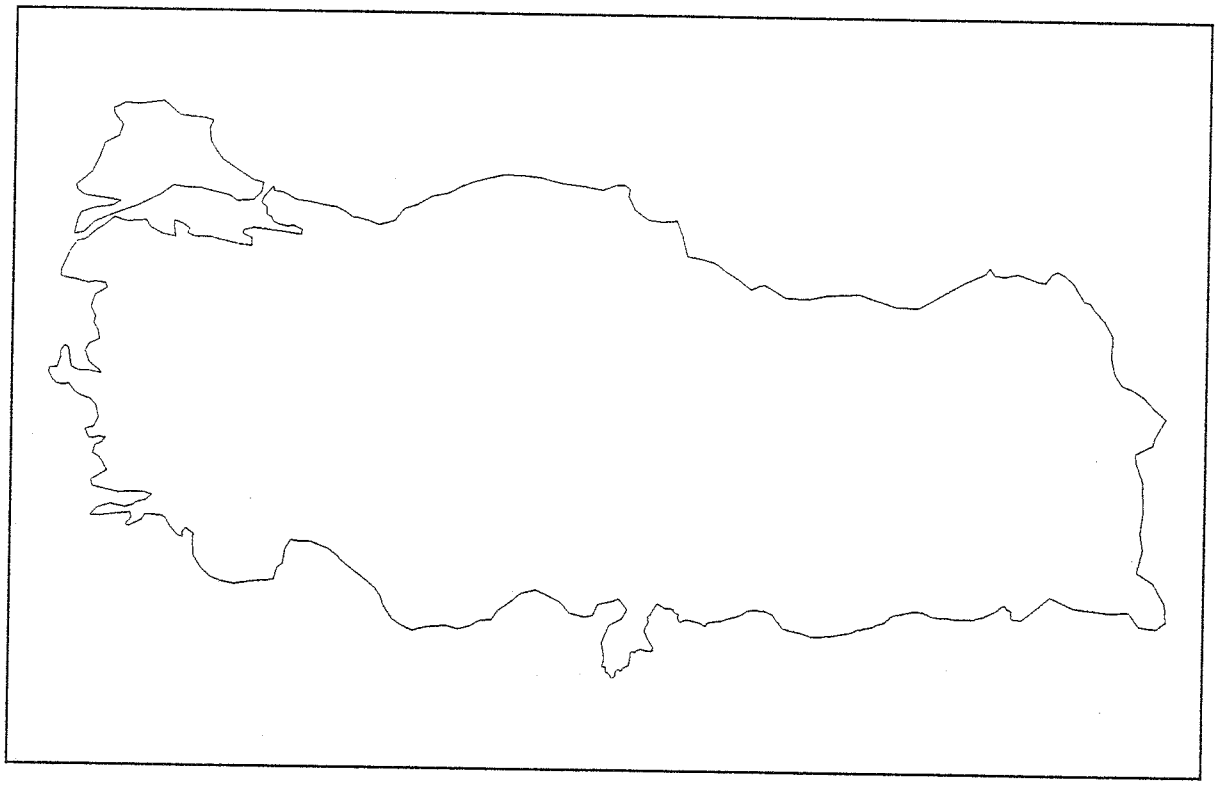
COUNTRY REPORT 3

Soil Reference Profiles of Turkey

Field and Analytical Data



ISRIC

Dept. of Soil Science - Faculty of Agriculture - Çukurova University
International Soil Reference and Information Centre

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Soil Reference Profiles of Turkey

Field and Analytical Data

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Department of Soil Science - Faculty of Agriculture - University of Çukuroma
International Soil Reference and Information Centre

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Based upon fieldwork of

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Reference citation

University of Çukuroma-ISRIC (1994) Soil reference profiles of Turkey. Field and analytical data. Country Report 3. (D. Creutzberg, T. van de Ven, compilers).

CONTENTS

FOREWORD

Soil Reference Collection and Database of Turkey

The objective of this Country Report is to provide comprehensive field and analytical data of a number of reference soils representative for the major soils of Turkey. The sites were carefully selected, described and sampled. Soil samples were analyzed by the ISRIC soil laboratory.

The sites, dispersed over Turkey, were selected on a number of criteria, such as extension, different production potential, a high salt content and parent material.
Of all sites soil monoliths were taken and prepared for display, these soil monoliths are included in ISRIC's world soil collection in The Netherlands.

This soil reference collection could be realized as a joint cooperation project of Wageningen Agricultural University (WAU), the former Turkish National Institute for Soil Fertility (NISF) and ISRIC in 1972.

The establishment of the soil reference collection, comprising exposition, database and accompanying documentation has been made possible with the support of many persons, some are specially mentioned here:
- Dr. Ir. Titus de Meester (staffmember WAU)
- Dr. Ural Dinç (director former NISF).

International Soil Reference Collection and Database

The International Soil Reference and Information Centre (ISRIC), founded in 1966 out of an initiative of the International Society of Soil Science (ISSS), has a mandate to collect and disseminate scientific knowledge about soils for the purpose of a better understanding of their formation, characterization, classification, distribution and capability for sustained land use at local, national, and global scales. One of ISRIC's main objectives is to assemble soil profiles, soil samples and associated information to illustrate the units of the FAO-Unesco Soil Map of the World. To date, the world soil collection consists of about 800 reference soils from 60 countries, accompanied by soil and environmental data. The collection is supported by a soil map collection, soil reports library, a thin section collection and a slide collection.

The National Soil Reference Collection Programme (NASREC), supported by the Directorate General of International Cooperation of the Netherlands within the Action Plan of National Soil Policies of UNEP, and through ISRIC's own budget has been instrumental to achieve this objective. ISRIC greatly appreciates the cooperation of the Department of Soil Science of the Faculty of Agriculture, University of Çukuroma in finalizing this Country Report.

The collected information of the reference soil profiles is stored in ISRIC's Soil Information System (ISIS), a database management system for storing and retrieving data on geology, geomorphology, hydrology, soil morphology, soil chemical and physical characteristics, and climate.
To disseminate its data, ISRIC has combined the different types of information into several publication series. Each series aims to address the needs of those working in one of the many fields of research using soil data and soil related data. One of these series is the Country Report.
The Country Reports, containing all ISRIC held data on soils and associated information of a specific country are generated by ISIS. Additional information on literature references, small scale maps, and a list of slides available in the ISRIC Slide Database is included. The country reports are jointly published by the national institution involved in the collection and ISRIC. A list of country reports (in press) is given on the back cover of this report. We are very pleased to release the draft Turkey Country Report at the occasion of the XVth World Soil Congress.

Dr. L.R. Oldeman,
Director

Country Reports can be purchased through ISRIC or the national institution of the country concerned. Publications based on the Country Reports should explicitly indicate the information source. To order Country Reports please contact:

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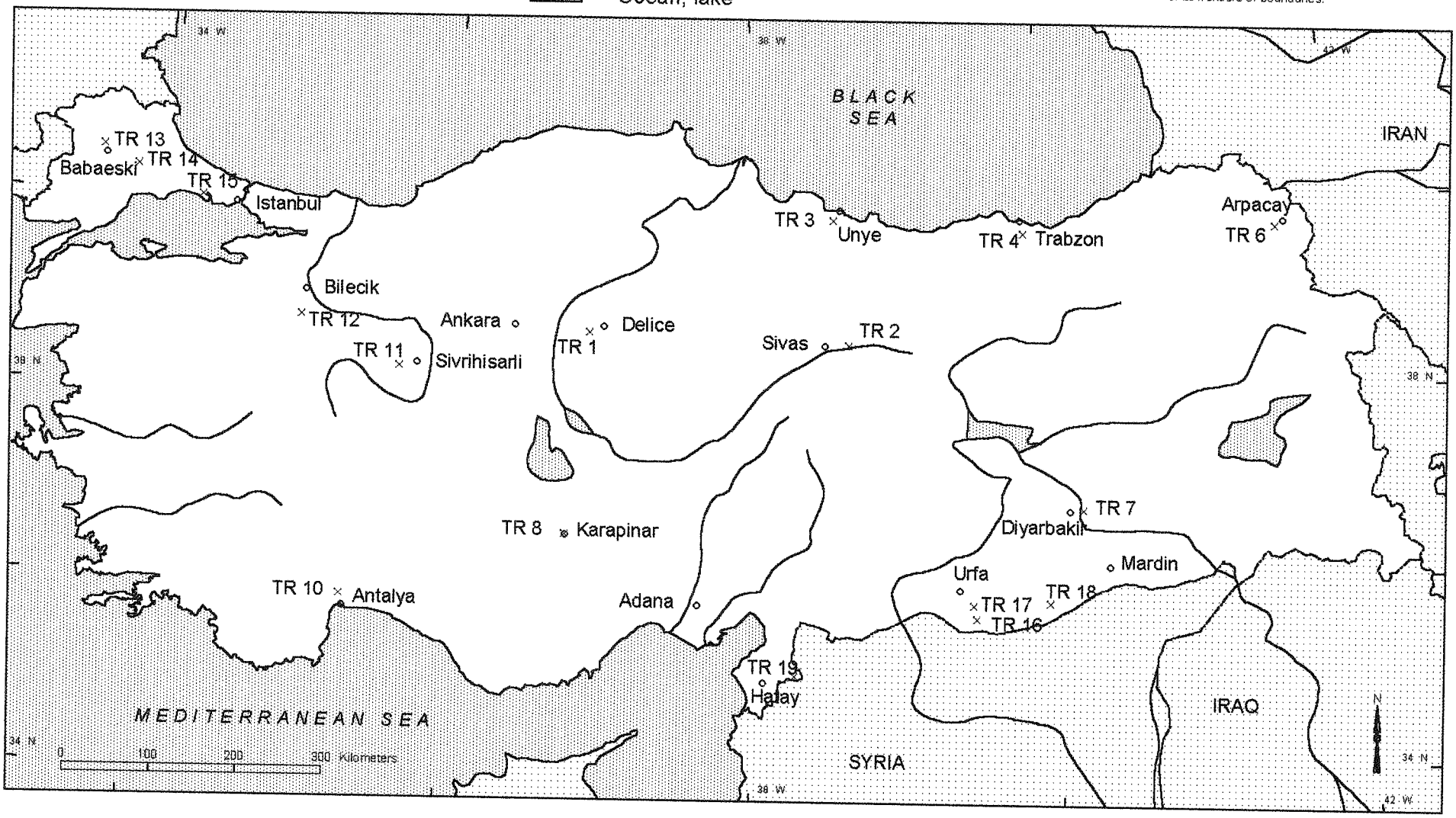
SUMMARIZED INFORMATION OF REFERENCE SOILS TR001 TO TR022

ISIS_ID[1]	FAO-74[2]	FAO-88[3]	ST-92[4]	PARENT MATERIAL	LANDFORM	LAND UTILIZATION TYPE	VEGETATION	ALT(M)[5]
TR001	Calcic Cambisol	Haplic Calcisol	Xerochrept	marl	terrace	fallow		650
TR002	Calcic Cambisol	Haplic Calcisol	Xerochrept	gypsum	terrace	fallow		1300
TR003	Haplic Phaeozem	Humic Cambisol	Xerumbrept	Eocene clay deposits	upland		woodland	35
TR004	Dystric Cambisol	Haplic Alisol	Hapludult	Pliocene clay and sand deposits	upland		closed forest	75
TR006	Eutric Cambisol	Calcaric Phaeozem	Haploboroll	Neogene clayey alluvium	alluvial terrace		medium tall grassland	1800
TR007	Vertic Luvisol	Vertic Luvisol	Haploxeralf	basalt			short grassland	680
TR008	Calcic Xerosol	Haplic Calcisol	Calciorthid	lacustrine sediments	lacustrine plain	semi natural grassland,grazed	grassland	1003
TR010	Calcic Luvisol	Luvic Calcisol	Rhodoxeralf	limestone	terrace		semi deciduous shrub	39
TR011	Calcic Cambisol	Haplic Calcisol	Xerochrept	gravelly marl	terrace	fallow	short grassland	1000
TR012	Calcic Cambisol	Haplic Calcisol	Xerochrept	micaschist	upland	woodland, grazed	semi deciduous woodland	740
TR013	Chromic Cambisol	Chromic Luvisol	Rhodoxeralf	Miocene sand, gravel and clay deposits	peneplain	arable farming	medium tall grassland	102
TR014	Pellic Vertisol	Eutric Vertisol	Calcixerert	lacustrine sediments	peneplain	arable farming	grassland	131
TR015	Calcaric Regosol	Calcaric Regosol	Calcixeroll	marl	upland	mixed farming	woodland	100

1) ISIS Identification code
2) FAO-Unesco, 1974
3) FAO-Unesco, 1988
4) USDA Soil Taxonomy, 1992
6) Altitude in meters

REFERENCE SOILS OF TURKEY



SOIL INFORMATION SHEETS

Generated by the ISRIC Soil Information System (ISIS, version 4.0)

ISIS 4.0 data sheet of monolith TR001 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Haplic Calcisol (1974 : Calcic Cambisol)
USDA/SCS SOIL TAXONOMY (1992) : Calcixerollic Xerochrept, mesic
LOCAL CLASSIFICATION : Reddish-Brown Soil

DIAGNOSTIC CRITERIA
FAO (1988) : Diagnostic horizons : ochric A, cambic B, calcic
USDA/SCS (1992) : Soil moisture regime : xeric

Classification remarks : Deep, reddish brown clay, derived from marl. The B horizon shows signs of clay illuviation and has manganese concretions. The BC horizons are enriched by lime (concretions). The sum of bases is very high and base saturation is very high throughout the profile.

LOCATION : Central Anatolia, Ankara province, Delice subprovince
Latitude : 39°52′ 0′′ N Longitude : 33°50′ 0′′ E Altitude : 650 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : Lower terrace
SLOPE Gradient : -% Aspect : Form :
POSITION OF SITE :
MICRO RELIEF Kind : Topography : undulating
SLOPE PROCESSES Soil erosion :

PARENT MATERIAL 1 : derived from : marl
Texture :
Remarks :

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

LAND USE : fallow; Crops : wheat; Rotation : crop with current fallow
Landuse/vegetation remarks : Grass, legumes; wheat-summer fallow rot.

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		35	38	36	34	50	31	13	8	19	22	28	47	359
T mean	°C		0.1	0.9	5.0	11.1	16.0	20.0	23.2	23.3	18.4	12.9	7.7	2.5	11.7

PROFILE DESCRIPTION :

Ap 0 - 17 cm. reddish brown (5YR 4.0/4.0, moist)reddish brown (5YR 5.0/4.0, dry) clay loam; weak fine granular structure; sticky, plastic, friable, slightly hard; common roots; calcareous; abrupt smooth boundary to

Al2 17 - 37 cm. reddish brown (5YR 4.0/4.0, moist)reddish brown (5YR 5.0/4.0, dry) clay loam; moderate medium granular structure; sticky, plastic, friable, hard;; calcareous; clear wavy boundary to

B3 37 - 53 cm. reddish brown (5YR 4.0/4.0, moist)reddish brown (5YR 5.0/4.0, dry) clay; moderate medium prismatic structure; sticky, plastic, friable, very hard; clay cutans;; very few small manganiferous concretions; clear wavy boundary to

B2Ca 53 - 74 cm. reddish brown (5YR 4.0/4.0, moist)reddish brown (5YR 5.0/4.0, dry) clay; strong coarse prismatic structure; very sticky, plastic, friable, very hard;; calcareous concretions; clear wavy boundary to

B3Ca 74 - 95 cm. brown (7.5YR 4.0/4.0, moist)light brown (7.5YR 6.0/4.0, dry) clay; strong coarse prismatic structure; very sticky, plastic, friable, very hard; clay cutans; few roots; calcareous concretions; gradual wavy boundary to

Cca 95 - 120 cm. brown (7.5YR 4.0/4.0, moist)pink (7.5YR 7.0/4.0, dry) clay; weak medium prismatic structure; sticky, plastic, friable, hard;;

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR001 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top	Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0	17	-	2	5	7	11	10	34	12	14	26	40	-	-	-	-	-	-	-	-	-	-
2	17	27	-	2	6	7	10	9	33	11	15	25	42	-	-	-	-	-	-	-	-	-	-
3	37	53	-	1	4	5	8	8	26	13	14	28	47	-	-	-	-	-	-	-	-	-	-
4	53	74	-	1	4	4	8	9	26	14	14	28	47	-	-	-	-	-	-	-	-	-	-
5	74	95	-	1	4	5	9	9	27	11	15	26	47	-	-	-	-	-	-	-	-	-	-
6	95	120	-	1	6	7	11	8	33	11	14	24	43	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	8.2	7.3	14.6	0.67	0.07	29.5	3.7	2.6	0.2	36.0	-	-	25.3	64	2.3	36.0	142	-	0.33
2	8.1	7.3	15.2	0.56	0.07	29.6	3.5	2.6	0.2	35.9	-	-	27.1	65	2.0	35.9	132	-	0.38
3	8.2	7.3	18.6	0.39	0.04	29.6	4.3	2.7	0.1	36.7	-	-	27.6	59	1.4	36.7	133	-	0.39
4	8.2	7.3	18.2	0.28	0.04	27.6	7.1	3.5	0.1	38.3	-	-	27.2	58	1.0	38.3	141	-	0.37
5	8.3	7.4	16.8	0.24	0.02	27.1	8.1	3.9	0.1	39.2	-	-	27.2	58	0.8	39.2	144	-	0.35
6	8.3	7.5	26.6	0.22	0.02	24.8	7.6	2.9	0.2	35.5	-	-	23.9	56	0.8	35.5	149	-	0.36

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.84	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.75	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.64	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.45	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.13	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.31	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR002 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Haplic Calcisol (1974 : Calcic Cambisol)
USDA/SCS SOIL TAXONOMY (1992) : Gypsic Xerochrept, mesic
LOCAL CLASSIFICATION : Gypsiferous Brown Soil

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A, cambic B, calcic
USDA/SCS (1992) : Soil moisture regime : xeric

Classification remarks : Deep, reddish brown clay derived from gypsum. The topsoil has a very high carbon content. The sum of bases and base saturation are very high throughout the profile.

LOCATION : Central Anatolia, Sivas province, Hafik subprovince
Latitude : 39°44' 0'' N Longitude : 37°21' 0'' E Altitude : 1300 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : Terrace
SLOPE Gradient : -% Aspect : Topography : undulating Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :

PARENT MATERIAL 1 : derived from : sedimentary rock
Texture :
Remarks : Parent mat.: gypsum

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

LAND USE : fallow; Crops : wheat; Rotation : crop with current fallow
Landuse/vegetation remarks : Grass, legumes; wheat-summer fallow rot.

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		42	42	42	53	58	33	7	5	17	30	39	42	411
T mean	°C		-4.4	-2.7	1.7	8.3	13.2	16.6	19.4	19.7	15.5	10.5	4.7	-1.2	8.5

PROFILE DESCRIPTION :

Ap 0 - 22 cm. dark reddish brown (5YR 3.0/3.0, moist)reddish brown (5YR 4.0/3.0, dry) clay; moderate medium granular structure; slightly sticky, plastic, friable, hard; common fine roots; strongly calcareous; gradual smooth boundary to

B2 22 - 47 cm. dark reddish brown (5YR 3.0/3.0, moist)reddish brown (5YR 4.0/3.0, dry) clay; moderate coarse angular blocky structure; sticky, plastic, friable, hard; few fine roots; strongly calcareous; clear wavy boundary to

B2Ca 47 - 68 cm. dark reddish brown (5YR 3.0/3.0, moist)reddish brown (5YR 4.0/3.0, dry) clay; strong coarse prismatic structure; very sticky, plastic, friable, very hard; clay cutans; few roots; calcareous concretions; gradual wavy boundary to

B3 68 - 105 cm. dusky red (2.5YR 3.0/2.0, moist)weak red (2.5YR 4.0/2.0, dry) clay; moderate medium angular blocky structure; sticky, plastic, friable, hard; few fine roots; clear irregular boundary to

C 105 - cm. ; mix.gypsiferous fragments;

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR002 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top	Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0	13	-	0	1	1	2	3	7	7	23	30	64	-	-	-	-	-	-	-	-	-	-
2	22	47	-	0	1	1	1	3	5	7	23	30	64	-	-	-	-	-	-	-	-	-	-
3	47	68	-	0	1	1	1	2	5	6	26	32	63	-	-	-	-	-	-	-	-	-	-
4	68	105	-	1	8	12	14	3	37	5	22	26	37	-	-	-	-	-	-	-	-	-	-
5	105	-	-	1	6	2	1	1	12	4	37	41	48	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	8.1	7.0	25.8	0.67	0.07	35.4	3.1	0.7	0.1	39.3	-	-	29.9	47	2.3	39.3	131	-	0.29
2	8.0	7.0	29.6	0.52	0.05	32.1	2.7	0.5	0.1	35.4	-	-	26.1	41	1.8	35.4	136	-	0.27
3	7.9	7.0	32.8	0.58	0.05	30.6	2.3	0.5	0.1	33.5	-	-	24.7	40	2.0	33.5	136	-	0.30
4	7.4	6.9	20.4	0.24	0.01	31.8	0.6	0.2	0.1	32.7	-	-	15.1	41	0.8	32.7	217	-	1.92
5	7.3	6.8	22.8	0.24	0.01	33.5	0.7	0.1	0.1	34.4	-	-	20.6	43	0.8	34.4	167	-	1.94

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.39	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.52	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.23	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.56	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.62	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR003 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Humic Cambisol (1974 : Haplic Phaeozem)
USDA/SCS SOIL TAXONOMY (1992) : Typic Xerumbrept
LOCAL CLASSIFICATION : Gray-Brown Podzolic

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : mollic A, cambic B

Classification remarks : Deep, brownish clay loam on Eogene clay deposits. The CEC-soil and the sum of bases are very high throughout the profile.

LOCATION : North-East Anatolia, Ordu province, Ünye subprovince
Latitude : 41° 3' 0'' N Longitude : 37° 9' 0'' E Altitude : 35 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : Upland
SLOPE Gradient : -% Aspect : Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :
Topography : hilly

PARENT MATERIAL 1 :
Texture : clayey
Remarks : Eogene clay deposits
derived from : sedimentary rock

WATER TABLE Depth(cm) :
DRAINAGE :
PERMEABILITY :
MOISTURE CONDITIONS PROFILE :
Kind :
No slow permeable layer(s) cm

VEGETATION Type : woodland
Landuse/vegetation remarks : Fagus,Quercus,carpinus,shrubs & grasses

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		81	73	74	54	44	39	36	30	57	70	84	79	719
T mean	°C		6.8	6.7	7.6	10.8	15.5	20.0	23.0	23.3	19.8	16.2	12.8	9.4	14.3

PROFILE DESCRIPTION :

O1 0 - 2 cm. leaves, moderately decomposed;;
O2 2 - 5 cm. very dark brown (10YR 2.0/2.0, dry) leaves, highly decomposed; many roots;
A1 5 - 20 cm. very dark grayish brown (10YR 3.0/2.0, moist)dark grayish brown (10YR 4.0/2.0, dry) clay loam; moderate medium subangular blocky structure; sticky, plastic, friable, hard; common fine roots; gradual wavy boundary to
A2 20 - 33 cm. dark brown (10YR 3.0/3.0, moist)dark brown (10YR 4.0/3.0, dry) sandy clay loam; moderate fine subangular blocky structure;, slightly plastic, friable, hard; few roots; gradual wavy boundary to
B2 33 - 50 cm. dark yellowish brown (10YR 4.0/4.0, moist)yellowish brown (10YR 5.0/4.0, dry) clay loam; strong fine subangular blocky structure;, plastic, friable, hard;; clear smooth boundary to
B3 50 - 69 cm. brown (7.5YR 4.0/4.0, moist)strong brown (7.5YR 5.0/6.0, dry) fine sandy loam; moderate medium granular structure; sticky, plastic, friable, hard;; abrupt wavy boundary to
C 69 - 125 cm. clay;;

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR003 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top - Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0 - 15	-	0	2	2	3	1	8	7	26	33	59	-	-	-	-	-	-	-	-	-	-
2	15 - 28	-	0	1	2	5	3	11	9	23	31	58	-	-	-	-	-	-	-	-	-	-
3	28 - 45	-	0	2	6	9	4	21	8	20	27	52	-	-	-	-	-	-	-	-	-	-
4	45 - 64	-	0	3	13	17	5	39	7	19	26	35	-	-	-	-	-	-	-	-	-	-
5	64 - 120	-	0	1	3	14	5	23	9	28	38	39	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	5.6	4.8	-	5.37	0.73	31.0	15.5	3.1	0.4	50.0	-	-	86.7	147	18.8	50.0	58	-	0.46
2	4.8	3.8	-	3.43	0.37	19.5	10.1	2.0	0.3	31.9	5.5	4.2	72.3	125	12.0	37.4	44	6	0.29
3	4.6	3.6	-	3.73	0.27	18.1	8.5	1.6	0.3	28.5	14.0	12.0	75.2	145	13.1	42.5	38	16	0.21
4	4.7	3.5	-	1.02	0.09	15.5	6.8	0.9	0.3	23.5	18.1	16.9	58.0	164	3.6	41.6	41	29	0.17
5	4.4	3.4	-	0.67	0.07	14.9	6.4	0.9	0.4	22.6	25.5	25.3	70.9	181	2.3	48.1	32	36	0.16

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.45	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.36	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.86	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.83	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.22	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR004 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Haplic Alisol (1974 : Dystric Cambisol)
USDA/SCS SOIL TAXONOMY (1992) : Typic Hapludult
LOCAL CLASSIFICATION : Red-Yellow Podzolic

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A, argic B
USDA/SCS (1992) : Soil moisture regime : udic

Classification remarks : Deep, reddish yellow clay, overlain by a clay loam top soil, derived from Pliocene clay and sandy deposits. The B horizon contains few iron and manganese concretions.

LOCATION : North-East Anatolia, Trabzon province
Latitude : 40°52' 0'' N Longitude : 39°45' 0'' E Altitude : 75 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : Upland
SLOPE Gradient : -% Aspect : Topography : hilly Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :

PARENT MATERIAL 1 : derived from : sedimentary rock
Texture : clayey
PARENT MATERIAL 2 : Derived from :
Texture : sandy
Weathering degree : Resistance :
Remarks : Pliocene deposits

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

VEGETATION Type : closed forest
Landuse/vegetation remarks : Quercus, Alnus, Fagus and Pines

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		90	70	60	56	53	51	37	46	78	109	101	80	831
T mean	°C		7.2	7.0	7.9	11.3	15.7	20.0	22.7	23.2	20.1	16.5	13.1	9.6	14.5

PROFILE DESCRIPTION :

A1 0 - 10 cm. strong brown (7.5YR 5.0/6.0, moist)reddish yellow (7.5YR 6.0/6.0, dry) clay loam; moderate medium subangular blocky structure; slightly sticky, slightly plastic, friable, hard; many fine roots; clear smooth boundary to

A2 10 - 23 cm. yellowish brown (10YR 5.0/6.0, moist)very pale brown (10YR 7.0/4.0, dry) clay loam; weak fine subangular blocky structure; slightly sticky, slightly plastic, friable, hard; common fine roots; clear smooth boundary to

B2 23 - 70 cm. yellowish red (5YR 5.0/6.0, moist)reddish yellow (5YR 6.0/6.0, dry) clay; moderate coarse angular blocky structure;, plastic, firm, hard; few fine roots; few ferruginous concretions and few manganiferous concretions; gradual wavy boundary to

C 70 - 120 cm. reddish brown (5YR 4.0/4.0, moist)olive (5Y 5.0/4.0, dry) clay; massive structure;;

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR004 Country : TURKEY

Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top	Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0	10	-	3	8	5	5	3	25	11	33	44	31	-	-	-	-	-	-	-	-	-	-
2	10	23	-	3	6	5	5	4	22	12	28	40	38	-	-	-	-	-	-	-	-	-	-
3	23	70	-	1	5	3	3	2	13	8	18	26	61	-	-	-	-	-	-	-	-	-	-
4	70	120	-	1	3	5	7	3	18	8	29	37	45	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH CAT. Ca	Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	5.4	4.5	-	3.28	0.18	4.9	1.9	0.4	0.1	7.3	0.8	0.2	17.5	56	11.5	8.1	42	1	0.18
2	5.0	3.9	-	1.45	0.08	3.6	1.7	0.2	0.1	5.6	2.4	1.3	14.7	38	5.1	8.0	38	9	0.11
3	4.8	3.6	-	0.68	0.04	2.6	1.7	0.2	0.1	4.6	7.8	6.7	20.2	33	2.4	12.4	23	33	0.07
4	4.9	3.7	-	0.26	0.03	1.5	0.9	0.2	0.1	2.7	8.3	7.8	16.5	37	0.9	11.0	16	47	0.07

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.39	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.37	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.07	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.79	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR006 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Calcaric Phaeozem (1974 : Eutric Cambisol)
USDA/SCS SOIL TAXONOMY (1992) : Pachic Udic Haploboroll
LOCAL CLASSIFICATION : Chestnut

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : mollic A

Classification remarks : Deep, dark grey clay derived from Neogene clayey deposits. CEC-soil, sum of bases and base saturation are very high throughout the profile.

LOCATION : North eastern Anatolia, Kars province, Arpacay subprovince Altitude : 1800 (m.a.s.l.)
Latitude : 40°48' 0'' N Longitude : 43°13' 0'' E Date (mm.yy) : 5.72

AUTHOR(S) : S'Ardas

GENERAL LANDFORM : alluvial terrace Topography : flat or almost flat
PHYSIOGRAPHIC UNIT : Terrace
SLOPE Gradient : -% Aspect : Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :

PARENT MATERIAL 1 : alluvium derived from : sedimentary rock
Texture : clayey
Remarks : Neogene clayey dep.

EFFECTIVE SOIL DEPTH(cm) : 125

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

VEGETATION Type : medium tall grassland
Landuse/vegetation remarks : Mid and short grasses

CLIMATE : Köppen: Relevance:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		30	30	32	48	87	85	59	47	30	39	29	24	535
T mean	°C		-12.0	-10.0	-4.5	4.4	10.3	13.6	17.3	17.4	13.3	7.0	0.6	-7.8	4.1

PROFILE DESCRIPTION :

A1 0 - 28 cm. black (10YR 2.0/1.0, moist)very dark gray (10YR 3.0/1.0, dry) clay; strong medium granular structure; sticky, plastic, firm, very hard; many fine roots; non calcareous; gradual smooth boundary to

B2 28 - 55 cm. black (10YR 2.0/1.0, moist)very dark gray (10YR 3.0/1.0, dry) clay; moderate medium subangular blocky structure; sticky, plastic, firm, hard; common fine roots; non calcareous (10% HCL); gradual smooth boundary to

B3 55 - 78 cm. black (10YR 2.0/1.0, moist)very dark gray (10YR 3.0/1.0, dry) clay; strong medium angular blocky structure; sticky, plastic, firm, hard; few fine roots; non calcareous (10% HCL); gradual irregular boundary to

C1 78 - 125 cm. dark brown (10YR 4.0/3.0, moist)pale brown (10YR 6.0/3.0, dry) clay loam; moderate coarse prismatic structure; sticky, plastic, friable, hard;; strongly calcareous (10% HCL);

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR006 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top - Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0 - 28	-	1	5	5	5	3	19	17	7	23	57	-	-	-	-	-	-	-	-	-	-
2	28 - 55	-	2	6	4	5	3	19	6	16	22	59	-	-	-	-	-	-	-	-	-	-
3	55 - 78	-	1	4	4	6	3	18	7	16	23	60	-	-	-	-	-	-	-	-	-	-
4	78 - 125	-	1	4	4	6	4	19	17	34	52	30	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	7.1	5.9	-	1.76	0.22	33.8	8.3	0.9	0.2	43.2	-	-	55.8	97	6.2	43.2	77	-	0.34
2	7.2	5.7	-	1.52	0.18	34.5	10.3	0.8	0.2	45.8	-	-	61.0	104	5.3	45.8	75	-	0.23
3	7.9	6.8	5.8	1.31	0.15	43.5	10.6	0.8	0.2	55.1	-	-	58.5	98	4.6	55.1	94	-	0.36
4	8.3	7.1	2.3	0.48	0.07	36.1	10.4	0.6	0.2	47.3	-	-	35.3	119	1.7	47.3	134	-	0.34

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.09	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.03	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.87	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.57	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR007 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Vertic Luvisol (1974 : Vertic Luvisol)
USDA/SCS SOIL TAXONOMY (1992) : Vertic Haploxeralf
LOCAL CLASSIFICATION : Reddish Brown Med. Soil

DIAGNOSTIC CRITERIA
FAO (1988) : Diagnostic horizons : ochric A, argic B
: Diagnostic properties : vertic properties
USDA/SCS (1992) : Soil moisture regime : xeric

Classification remarks : Deep, reddish brown clay derived from basalt rock. Showing cracks, reaching to depths of 25 cm, and slickensides in the subsoil. The B horizon shows signs of clay and CaCO3 illuviation. The CEC-soil, sum of bases and base saturation are very high throughout the profile.

LOCATION : Southeastern part of Turkey, Diyarbakir Province
Latitude : 37°56' 0'' N Longitude : 40°24' 0'' E Altitude : 680 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT :
SLOPE Gradient : -% Aspect : Topography : undulating Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SURFACE CHAR. Rock outcrop : Stoniness : stony
Cracking : large cracks Slaking/crusting :
SLOPE PROCESSES Soil erosion :

PARENT MATERIAL 1 : volcanic ejecta derived from : fine-basic igneous rock
Texture :
Remarks : Basalt

EFFECTIVE SOIL DEPTH(cm) : 120

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

VEGETATION Type : short grassland
Landuse/vegetation remarks : Short grass, Legumes,wheat-summer fallow

ADDITIONAL REMARKS :
STONINESS: Rounded basaltic fresh bombs.

CRACKS: 4 to 7cm wide and 20 to 25cm deep.

ADDITIONAL NOTES ON PROFILE DESCRIPTION:
Ap - many gravels, stones, boulders.
B12 - also slickensides: shining surfaces with angle of 45°.
B12Ca - also slickensides: shining surfaces with angle of 45°.
B22Ca - also slickensides: shining surfaces with angle of 45°.
B3 - slickensides: with angle of 45°.

CLIMATE : Köppen: Relevance:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		75	68	60	71	42	8	1	1	3	28	56	69	481
T mean	°C		1.6	3.7	8.0	13.8	19.3	25.8	31.0	30.5	24.9	17.2	10.0	4.1	15.8

ISIS 4.0 data sheet of monolith TR007 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

PROFILE DESCRIPTION :

Ap 0 - 18 cm. dark reddish brown (5YR 3.0/3.0, moist)dark reddish brown (5YR 3.0/3.0, dry) very stony clay; moderate coarse angular blocky structure; sticky, plastic, friable, hard; common roots; slightly calcareous (HCL); gradual smooth boundary to

B12 18 - 38 cm. dark reddish brown (5YR 3.0/3.0, moist)dark reddish brown (5YR 3.0/3.0, dry) clay; moderate medium angular blocky structure; sticky, plastic, friable, very hard; continuous thin clay cutans on hor.and vert. pedfaces; few very fine roots; very few small spherical soft calcareous nodules and very few small threadlike soft calcareous inclusions; few medium fresh rounded acid fragments and few medium fresh round. basaltic fragments; strongly calcareous (HCL); gradual smooth boundary to

B21Ca 38 - 77 cm. dark reddish brown (5YR 3.0/3.0, moist)dark reddish brown (5YR 3.0/3.0, dry) clay; very strong very coarse angular blocky into moderate fine angular blocky structure; sticky, plastic, very friable, hard; continuous thin clay cutans on hor.and vert. pedfaces; few very fine roots; few small spherical soft calcareous nodules; few medium fresh rounded acid fragments and few medium fresh round. basaltic fragments; strongly calcareous (HCL); gradual smooth boundary to

B22Ca 77 - 98 cm. dark reddish brown (5YR 3.0/3.0, moist)dark reddish brown (5YR 3.0/3.0, dry) clay; very strong very coarse angular blocky into moderate fine angular blocky structure; sticky, plastic, very friable, hard; continuous moderately thick clay cutans on hor.and vert. pedfaces; few very fine roots; frequent small spherical soft calcareous nodules; few medium fresh rounded acid fragments and few medium fresh round. basaltic fragments; strongly calcareous (HCL); gradual smooth boundary to

B3 98 - 120 cm. dark reddish brown (5YR 3.0/4.0, moist)dark reddish brown (5YR 3.0/3.0, dry) clay; strong very coarse angular blocky structure; sticky, plastic, friable, hard; slickensides cutans; few roots; spherical calcareous nodules and irregular calcareous nodules; strongly calcareous (HCL); gradual smooth boundary to

ANALYTICAL DATA :

Hor. no.	Top - Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0 - 18	-	0	0	0	0	0	1	6	32	38	61	-	-	-	-	-	-	-	-	-	-
2	18 - 38	-	0	0	0	0	1	2	3	19	22	77	-	-	-	-	-	-	-	-	-	-
3	38 - 77	-	0	0	0	0	1	2	4	17	20	78	-	-	-	-	-	-	-	-	-	-
4	77 - 98	-	0	0	0	0	0	2	3	19	22	76	-	-	-	-	-	-	-	-	-	-
5	89 - 120	-	0	0	0	1	1	2	5	16	21	78	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH CAT. Ca	Mg	K	Na	sum	EXCH AC. H+Al	Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	8.0	6.6	0.4	0.73	0.11	56.9	8.9	1.9	0.2	67.9	-	-	83.8	138	2.6	67.9	81	-	0.35
2	8.0	6.7	4.3	0.45	0.08	62.2	9.2	1.3	0.3	73.0	-	-	81.2	106	1.6	73.0	90	-	0.35
3	7.9	6.7	3.3	0.47	0.07	62.2	9.2	1.3	0.3	73.0	-	-	80.0	102	1.6	73.0	91	-	0.43
4	7.9	6.8	3.8	0.46	0.07	59.5	11.0	1.2	0.3	72.0	-	-	82.3	108	1.6	72.0	87	-	0.45
5	8.0	6.8	9.8	0.34	0.06	59.2	10.8	0.9	0.3	71.2	-	-	74.9	96	1.2	71.2	95	-	0.46

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.49	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.61	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.57	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.38	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.17	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR008 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Haplic Calcisol (1974 : Calcic Xerosol)
USDA/SCS SOIL TAXONOMY (1992) : Xerollic Calciorthid (1975 : xerollic calciorthid)
LOCAL CLASSIFICATION : Sierozem

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A, cambic B, calcic

Classification remarks : Deep, moderately well drained greyish brown silty clay loam derived from clayey lacustrine sediments. The upper B horizon shows signs of CaCO3 accumulation. The parent material contains gypsum. The sum of bases and base saturation is very high throughout the profile.

LOCATION : 16 km W of Karapinar, subprov. Karapinar, Konya basin, centr. Anatolia
Latitude : 37°44' 0'' N Longitude : 33°34' 0'' E Altitude : 1003 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM : lacustrine plain Topography : flat or almost flat
PHYSIOGRAPHIC UNIT : Former lake bottom
SLOPE Gradient : -% Aspect : Form :
POSITION OF SITE : flat
MICRO RELIEF Kind : Pattern : none
SURFACE CHAR. Rock outcrop : nil Stoniness : nil
Cracking : Slaking/crusting :
Salt : slight Alkali : strong
SLOPE PROCESSES Soil erosion : nil

PARENT MATERIAL 1 : lacustrine sediments derived from :
Texture : clayey
Remarks : see general remarks

WATER TABLE Depth(cm) : Kind : no watertable observed
DRAINAGE : moderately well
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE : 0 - 120 cm dry

LAND USE : semi natural grassland,grazed; no irrigation; Rotation : not relevant; Improvements : none
VEGETATION Type : grassland
Landuse/vegetation remarks : Steppe vegetation

ADDITIONAL REMARKS :
CLIMATE:
TRC005: xa - mean soil temperature at 50 cm depth.
TRC008: xa - daily greatest amount of rain in mm
xb - mean number of days with P =< 0.1 mm
xc - mean number of days with T < 0.1 °C
xd - mean number of days with snow on the ground

CLIMATE : Köppen: BSk
Station: CUMRA 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:
Station: KARAPINAR 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

	No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
xa (see remarks)		4.5	4.7	7.5	12.0	16.5	20.5	23.5	24.0	21.2	16.6	12.5	7.5	14.3
precipitation mm		37	34	28	24	38	21	3	1	6	15	22	45	273
T mean °C		-4.6	0.8	6.7	9.9	14.7	19.8	22.7	21.7	16.5	9.4	5.2	3.2	10.5
windspeed(at 2m) m/s		2.7	4.3	3.5	4.3	2.9	3.3	4.1	3.9	3.6	2.9	3.6	3.9	3.6
xa (see remarks)		32.4	33.0	21.4	29.5	27.5	25.1	17.0	4.4	14.9	28.0	25.6	20.6	33.0
xb (see remarks)		7.0	7.6	7.0	6.0	7.8	4.0	0.6	0.2	1.6	2.9	4.5	8.5	57.8
xc (see remarks)		26.0	23.0	13.0	9.0	1.0	0.0	0.0	0.0	1.0	21.0	21.0	18.0	133.0
xd (see remarks)		4.4	4.0	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.3	13.1

ISIS 4.0 data sheet of monolith TR008 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

PROFILE DESCRIPTION :

Ah1 0 - 3 cm. grayish brown (2.5Y 5.0/2.0, moist)light gray (2.5Y 7.0/2.0, dry) loam; moderate very fine platy structure; non sticky, slightly plastic, very friable, soft; common roots; strongly calcareous (HCL); abrupt smooth boundary to

Ah2 3 - 33 cm. grayish brown (2.5Y 5.0/2.0, moist)light gray (2.5Y 7.0/2.0, dry) silty clay loam; moderate medium granular structure; slightly sticky, plastic, friable, very hard; few roots; strongly calcareous (HCL); abrupt smooth boundary to

B(c)k 33 - 55 cm. pale yellow (5Y 6.5/3.0, moist)white (2.5Y 8.0/2.0, dry) silt loam; moderate coarse angular blocky structure; non sticky, plastic, friable, very hard;; strongly calcareous (HCL); clear smooth boundary to

Bk 55 - 83 cm. grayish brown (2.5Y 5.0/2.0, moist)white (2.5Y 7.5/2.0, dry) silty clay loam; strong coarse angular blocky structure; sticky, plastic, friable, hard;; strongly calcareous (HCL); gradual smooth boundary to

C 83 - cm. light brownish gray (2.5Y 6.0/2.0, moist)white (2.5Y 7.5/2.0, dry) silty clay loam; moderate coarse angular blocky structure; sticky, plastic, friable, very hard; few roots; strongly calcareous (HCL);

ANALYTICAL DATA :

Hor. no.	Top - Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0 - 3	-	0	0	0	3	7	10	14	19	33	56	-	-	-	-	-	-	-	-	-	-
2	3 - 33	-	0	0	1	3	5	9	12	15	27	64	-	-	-	-	-	-	-	-	-	-
3	33 - 55	-	0	0	1	2	3	6	10	15	25	69	-	-	-	-	-	-	-	-	-	-
4	55 - 83	-	0	0	0	1	3	4	12	20	32	63	-	-	-	-	-	-	-	-	-	-
5	83 - 110	-	0	0	0	2	4	6	11	22	32	61	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	pH- KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	EXCH Mg	EXCH K	EXCH Na	EXCH sum	CAT. H+Al	AC. Al	CEC soil	CEC clay	CEC OrgC	CEC ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	8.0	7.3	50.4	1.06	0.13	24.3	2.2	1.8	0.1	28.4	-	-	17.2	31	3.7	28.4	165	-	0.27
2	8.2	7.4	55.9	0.81	0.11	20.8	2.6	1.3	0.2	24.9	-	-	17.4	27	2.8	24.9	143	-	0.26
3	8.5	7.9	64.3	0.62	0.07	18.2	8.3	0.4	0.4	27.3	-	-	15.8	23	2.2	27.3	173	-	0.87
4	8.5	8.0	68.4	0.30	0.05	17.8	11.8	0.4	0.5	30.5	-	-	15.9	25	1.1	30.5	192	-	1.79
5	8.1	7.7	60.8	0.18	0.04	20.0	10.8	0.4	0.5	31.7	-	-	15.6	25	0.6	31.7	203	-	4.20

ELEMENTAL COMPOSITION OF TOTAL SOIL (in weight %) AND MOLAR RATIOS

Hor. no.	SiO2	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	TiO2	MnO2	P2O5	IGN. LOSS	SiO2/ Al2O3	SiO2/ Fe2O3	SiO2/ R2O3	Al2O3/ Fe2O3
1	31.4	7.8	3.1	25.47	2.41	1.38	-	0.38	0.04	0.17	26.0	6.8	27.0	5.5	3.9
2	28.3	7.2	2.8	27.31	2.43	1.24	-	0.33	0.03	0.16	27.6	6.7	26.9	5.3	4.0
3	23.3	6.0	2.4	29.94	2.93	0.77	-	0.27	0.02	0.13	30.4	6.6	25.8	5.3	3.9
4	26.3	7.1	2.8	28.28	3.22	0.80	-	0.33	0.03	0.12	28.2	6.3	25.0	5.0	4.0
5	26.3	7.0	2.8	28.16	3.24	0.85	-	0.32	0.03	0.11	27.6	6.4	25.0	5.1	3.9

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	MX	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	4	-	4	4	4	-	4	2	-	-	-	-	2	0.08	0.18	0.10	0.20	0.04	0.01	0.02	-	-
2	4	-	4	4	4	-	4	2	-	-	-	-	2	0.06	0.09	0.10	0.12	0.03	0.01	0.02	-	-
3	4	-	4	6	4	-	4	2	-	-	-	-	2	0.07	0.07	0.10	0.05	0.01	0.03	0.05	-	-
4	4	-	4	6	4	-	4	2	-	-	-	-	2	0.09	0.08	0.10	0.06	0.02	0.09	0.19	-	-
5	4	-	4	6	4	-	4	2	-	-	-	-	2	0.11	0.07	0.10	0.11	0.02	0.04	0.09	-	-

ISIS 4.0 data sheet of monolith TR010 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Luvic Calcisol (1974 : Calcic Luvisol)
USDA/SCS SOIL TAXONOMY (1992) : Calcic Rhodoxeralf
LOCAL CLASSIFICATION : Red Mediterranean

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A, argic B, calcic

Classification remarks : Deep, dark red clay derived from limestone. The B horizon bears the markings of clay illuviation. The CEC-soil is very high in the A and B horizons, in the C horizons has a medium value. The sum of bases is very high throughout. The base saturation is high in the topsoil and very high in the subsoil.

LOCATION : South western Turkey, Antalya Province
Latitude : 37° 0' 0'' N Longitude : 30°39' 0'' E Altitude : 39 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : Terrace
SLOPE Gradient : -% Aspect : Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :
Topography : flat or almost flat

PARENT MATERIAL 1 : derived from : limestone
Texture :
Remarks : Travertine

EFFECTIVE SOIL DEPTH(cm) : 102

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

VEGETATION Type : semi deciduous shrub
Landuse/vegetation remarks : Maki(Mediteranean type) and wild olives

ADDITIONAL REMARKS :
ADDITIONAL NOTES ON PROFILE DESCRIPTION:
B3 - distinct slickensides.

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		246	160	89	43	32	11	2	3	13	51	104	277	1031
T mean	°C		10.0	10.6	12.7	16.3	20.4	25.0	28.2	28.1	24.9	20.3	15.5	11.8	18.7

PROFILE DESCRIPTION :

A1 0 - 15 cm. dark reddish brown (5YR 3.0/3.0, moist)dark reddish brown (5YR 3.0/4.0, dry) silty clay loam; strong coarse angular blocky structure; sticky, plastic, firm, very hard; many roots; non calcareous (HCL); abrupt smooth boundary to

B2 15 - 50 cm. dark reddish brown (2.5YR 3.0/4.0, moist)dark red (2.5YR 3.0/6.0, dry) clay; strong coarse angular blocky structure; very sticky, plastic, firm, very hard; clay cutans on pedfaces; common roots; non calcareous (HCL); abrupt smooth boundary to

B3 50 - 75 cm. dark red (2.5YR 3.0/6.0, moist)red (2.5YR 3.5/6.0, dry) clay; moderate medium subangular blocky structure; very sticky, plastic, friable, hard; thin clay cutans; few roots; clear wavy boundary to

C1ca 75 - 102 cm. reddish yellow (7.5YR 6.0/6.0, moist)reddish yellow (7.5YR 6.5/8.0, dry) clay loam; massive structure; sticky, plastic, friable, very hard; few roots; hard calcareous concretions;

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR010 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top	Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0	15	-	0	0	1	2	2	5	10	20	30	66	-	-	-	-	-	-	-	-	-	-
2	15	50	-	0	0	0	1	1	2	4	9	13	86	-	-	-	-	-	-	-	-	-	-
3	50	75	-	-	-	-	-	-	0	2	3	5	95	-	-	-	-	-	-	-	-	-	-
4	75	102	-	1	8	6	5	1	22	8	9	17	61	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH CAT. Ca	Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	7.5	6.6	0.3	2.97	0.22	32.9	2.0	0.9	0.4	36.2	-	-	50.5	77	10.4	36.2	72	-	0.38
2	7.5	6.5	0.4	0.86	0.11	40.4	1.6	0.7	0.6	43.3	-	-	51.0	59	3.0	43.3	85	-	0.40
3	7.9	6.9	21.1	0.46	0.09	43.3	1.4	0.6	0.4	45.7	-	-	40.9	43	1.6	45.7	112	-	0.41
4	8.2	7.2	47.7	0.29	0.05	26.1	0.7	0.4	0.4	27.6	-	-	18.5	30	1.0	27.6	149	-	0.26

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.23	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.80	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.12	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.76	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR011 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Haplic Calcisol (1974 : Calcic Cambisol)
USDA/SCS SOIL TAXONOMY (1992) : Calcixerollic Xerochrept
LOCAL CLASSIFICATION : Brown Soil

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A, cambic B, calcic
USDA/SCS (1992) : Soil moisture regime : ustic

Classification remarks : Deep, pale brown silty loam derived from gravelly marl. The profile is strongly calcareous throughout and the sum of bases and base saturation are very high throughout. The B horizon is enriched with lime.

LOCATION : Central Anatolia, Eskisehir province, Sivrihisar subprovince
Latitude : 39°26′ 0′′ N Longitude : 31°17′ 0′′ E Altitude : 1000 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : Lower terrace
SLOPE Gradient : -% Aspect : Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :
Topography : undulating

PARENT MATERIAL 1 : derived from : marl
Texture : gravelly
Remarks :

EFFECTIVE SOIL DEPTH(cm) : 120

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

LAND USE : fallow; Crops : wheat; Rotation : crop with current fallow
Landuse/vegetation remarks : Short grass and legumes;wheat summer rot

ADDITIONAL REMARKS :
ADDITIONAL NOTES ON PROFILE DESCRIPTION:
B2 - some lime accumulation.
B3ca - strong lime accumulation.
C2 - marl.

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		41	38	36	34	46	37	13	5	19	23	30	48	368
T mean	°C		-0.2	1.0	4.5	10.1	15.1	18.7	21.5	21.4	16.9	12.0	6.9	2.3	10.9

ISIS 4.0 data sheet of monolith TR011 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

PROFILE DESCRIPTION :

Ap 0 - 17 cm. dark yellowish brown (10YR 4.0/4.0, moist)light yellowish brown (10YR 6.0/4.0, dry) loam; moderate fine granular structure; non sticky, slightly plastic, friable, hard; many roots; strongly calcareous (HCL); abrupt smooth boundary to

A1 17 - 35 cm. dark yellowish brown (10YR 4.0/3.5, moist)pale brown (10YR 6.0/3.0, dry) clay loam; strong medium granular structure; slightly sticky, plastic, friable, hard;; strongly calcareous (HCL); clear wavy boundary to

B2 35 - 58 cm. dark yellowish brown (10YR 4.0/4.0, moist)pale brown (10YR 5.5/3.0, dry) clay loam; strong coarse subangular blocky structure; sticky, plastic, friable, hard; clay cutans on pedfaces;; strongly calcareous (HCL); clear wavy boundary to

B3ca 58 - 80 cm. yellowish brown (10YR 5.0/4.0, moist)pale brown (10YR 5.5/3.0, dry) silty clay loam; moderate coarse subangular blocky structure; sticky, very plastic, friable, hard; patchy clay cutans; common roots; clear wavy boundary to

C1ca 80 - 93 cm. yellowish brown (10YR 5.0/4.0, moist)very pale brown (10YR 7.0/3.0, dry) silt loam; weak coarse subangular blocky structure; slightly sticky, plastic, friable, slightly hard;; clear wavy boundary to

C2 93 - 120 cm. very pale brown (10YR 7.0/4.0, moist)very pale brown (10YR 8.0/4.0, dry) gravelly silt loam; slightly sticky, plastic, friable, slightly hard; few roots;

ANALYTICAL DATA :

Hor. no.	Top - Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0 - 17	-	1	4	5	12	6	28	13	14	28	45	-	-	-	-	-	-	-	-	-	-
2	17 - 35	-	1	4	5	12	8	30	12	14	26	44	-	-	-	-	-	-	-	-	-	-
3	35 - 58	-	1	4	5	11	7	29	10	14	24	47	-	-	-	-	-	-	-	-	-	-
4	58 - 80	-	1	4	5	12	8	29	11	13	23	48	-	-	-	-	-	-	-	-	-	-
5	80 - 93	-	1	4	5	13	9	33	10	13	22	45	-	-	-	-	-	-	-	-	-	-
6	93 - 120	-	1	4	5	13	8	31	10	13	23	46	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH CAT. Ca	Mg	K	Na	sum	EXCH AC. H+Al	Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	8.1	7.3	28.1	0.77	0.09	19.7	3.1	0.9	0.4	24.1	-	-	27.5	61	2.7	24.1	88	-	0.38
2	8.2	7.3	30.5	0.45	0.07	16.6	1.3	0.5	0.2	18.6	-	-	25.7	58	1.6	18.6	72	-	0.36
3	8.2	7.3	32.3	0.21	0.06	34.2	3.9	0.4	0.2	38.7	-	-	25.7	54	0.7	38.7	151	-	0.39
4	8.2	7.3	36.8	0.38	0.06	30.0	3.6	0.4	0.2	34.2	-	-	25.7	54	1.3	34.2	133	-	0.39
5	8.3	7.5	52.2	0.26	0.05	26.2	4.4	0.3	0.1	31.0	-	-	17.9	40	0.9	31.0	173	-	0.31
6	8.3	7.5	51.3	0.10	0.04	15.9	2.6	0.3	0.1	18.9	-	-	16.2	36	0.4	18.9	117	-	0.33

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.74	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.59	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.44	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.44	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR012 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Haplic Calcisol (1974 : Calcic Cambisol)
USDA/SCS SOIL TAXONOMY (1992) : Calcixerollic Xerochrept
LOCAL CLASSIFICATION : Brown Forest Soil

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A, cambic B, calcic

Classification remarks : Deep, pale brown loamy soil derived from micaschist, showing lime accumulation in the B horizon. The subsoil is strongly calcareous. Sum of bases and base saturation are very high throughout.

LOCATION : North western Turkey, Bilecik province, Pazaryeri subprovince
Latitude : 39°55′ 0′′ N Longitude : 29°56′ 0′′ E Altitude : 740 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : Hilly upland
SLOPE Gradient : -%
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :
Topography : hilly
Aspect :
Form :

PARENT MATERIAL 1 :
Texture :
Remarks : Micaschist
derived from : schist

EFFECTIVE SOIL DEPTH(cm) : 120

WATER TABLE Depth(cm) :
DRAINAGE :
PERMEABILITY :
MOISTURE CONDITIONS PROFILE :
Kind :
No slow permeable layer(s) cm

LAND USE : woodland, grazed; Crops : crops, see remarks
VEGETATION Type : semi deciduous woodland
Landuse/vegetation remarks : Grass,legume,wild plum,Piner,Fagus,Querc

ADDITIONAL REMARKS :
ADDITIONAL NOTES ON PROFILE DESCRIPTION:
B2ca - lime accumulation.
B3ca - lime accumulation.
Cca - lime interbedded weathered mica schist.

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		48	48	43	36	49	38	20	9	21	31	36	52	430
T mean	°C		2.5	3.5	5.8	11.2	15.9	19.6	21.7	21.8	18.0	13.8	9.5	4.7	12.3

PROFILE DESCRIPTION :

A1 0 - 25 cm. dark yellowish brown (10YR 4.0/4.0, moist)brown (7.5YR 4.0/4.0, dry) clay loam; moderate medium to coarse angular blocky structure; sticky, slightly plastic, friable, hard; many fine roots; slightly calcareous (HCL); abrupt wavy boundary to

B2ca 25 - 63 cm. dark brown (10YR 4.0/3.0, moist)brown (7.5YR 4.0/4.0, dry) silty clay loam; strong coarse angular blocky structure; sticky, plastic, friable, hard; many roots; clear wavy boundary to

B3ca 63 - 88 cm. yellowish brown (10YR 5.0/6.0, moist)very pale brown (10YR 7.0/4.0, dry) silt loam; weak coarse angular blocky structure; non sticky, slightly plastic, friable, soft;; strongly calcareous (HCL); gradual irregular boundary to

Cca 88 - 120 cm. 10YR 7.0/5.0, moistvery pale brown (10YR 7.5/3.0, dry) loam; massive structure; non sticky , slightly plastic, friable, soft; few roots;

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR012 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top - Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0 - 25	-	2	7	7	14	11	40	12	20	32	29	-	-	-	-	-	-	-	-	-	-
2	25 - 63	-	2	7	6	13	10	37	12	20	32	31	-	-	-	-	-	-	-	-	-	-
3	63 - 88	-	2	4	5	12	9	31	17	35	52	18	-	-	-	-	-	-	-	-	-	-
4	88 - 120	-	1	2	2	14	12	31	15	38	53	17	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	8.0	7.2	1.1	1.05	0.12	28.2	0.8	0.3	0.1	29.4	-	-	23.7	83	3.7	29.4	124	-	0.32
2	8.1	7.2	1.9	0.69	0.09	31.4	0.9	0.2	0.1	32.6	-	-	25.1	81	2.4	32.6	130	-	0.25
3	8.3	7.4	28.5	0.43	0.05	30.0	1.3	0.1	0.0	31.4	-	-	19.4	110	1.5	31.4	162	-	0.26
4	8.5	7.7	32.4	0.17	0.04	24.4	1.3	0.1	0.0	25.8	-	-	14.1	85	0.6	25.8	183	-	0.23

ELEMENTAL COMPOSITION OF TOTAL SOIL (in weight %) AND MOLAR RATIOS

Hor. no.	SiO2	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	TiO2	MnO2	P2O5	IGN. LOSS	SiO2/ Al2O3	SiO2/ Fe2O3	SiO2/ R2O3	Al2O3/ Fe2O3
1	57.9	16.2	9.7	1.99	1.43	1.35	-	2.12	0.19	0.32	7.9	6.1	15.9	4.4	2.6
2	56.9	16.1	10.1	2.40	1.38	1.30	-	2.04	0.19	0.27	8.0	6.0	15.0	4.3	2.5
3	38.8	13.1	6.7	15.00	2.78	1.08	-	2.04	0.19	0.38	17.4	5.0	15.4	3.8	3.1
4	35.3	14.3	6.1	17.06	3.39	1.43	-	1.84	0.08	0.52	17.0	4.2	15.4	3.3	3.7

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	4	4	2	6	6	-	-	-	-	-	-	-	-	-	-	5.06	-	-	-	-	-
2	2	4	2	6	6	-	-	-	-	-	-	-	-	-	-	5.15	-	-	-	-	-
3	2	-	4	8	4	-	-	-	-	-	-	-	-	-	-	2.37	-	-	-	-	-
4	4	-	4	8	4	-	-	-	-	-	-	-	-	-	-	0.94	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR013 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Chromic Luvisol (1974 : Chromic Cambisol)
USDA/SCS SOIL TAXONOMY (1992) : Typic Rhodoxeralf
LOCAL CLASSIFICATION : Noncalcic Brown Soil

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A, argic B

Classification remarks : Deep, red clay loam derived from Miocene gravel, sand and clay deposits. The B horizon has a strong coarse prismatic structure. Sum of bases and base saturation are very high throughout the subsoil.

LOCATION : Thrace Region, Kirklareli province, Babaeski subprovince
Latitude : 41°31′ 0′′ N Longitude : 27° 3′ 0′′ E Altitude : 102 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM : plain Topography : undulating
PHYSIOGRAPHIC UNIT :
SLOPE Gradient : 4% Aspect : Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :

PARENT MATERIAL 1 : unconsolidated derived from : sedimentary rock
Texture :
Remarks : Sand, gravel & Clay

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

LAND USE : arable farming; Crops : sunflower
Landuse/vegetation remarks : Short & mid grass, cult.land-also wheat

ADDITIONAL REMARKS :
GEOLOGY: Miocene

ADDITIONAL NOTES ON PROFILE DESCRIPTION:
C - sand and gravelly deposits

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		67	57	52	43	49	53	26	15	33	53	75	82	604
T mean	°C		2.9	3.7	6.1	11.4	16.7	20.9	23.4	23.3	18.8	14.1	9.7	5.5	13.1

PROFILE DESCRIPTION :

Ap 0 - 16 cm. brown (7.5YR 4.0/4.0, moist)light brown (7.5YR 6.0/4.0, dry) slightly gravelly loam; moderate medium granular structure; non sticky, non plastic, friable, slightly hard; many roots; non calcareous (HCL); clear smooth boundary to

A12 16 - 34 cm. reddish brown (5YR 4.0/4.0, moist)reddish brown (5YR 5.0/4.0, dry) slightly gravelly loam; moderate medium subangular blocky structure; slightly sticky, slightly plastic, friable, hard; common fine roots; non calcareous (HCL); clear wavy boundary to

B 34 - 95 cm. 2.5YR 3.0/5.0, moistdark red (2.5YR 3.0/6.0, dry) slightly gravelly clay loam; strong coarse prismatic structure; very sticky, plastic, very firm, very hard; few roots; non calcareous (HCL); gradual smooth boundary to

C 95 - 120 cm. yellowish red (5YR 4.0/6.0, moist)yellowish red (5YR 5.0/8.0, dry) sandy clay loam; structureless single grain structure;; non calcareous (HCL);

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR013 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top - Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0 - 16	-	5	12	9	12	11	48	19	19	38	14	-	-	-	-	-	-	-	-	-	-
2	16 - 34	-	6	11	7	9	9	42	10	18	27	31	-	-	-	-	-	-	-	-	-	-
3	34 - 95	-	4	11	8	8	8	37	8	14	21	41	-	-	-	-	-	-	-	-	-	-
4	95 - 120	56	11	17	10	8	5	51	2	9	11	38	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH AC. H+Al	Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	7.0	6.4	0.3	0.55	0.05	3.0	0.4	0.5	0.0	3.9	-	-	7.2	51	1.9	3.9	54	-	0.18
2	6.9	5.8	0.1	0.24	0.05	6.1	1.7	0.7	0.0	8.5	-	-	13.3	43	0.8	8.5	64	-	0.16
3	6.9	5.7	0.1	0.21	0.06	12.4	5.0	0.7	0.0	18.1	-	-	21.2	51	0.7	18.1	85	-	0.27
4	6.7	5.4	0.1	0.07	0.07	12.2	5.3	0.8	0.0	18.3	-	-	20.6	54	0.2	18.3	89	-	0.19

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.16	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.77	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.55	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR014 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Eutric Vertisol (1974 : Pellic Vertisol)
USDA/SCS SOIL TAXONOMY (1992) : Typic Calcixerert (1975 : typic pelloxerert)
LOCAL CLASSIFICATION : Vertisol

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A

Classification remarks : A deep black clayey profile with a weak prismatic and blocky structure, showing distinct slickensides below 55 cm. Calcareous below 55 cm.

LOCATION : Thrace region, Tekirdag province, saray subprovince
Latitude : 41°21' 0'' N Longitude : 27°33' 0'' E Altitude : 131 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM : peneplain Topography : undulating
PHYSIOGRAPHIC UNIT :
SLOPE Gradient : 4% Aspect : Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SURFACE CHAR. Rock outcrop : nil Stoniness : nil
Cracking : Slaking/crusting :
Salt : nil Alkali : nil
SLOPE PROCESSES Soil erosion : nil

PARENT MATERIAL 1 : lacustrine sediments derived from :
Texture : clayey
Remarks :

WATER TABLE Depth(cm) : Kind :
DRAINAGE : moderately well
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

LAND USE : arable farming; Crops : vegetables
Landuse/vegetation remarks : grasses, legumes and sunflowers

ADDITIONAL REMARKS :
SURFACE CHARACTERISTICS: selfmulching; not-cultivated soils in the vicinity show gilgai.

HUMAN INFLUENCE: the soil is regularly ploughed.

CLIMATE : Köppen:
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		67	57	52	43	49	53	26	15	33	53	75	82	604
T mean	°C		2.9	3.7	6.1	11.4	16.7	20.9	23.4	23.3	18.8	14.1	9.7	5.5	13.1

PROFILE DESCRIPTION :

A11 0 - 15 cm. black (10YR 2.0/1.0, moist)very dark gray (10YR 3.0/1.0, dry) clay; weak coarse granular structure; very sticky, very plastic, firm, very hard; common roots; slightly calcareous (HCL); clear wavy boundary to

Au1 15 - 55 cm. black (10YR 2.0/1.0, moist)black (10YR 2.0/1.0, dry) clay; weak prismatic into weak angular blocky structure; very sticky, very plastic, very friable, very hard; slickensides cutans; common roots; calcareous (HCL); clear wavy boundary to

Au2 55 - 125 cm. black (10YR 2.0/1.0, moist)black (10YR 2.0/1.0, dry) clay; weak prismatic, weak angular blocky structure; very sticky, very plastic; moderately thick slickensides cutans;; calcareous; clear wavy boundary to

C 125 - 200 cm. grayish brown (10YR 5.0/2.0, moist)light brownish gray (10YR 6.0/2.0, dry) clay; massive structure; very sticky, very plastic, firm, very hard; slickensides cutans; few roots; strongly calcareous (HCL);

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR014 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top	Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0	15	-	1	7	11	12	5	36	5	13	18	47	-	-	-	-	-	-	-	-	-	-
2	15	55	-	1	7	10	12	4	34	6	12	18	48	-	-	-	-	-	-	-	-	-	-
3	55	125	-	1	7	10	12	5	36	4	12	16	48	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	7.9	7.0	1.9	0.97	0.12	35.8	4.5	1.0	0.4	41.7	-	-	47.1	101	3.4	41.7	89	-	0.36
2	8.3	7.1	7.1	0.39	0.08	42.2	6.7	0.7	0.4	50.0	-	-	48.6	101	1.4	50.0	103	-	0.34
3	8.5	7.1	6.6	0.43	0.05	36.9	9.3	0.6	1.4	48.2	-	-	45.9	96	1.5	48.2	105	-	0.39

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	3	-	-	7	4	-	-	4	2	-	-	-	-	-	-	0.31	-	-	-	-	-
2	2	-	-	7	4	-	-	3	4	-	-	-	-	-	-	0.22	-	-	-	-	-
3	2	-	-	7	4	-	-	4	2	-	-	-	-	-	-	0.22	-	-	-	-	-

ISIS 4.0 data sheet of monolith TR015 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

FAO/UNESCO (1988) : Calcaric Regosol (1974 : Calcaric Regosol)
USDA/SCS SOIL TAXONOMY (1992) : Typic Calcixeroll (1975 : vertic rendoll)
LOCAL CLASSIFICATION : Rendzina

DIAGNOSTIC CRITERIA FAO (1988) : Diagnostic horizons : ochric A

Classification remarks : A very dark grey, clayey surface horizon with a medium granular structure overlies, with a light brownish grey, clayey transitional horizon, a white clayey marl. The profile is strongly calcareous and cracks are formed after drying.

LOCATION : Thrace region, Instanbul province, Catalca subprovince
Latitude : 41° 5' 0'' N Longitude : 28°28' 0'' E Altitude : 100 (m.a.s.l.)
AUTHOR(S) : S'Ardas Date (mm.yy) : 5.72

GENERAL LANDFORM :
PHYSIOGRAPHIC UNIT : upland
SLOPE Gradient : 7% Aspect : Topography : hilly Form :
POSITION OF SITE :
MICRO RELIEF Kind :
SLOPE PROCESSES Soil erosion :

PARENT MATERIAL 1 : derived from : marl
Texture : clayey
Remarks : Marl

WATER TABLE Depth(cm) : Kind :
DRAINAGE :
PERMEABILITY : No slow permeable layer(s) cm
MOISTURE CONDITIONS PROFILE :

LAND USE : mixed farming
Landuse/vegetation remarks : Scattered oak trees and shrubs

CLIMATE : Köppen: Csa
Station: 0 0 / 0 0 0 m a.s.l 0 km of site Relevance:

		No. years of record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
precipitation	mm		66	50	45	37	43	38	18	20	28	49	77	89	559
T mean	°C		2.8	3.7	5.7	10.8	15.8	19.9	22.4	22.2	18.4	14.0	10.3	5.7	12.6

PROFILE DESCRIPTION :

A1 0 - 31 cm. very dark grayish brown (10YR 3.0/2.0, moist)very dark gray (10YR 3.0/1.0, dry) clay; strong medium granular structure; very sticky, plastic, very friable, very hard; many fine roots; strongly calcareous (HCL); clear smooth boundary to

AC 31 - 42 cm. light brownish gray (2.5Y 6.0/2.0, dry) clay; moderate medium granular structure; sticky, plastic , firm, hard; many fine roots; strongly calcareous (HCL); abrupt smooth boundary to

C 42 - 95 cm. pale yellow (5Y 7.0/3.0, moist)white (2.5Y 8.0/2.0, dry) silty clay loam; massive structure; few roots; marl fragments;

ANALYTICAL DATA :

ISIS 4.0 data sheet of monolith TR015 Country : TURKEY Print date (dd/mm/yy) : 27/06/94

Hor. no.	Top	Bot	>2 mm	2000 1000	1000 500	500 250	250 100	100 50	TOT SAND	50 20	20 2	TOT SILT	<2 µm	DISP	BULK DENS	pF- 0.0	1.0	1.5	2.0	2.3	2.7	3.4	4.2
1	0	31	-	0	0	1	3	6	10	10	41	51	39	-	-	-	-	-	-	-	-	-	-
2	31	42	-	0	1	1	3	1	5	10	23	32	62	-	-	-	-	-	-	-	-	-	-
3	42	95	-	0	0	0	1	1	2	6	23	29	69	-	-	-	-	-	-	-	-	-	-

Hor. no.	pH- H2O	KCl	CaCO3 %	ORG- C %	MAT. N %	EXCH Ca	CAT. Mg	K	Na	sum	EXCH H+Al	AC. Al	CEC soil	clay	OrgC	ECEC	BASE SAT %	Al SAT %	EC 2.5 mS/cm
						cmol(+)/kg													
1	7.7	7.0	9.0	3.07	0.30	52.3	2.0	2.8	0.5	57.6	-	-	-	-	10.7	57.6	-	-	0.59
2	8.1	7.1	52.2	0.55	0.08	33.2	0.7	0.7	0.2	34.8	-	-	-	-	1.9	34.8	-	-	0.34
3	8.2	7.2	67.8	0.43	0.05	33.4	0.4	0.3	0.1	34.2	-	-	-	-	1.5	34.2	-	-	0.28

ELEMENTAL COMPOSITION OF TOTAL SOIL (in weight %) AND MOLAR RATIOS

Hor. no.	SiO2	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	TiO2	MnO2	P2O5	IGN. LOSS	SiO2/ Al2O3	SiO2/ Fe2O3	SiO2/ R2O3	Al2O3/ Fe2O3
1	52.6	12.4	3.3	5.99	1.86	1.82	-	0.42	0.22	0.07	21.6	7.2	42.4	6.2	5.9
2	22.9	6.4	2.2	32.04	1.25	0.93	-	0.21	0.13	0.12	29.9	6.1	27.7	5.0	4.6
3	29.3	7.8	2.4	27.91	1.28	1.08	-	0.25	0.13	0.11	27.4	6.4	32.5	5.3	5.1

CLAY MINERALOGY (1 very weak,.., 8 very strong) / EXTRACTABLE Fe Al Si Mn (by AMM. OXALATE(o), Na DITHIONITE(d) & PYROPHO(p)

Hor. no.	MI	VE	CH	SM	KA	HA	ML	QU	FE	GI	GO	HE	MX	Fe(o)	Al(o)	Si(o)	Fe(d)	Al(d)	Fe(p)	Al(p)	Pret	pHNaF
1	2	-	-	6	-	-	-	4	2	-	-	-	4	-	-	-	0.46	-	-	-	-	-
2	2	-	-	8	-	-	-	4	2	-	-	-	2	-	-	-	0.37	-	-	-	-	-
3	2	-	-	8	-	-	-	4	2	-	-	-	2	-	-	-	0.30	-	-	-	-	-

ANNEX 1 REFERENCES

De Meester, T. (ed.), 1970. Soils of the Great Konya Basin, Turkey. Agricultural Research Report 740. Pudoc, Wageningen.

De Meester, T., 1971. Highly calcareous lacustrine soils in the Great Konya Basin, Turkey. Thesis, Pudoc, Wageningen.

Groneman A.F., 1968. The Soils of the Wind Erosion Control Camp Area Karapinar Turkey. Agricultural University Wageningen.

Driessen, P.M., 1970. Soil Salinity and Alkalinity in the Great Konya Basin, Turkey. Agricultural Research Report 743. Pudoc, Wageningen.

ANNEX 2 FIELD METHODS

The soils were described in the field according to ISRIC's Guidelines for the description and coding of soil data (Van Waveren & Bos, 1988; 1994). These guidelines follow closely those for soil description given by FAO (1977, 1990). Soil columns were taken for monolith preparation using the methods described by Van Baren & Bomer (1979). In addition, disturbed and undisturbed samples are collected for physical, chemical and mineralogical analyses and for thin section preparation, where possible using the guidelines for the sampling of soil horizons for a soil reference collection (NASREC Newsletter no. 1 (March, 1991).

Of all sites slides and photographs were taken showing, the landscape, vegetation, land use, soil profile and important profile details. Furthermore, data are collected with each pedon on climate, land use history, crops and crop yields, soil management practices, etc.

Soils are classified according to the FAO-Unesco Legend of the Soil Map of the World (1974) and its Revised Legend (FAO-Unesco-ISRIC, 1988). Soil subunit modifiers ("third level") were added using the guidelines described by Nachtergaele *et al.* (1994). In addition soil were given their classification according to Soil Taxonomy (Soil Survey Staff, 1975; 1992), and, if available, the local classification.

All data are stored in ISIS version 4.0 (ISRIC, 1994), ISRIC's soil pedon data management system for micro computers. The information given on the soil data sheets in this publication have been generated from the ISIS files.

ANNEX 3 ANALYTICAL METHODS

Abstract from ISRIC TP 9 (Van Reeuwijk, 1993).

Preparation
Each sample is air-dried, cleaned, crushed (not ground), passed through 2 mm sieve, homogenized. Moisture content is determined at 105^0 C.

pH H_2O
(1:2.5): 20 g of soil is shaken with 50 ml of deionised water for 2 hours, electrode in upper part of suspension.

pH-KCl
likewise but shaken with 1 *M* KCl.

EC
(1:2.5): Conductivity of pH-H_2O suspension.

Particle-size distribution
Soil is treated with 15% hydrogen peroxide overnight in the cold, then on waterbath at about 80°C. Then boiled on hot plate for 1 hour. Washings until dispersion. Dispersing agent is added (20 ml solution of 4% Na-hexametaphosphate and 1% soda) and suspension shaken overnight. Suspension sieved through 50 μm sieve. Sand fraction remaining on sieve dried and weighed. Clay and silt determined by pipetting from sedimentation cylinder.

Water-dispersable clay
Pipetting after shaking 20 g of soil overnight (16 hours) with deionized water.

Exchangeable bases and CEC
Percolation with 1 *M* ammonium acetate pH 7 using automatic extractor.
(If EC>0.5mS pre-leaching with ethanol 80%). Cations are determined in the leachate by AAS.
CEC: saturation with sodium acetate 1 *M* pH 7; washed with ethanol 80% and then leached with ammonium acetate 1 *M* pH 7. Na determined by FES.

Exchangeable acidity and Aluminium
The sample is extracted with *1 M* KCl solution and the exchange acidity (H+Al) titrated with NaOH. Al is measured by AAS.

Carbonate
Piper's procedure. Sample is treated with dilute acid and the residual acid is titrated.

Organic carbon
Walkley-Black procedure. The sample is treated with a mixture of potassium dichromate and sulphuric acid at about 125°C. The residual dichromate is titrated with ferrous sulphate. The result expressed in % carbon (because of incomplete oxidation a correction factor of 1.3 is applied).

Total nitrogen
Micro-Kjeldahl. Digested in H_2SO_4 with Se as catalyst. Then ammonia is distilled, trapped in boric acid and titrated with standard acid.

P-Bray 1
Phosphate is extracted with a mixture of 0.025 *M* HCl + 0.03 *M* NH_4F and determined colorimetrically.

P-Olsen
Phosphate is extracted with 0.5 *M* $NaHCO_3$ solution pH 8.5 and determined colorimetrically.

P-Retention
Blakemore *et al.* Shaken with (KH_2PO_4 + NaAc) solution, 1000 mg/L P
pH 4.6 for 16 hours.
Determination of residual P colorimetrically after centrifuging.

pH-NaF
To 1g of soil 50 ml of NaF 1 *M* is added and stirred for 1 minute.
Reading pH by continuous stirring exactly 2 minutes after adding NaF solution.

Extractable Iron, Aluminium, Manganese and Silicon
All determinations by AAS.

1. "Free" (Fe, Al, Mn): Holmgren Shaken with sodium citrate (17%) + sodium dithionite (1.7%) solution for 16 hours.
2. "Active" (Fe, Al, Si): Shaken with acid ammonium acetate 0.2 *M* pH 3 for 4 hours in the dark.
3. "Organically bound" (Fe, Al): Shaken with sodium pyrophosphate 0.1 *M* for 16 hours.

Clay mineralogy
Clay is separated as indicated for particle-size analysis.
about 10-20 mg of clay is brought on porous ceramic tile by suction and analyzed using a Philips diffractometer.

Soluble salts
Measuring pH, EC, cations and anions in water extracts.
1. 1:5 extract. Shaking 30 g of fine earth + 150 ml of water for 2 hours.
2. saturation extract. Adding to 200-1000 g fine earth just enough water to saturate the sample.
Standing overnight.
After filtration Ca, Mg, Na, K are measured by AAS. Cl with the Chlorocounter and SO_4 turbidimetrically.

Gypsum
To 10 g of fine earth 100 ml of water is added, shaken overnight and centrifuged.
Precipitation by adding acetone. Precipitate redissolved in water and determination of Ca by AAS.

Elemental composition
The fine earth is dried, ignited and fused with lithium tetraborate.
The formed bead is analyzed by X-ray fluorescence spectroscopy.

Moisture retention
Moisture determinations on undisturbed core samples in silt box (pF1.0;1.5;2.0) and kaolinite box (pF2.3;2.7) respectivily and on disturbed samples in high pressure pan (pF3.4;4.2).
Bulk density obtained from dry weight of core sample.

ANNEX 4 LIST OF SLIDES

ISIS_ID	Slide nr.	Subject	Remarks
TR001	304	landscape	Landscape, arable land
TR001	305	landscape	Landscape, arable land
TR001	306	landscape	Road-incision, 100 m at site
TR002	307	landscape	Landscape, arable land
TR002	308	landscape	Landscape, arable land
TR002	309	landscape	Landscape, arable land
TR002	310	landscape	
TR002	311	landscape	Landscape, arable land
TR002	312	landscape	Landscape, arable land
TR004	313	landscape	Landscape, vegetation
TR004	314	landscape	Landscape, vegetation
TR004	315	profile	Profile with groundcover
TR005	316	vegetation	Groundcover, vegetation
TR005	317	vegetation	Groundcover, vegetation
TR006	318	vegetation	Vegetation, groundcover - Gölé
TR006	319	vegetation	Vegetation, groundcover - Gölé
TR007	320	vegetation	Groundcover with stones
TR007	321	vegetation	Groundcover with stones
TR007	322	vegetation	Groundcover with stones
TR007	323	vegetation	Groundcover with stones
TR007	324	profile details	Crack in Vertisol
TR007	325	profile details	Crack in Vertisol
TR007	326	profile details	Vertisol-structure, without stones
TR007	327	profile	Pit in Basalt
TR008	328	profile	(Xerollic Calciorthid)
TR008	329	profile	Profile, diff. exp.
TR008	330	vegetation	Semi-desert grasses and - herbs (Xerollic Calciorthid)
TR008	331	landscape	
TR008	332	vegetation	Groundcover, vegetation
TR008	704	other	
TR008	705	other	Part of monolith; 20-60 cm
TR009	333	profile	

ISIS_ID	Slide nr.	Subject	Remarks
TR009	334	profile	Profile, diff. exp.
TR009	335	vegetation	
TR009	336	erosion /conservation	
TR010	337	landscape	
TR010	338	landscape	
TR010	339	profile	
TR011	340	profile	
TR011	341	land use	Arable land
TR011	342	land use	Arable land
TR011	343	land use	Arable land
TR012	344	profile	Profile-pit
TR012	345	landscape	
TR012	706	other	
TR012	707	other	Part of monolith; 25-95 cm
TR012	708	other	Part of monolith; 30-70 cm
TR012	709	profile details	Macro; 40-50 cm
TR012	1534	tables/text	Table carbon & base saturation percent
TR013	347	profile	
TR013	348	land use	Arable land
TR014	349	land use	Arable land
TR014	350	land use	Arable land
TR014	351	surface characteristics	Gilgai
TR014	352	surface characteristics	Gilgai
TR014	353	surface characteristics	Gilgai
TR014	354	surface characteristics	Gilgai
TR014	355	surface characteristics	Gilgai
TR015	356	profile	
TR015	357	profile	
TR015	358	landscape	
TR015	359	landscape	

Other Country Reports (in press):

Country Report 1	Cuba
Country Report 2	China
Country Report 4	Côte d'Ivoire
Country Report 5	Thailand
Country Report 6	Colombia
Country Report 7	Indonesia
Country Report 8	Ecuador (in prep.)
Country Report 9	Brazil
Country Report 10	Peru (in prep.)
Country Report 11	Nicaragua
Country Report 12	Costa Rica
Country Report 13	Zambia

Country Reports[1]

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No.	Country	No. of soils	No.	Coutry	No. of soils
1	Cuba	22	15	Gabon	6
2	P.R. of China	51	16	Ghana	in prep.
3	Turkey	15	17	Philippines	6
4	Côte d'Ivoire	7	18	Zimbabwe	13
5	Thailand	13	19	Spain	20
6	Colombia	18	20	Italy	17
7	Indonesia	48	21	Greece	in prep.
8	Ecuador	in prep.	22	India	in prep.
9	Brazil	28	23	Kenya	in prep.
10	Peru	21	24	Mali	in prep.
11	Nicaragua	11	25	Nigeria	in prep.
12	Costa Rica	12	26	Mozambique	in prep.
13	Zambia	11	27	Botswana	in prep.
14	Uruguay	10	28	Malaysia	18

[1] as of June 1995