

Proposed by F.R. Moormann et al-1966
Revised by:
1. C. Changprai, 1987
2. S. Udomsri, 2004

MUAK LEK SERIES

Field Symbol: MI

Distribution: Occupies moderate extent to large in the Central Plain, Central Highlands, West and North of Thailand.

Setting: The Muak Lek soils are formed from residuum and colluvium from light colored shale, slates and other equivalent rocks and occur on the undulating to hilly topography of erosion surfaces and footslopes. The range of slopes is from 4-35%. Elevation above sea level is from 180 m up to 400 m. The climate is Tropical Savanna (Köppen 'Aw'). Average annual precipitation varies from 1,100-1,400 mm. Mean annual temperature is around 27°C.

Drainage, Permeability and Surface Runoff: The Muak Lek series consists of well drained soils. Permeability is moderate. Surface runoff is rapid. Ground water level during the dry season is very deep.

Vegetation and Land Use: Mainly in Mixed deciduous and dry evergreen forest. Parts are cleared for upland crop cultivation.

Characteristic Profile Features: The Muak Lek series is a member of the Clayey-skeletal, mixed, semiactive, isohyperthermic, shallow Ultic Haplustalfs. They are shallow soil to parent rock and characterized by a dark brown or dark grayish brown loam or silt loam A horizon overlying a brown or dark brown or dark yellowish brown gravelly (or very gravelly) clay loam, silty clay loam or clay argillic B horizon which in turn overlies parent rock fragments at some depth within 50 cm of the surface. Reaction is medium acid to neutral over strongly acid to slightly acid.

Typifying Pedon: Profile code number is 1

Location: Thai-Danish Dairy Farm on km 142 right side of Mitraparp road, Amphoe Muak Lek Changwat Saraburi.

Sheet Name: Amphoe Kaeng Khoi

Sheet No.: 5238 III

Coordinate: 597385

Elevation: 220 m (MSL)

Relief: undulating to rolling

Slope: 5-8%

Physiography: erosion surfaces

Parent material: residuum and colluvium from shale and equivalent rocks

Drainage: well drained

Permeability: moderate

Runoff: moderate

Ground water depth: 1.7 m

Flooding depth: - cm

Duration: - month

Frequency: -

Annual rainfall: 1,211.9 mm

Mean temp: 28.1°C

Climate type: Tropical Savannah

Natural vegetation and/or land use: pasture

Other:

Described by: P.Hemsrichart, C.Navanugraha,
T.Chitchumnong

Date: 10 June, 1984

Revised by: S. Udomsri

Horizon	Depth (cm)	Description
Ap	0-19	Dark brown to brown (10YR4/3) and brown (10YR5/3) clay loam; few fine distinct strong brown (7.5YR5/6) mottles; strong medium and coarse subangular blocky structure; hard firm, sticky, plastic; many very fine roots; some fragment of shale; medium acid (field pH 6.0); clear, smooth boundary.

Bt	19-33/40	Dark yellowish brown (10YR4/4), brown (10YR5/3) and yellowish red (5YR4/6) clay; few fine distinct strong brown (7.5YR5/6) mottles; strong medium and coarse subangular blocky structure; hard, firm, sticky, plastic; patchy thin cutan on ped faces; many very fine roots; some fragments of shale; strongly acid (field pH 5.5) clear, wavy boundary.
BC	33/40-112	Brown (10YR5/3) very gravelly clay; common fine distinct strong brown (7.5YR5/6) and few fine prominent red (2.5YR5/6) mottles; loose and some fine subangular blocky structure; sticky plastic; many very fine roots; gravels are pseudolaterite from shale about 30-90% diameter about 1-10 cm neutral (field pH 7.0).
Cr	112-133 ⁺	Gray (10YR5/1) gravelly clay; common fine and medium brownish yellow (10YR6/6) and few fine red (10YR4/8) mottles.

Remark: Pedon No. 1 from *Supplementary on Soil Analysis Data of Six Pedon Soil in the Central Plain, Central Highlands, and Northeast Plateau*, Publish as part of the field guide book for the Fifth Asean Soil Conference, 10-23 June 1984, Bangkok, Thailand. Department of Land Development, Thailand.

Type Location: Name of Amphoe, Amphoe Muak Lek Changwat Saraburi.

Range of Profile Features:

The thickness of an A horizon varies from 5-20 cm and has 7.5YR or 10YR hues, values of 3 or 4, and chromas of 2 to 4. Texture of loam to clay loam may occur in places. Structure is weak to moderate medium blocky and/or granular. Field pH value ranges from 5.5 to 7.0. This horizon may contain some coarse fraction derived from parent rocks.

The B horizon has 10YR or 7.5YR hues; values of 4 or 5, and chromas of 2 to 4. Structure is weak to moderate blocky. Field pH value is from 5.5 to 6.5.

The C and R horizons consist of parent rock fragments and occur within 50 cm of the surface. In places these soils may contain some quartz fragments. Mottles may occur in the weathering zone.

Similar Soil Series:

Chiang Khan Series (Ch): Coarse fraction consists of pseudolaterite derived from shale and coating with iron. Colors of subsoil is in 5YR hues.

Li Series (Li): is redder color in the subsoil (in 5YR or 2.5YR hues).

Wang Saphung (Ws); has contain shale fragments and bedrock between 50-100 cm.

Principal Associated Soils: These include Pak Chong, Thap Kwang, Ban Chong, Tha Kli, Lop Buri and Complex soils.

ANALYSIS RESULTS

(oven dry basis)

Profile code No. 1

Soil series : Muak Lek (M1)

Lab No.	Depth (cm)	Horizon	Particle size distribution analysis (% by weight)								Texture		pH		CaCO ₃ %	P, mg kg ⁻¹ Bray 2	K, mg kg ⁻¹ NH ₄ OAc
			USDA grading			Sand-fraction grading					Lab	Field	1:1	1:1			
			sand	silt	clay	vc	c	m	f	vf	result	estim ¹	water	KCl			
6145	0-19	Ap	19.3	30.5	50.2	2.4	2.8	3.0	2.6	8.5	c	cl	6.0	4.7		23.4	100
6146	19-33/40	Bt	15.3	32.9	51.8	3.1	1.9	1.9	1.5	6.7	c	c	5.2	4.4		5.8	87
6147	33/40-112	BC	12.5	16.0	71.5	5.0	1.6	0.5	0.4	5.0	c	vg	5.0	4.1		2.3	50
6148	1112-133	Cr	15.7	24.6	59.7	3.2	1.8	1.7	3.1	5.9	c	gc	5.7	5.2		2.0	38

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol ₍₊₎ kg ⁻¹)										Base satur ¹ (%)		ECEC cmol ₍₊₎ kg ⁻¹ (B+D)	Al KCl extr. cmol ₍₊₎ kg ⁻¹ (D)	Electrical conduct ^y (ECx10 ⁶) dS m ⁻¹
				Ca	Mg	K	Na	SUM cations (B)	Extr. acidity (A)	SUM (B+A)	CEC NH ₄ OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/(B+A)				
				0-19	3.1	1.99		12.30	2.10	0.30	0.40	15.10	10.00	25.10	18.50			
19-33/40	3.5	1.54		11.80	1.70	0.20	0.50	14.20	10.10	24.30	18.10	34.9	78	58				
33/40-112	5.5	0.66		11.00	2.80	0.10	0.40	14.30	10.80	25.10	18.00	25.2	79	57				
1112-133	3.2	0.19		12.90	2.00	0.10	1.20	16.20	5.50	21.70	16.60	27.8	98	75				