weak thin clay coating of peds; violent reaction to HCL; abrupt irregular boundary to: |
| 47+   | cm | Lithic contact to Limestone.  |

## Soil Profile Description (ID 3)

### Information on the site :

Soil Classification: USDA (1990): Clayey-skeletal,mixed, calcareous, thermic Family of Ultic/Entic/Typic Haploxerolls (HDFZ)  
ACSAD: MXH ut /en /t 4 c: Ultic/Entic/Typic Haploxeroll  
FAO/UNESCO:

Location: 1.7km E of Um Qeis  
Coordinates: Geographical : 35.70156 E/ 32.65391 N  
JTM: 378200 E/ 614443 N  
Elevation: 360 m asl  
Landform: Position: Upper slope  
Land System : 8/3 (Deeply dissected valleys on Ajlun group and Umm Rijam limestone)--8.3.3[GIS]  
Land Facet: 4 ( Gently slopes on colluvium )  
Microrelief: Class: extremely uneven (>200 cm)  
Type: Other  
Slope: Moderately steep (22 %), irregular to E  
Land Use : 3.6 Natural forest, woodland  
Plant /Crop: Oak (3) : 30 % groundcover  
Climate:Mean annual precipitation:  
Mean annual temperature: Air : 18.5° C / Soil (50cm): 21.4° C  
Soil moisture regime: Xeric  
Precipitation zone: 500-550 mm p.a.

### GENERAL INFORMATON ON THE SOIL:

Geology: Sedimentary chemic./organ .: Limestone [ tt LSt,marls,cherts(Shalla) (Bender 1968)]  
Parent Material: Colluvium ( gravelly texture )  
Drainage: Surface Runoff: Very rapid  
Soil Drainage Class: Well  
Surface Cover : Rock (40 %)  
Surface Feature : Litter (60%)  
Soil Surface Conditions: Dry / Moderately hard  
Erosion : Nil  
Soil Depth : 150 cm (Lithic contact)  
Diagnostic Horizon or Property: --

### PROFILE DESCRIPTION :

0-30	cm	Very dark grayish brown (10YR 3/2) dry and very dark brown (10YR 2/2 ) moist; extremely gravelly clayloam; weak medium subangular blocky breaking to weak fine subangular blocky; dry soft; moist very friable; slightly sticky; slightly plastic; common fine (0.5-2 mm) spherical pores; many very fine (<1 mm) fibrous roots; 65 % sub-rounded hard limestone gravel ( 5-20 mm); violent reaction to HCL; clear smooth boundary to :
30-70	cm	Very dark grayish brown (10YR 3/2) dry and very dark brown (10YR 2/2 ) moist; extremely gravelly clayloam; moderate coarse subangular blocky breaking to moderate medium subangular blocky; dry slightly hard; moist very friable; slightly sticky; slightly plastic; common medium (2-5 mm) spherical pores; common very fine (<1 mm) fibrous roots; 70 % irregular hard limestone coarse gravel ( 20-75 mm); violent reaction to HCL; clear smooth boundary to :
70-110	cm	Brown (7.5YR 4/4) dry and dark brown (7.5YR 3/4 ) moist; extremely stony clay; very weak fine subangular blocky; dry moderately hard; moist very friable; very sticky; very plastic; few medium (2-5 mm) fibrous roots; 85 % sub-rounded hard limestone stones ( 75-250 mm); 2 % small (<5 mm) soft calcareous concretins; violent reaction to HCL; clear smooth boundary to :
110-150	cm	Reddish yellow (7.5YR 6/6) dry and brown (7.5YR 4/4 ) moist; extremely stony clay; weak fine subangular blocky; dry moderately hard; moist friable; very sticky; very plastic; few fine (0.5-2 mm) spherical pores; 85 % platy hard limestone stones ( 75-250 mm); 2 % small (<5 mm) soft calcareous concretins; violent reaction to HCL; abrupt smooth boundary to :
150+	cm	Lithic contact to limestone

## Soil Profile Description (ID 4)

### Information on the site :

Soil Classification: USDA (1990): Fine-loamy,mixed, calcareous, thermic Family of Ultic/Entic/Typic Haploxerolls (HDFZ)  
ACSAD: MXH ut /en /t 2/4 b: Ultic/Entic/Typic Haploxeroll  
FAO/UNESCO:

Location: 1.6km SW of Irbid  
Coordinates: Geographical : 35.84549 E/ 32.53757 N  
JTM: 391562 E/ 601386 N  
Elevation: 595 m asl  
Landform: Position: Middle slope  
Land System : 8/2 (Dissected, undulating limestone plateau)--8.2.0 [GIS]  
Land Facet: 4 ( Colluvial slopes )  
Microrelief: Class: Extremely uneven (>200 cm)  
Type: Other  
Slope: Sloping (8 %), irregular to NW  
Land Use : 3.3 Nat.grazing  
Plant /Crop: Grasses (25) : 15 % groundcover  
Climate:Mean annual precipitation:  
Mean annual temperature: Air : 17.1° C / Soil (50cm): 20.1° C  
Soil moisture regime: Xeric  
Precipitation zone: 450-500 mm p.a.

### GENERAL INFORMATION ON THE SOIL:

Geology: Sedimentary chemic./organ .: Limestone [ c2 LSt,marls,cherts, phospor (Bender 1968)]  
Parent Material: Colluvium ( stony texture )  
Drainage: Surface Runoff: Rapid  
Soil Drainage Class: Well  
Surface Cover : Stones (60 %)  
Surface Feature :  
Soil Surface Conditions: Dry / Hard  
Erosion : Nil  
Soil Depth : 100 cm ( Boulders )  
Diagnostic Horizon or Property: Mollic epipedon at 12 cm

### PROFILE DESCRIPTION :

0-12	cm	Brown (10YR 4/3) dry and dark brown (10YR 3/3 ) moist; very gravelly clayloam; very strong very coarse subangular blocky breaking to very strong coarse subangular blocky; dry hard; moist firm; moderately sticky; moderately plastic; common medium (2-5 mm) spherical pores; few fine (1-5 mm) irregular cracks; few very fine (<1 mm) fibrous roots; 40 % rounded hard limestone gravel ( 5-20 mm); moderate reaction to HCL; abrupt smooth boundary to :
12-65	cm	Brown (10YR 4/3) dry and dark brown (10YR 3/3 ) moist; gravelly clayloam; very strong coarse subangular blocky breaking to strong coarse subangular blocky; dry hard; moist firm; moderately sticky; moderately plastic; common medium (2-5 mm) spherical pores; 20 % irregular chert gravel ( 5-20 mm); violent reaction to HCL; clear irregular boundary to :
65-100	cm	Brownish yellow (10YR 6/6) dry and yellowish brown (10YR 5/6 ) moist; extremely stony sandy clay; moderate medium subangular blocky; dry slightly hard; moist friable; moderately sticky; moderately plastic; 70 % irregular chert stones ( 75-250 mm); 1 % small (<5 mm) soft calcareous concretions; violent reaction to HCL.
100+	cm	Boulders.