

Proposed by F.R. Moormann-1963
Revised by:
1. S. Kunaporn, 1987
2. S. Udomsri, 2004

LAT YA SERIES

Field Symbol: Ly

Distribution: Occupies large extent, occurring in all parts of Thailand with the exception of Peninsular Thailand and Southeast Coastal Thailand.

Setting: Lat Ya soils are formed from colluvium and residuum derived from sandstone and quartzite interbedded with shale and phyllite or fine grained clastic rocks and occur on dissected erosion surfaces or footslopes of residual hills. Relief is mainly undulating to rolling but may be hilly in places. Slope range from 2-20%. Elevation are variable, but the soils are not thought to occur higher than 750 meters above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Mean annual temperature is 27° C.

Drainage and Permeability and Surface Runoff: Well drained. Permeability and surface runoff are moderate to rapid. Ground water table is below 2 meters throughout the year.

Vegetation and Land Use: Mixed deciduous and dipterocarp forest, locally cleared for the shifting cultivation of upland crops, reverting to secondary forest and shrubs when abandoned.

Characteristic Profile Features: Lat Ya series is a member of the Fine-loamy, siliceous, isohyperthermic Kanhaplic Haplustults. They are moderately deep soils to fragments of coarse grained material and are characterized by a dark yellowish brown, dark brown or dark grayish brown sandy loam or loam A horizon. The argillic B horizon is a brown, strong brown or reddish brown sandy loam or sandy clay loam grading to a yellowish red gravelly sandy clay loam at some depth below 50 cm and within 125 cm of the soil surface. Gravels are composed of quartz, sandstone phyllite, and shale fragments and scattered ironstone nodules. Reaction is very strongly acid to medium acid, decreasing slightly with depth.

Typifying Pedon: Profile code number is 17

Location: 39 km to Erawan falling, Ban Wang Dong, Tambon Lat Ya, Amphoe Mueang Changwat Kanchanaburi.

Sheet Name: King Ban Lat Ya

Sheet No.: 4837 II

Coordinate: 293423

Elevation: 50-60 m (MSL)

Relief: gently undulating

Slope: 2% convex

Physiography: footslope

Parent material: coarse grained material over fine grained clastic rocks

Drainage: well drained

Permeability: moderate

Runoff: moderate

Ground water depth: >2 m

Flooding depth: - cm

Duration: - month

Frequency: -

Annual rainfall: 1,051.8 mm

Mean temp: 27.9 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: secondary forest

Other:

Described by: M.J. Maubach, C. Chaengprai,
W. Sirichuaychoo

Date: 10 June, 1981

Revised by: S. Udomsri

Horizon **Depth (cm)**

Description

Ap	0-20	Brown to dark brown (7.5YR4/4 dry), dark reddish brown (5YR3/2 moist) clay loam; weak medium subangular blocky breaking to moderate fine subangular blocky and granular structure; hard, friable, slightly sticky, slightly plastic; many very fine and fine roots; moderately acid (field pH 6.0); clear, slightly wavy boundary.
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BA	20-42	Strong brown (7.5YR5/6 dry), reddish brown (5YR4/4 moist) clay loam; moderate medium and coarse subangular blocky structure; hard, friable, slightly sticky, slightly plastic; patchy thin clay coatings on ped faces and in pores; common fine and few large roots; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bt1	42-66	Reddish yellow (7.5YR6/8 dry), dark red (2.5YR3/6 moist) clay loam; moderate medium and coarse subangular blocky structure; hard, friable, slightly sticky, slightly plastic; patchy thin clay coatings on ped faces and moderately thick in some pores; few fine and medium roots; extremely acid (field pH 4.0); gradual, smooth boundary.
Bt2	66-96	Reddish yellow (5YR6/8 or 7.5YR7/6 dry), red (2.5YR4/8 moist) clay loam; moderate coarse and medium subangular blocky breaking to moderate fine subangular blocky structure; hard, friable, slightly sticky, slightly plastic; patchy thin clay coatings on ped faces and moderately thick in some pores; few fine and medium roots; extremely acid (field pH 4.0); abrupt, smooth boundary.
BC	96-127	Rock fragment about 80%, mostly quartzite; few fine roots.

Remark: Pedon No. 17 from *Benchmark Soils of Thailand*, L. Moncharoen, T. Veerasilp, and H. Esvaran, 1987, Department of Land Development, Thailand and Soil Management Support Service, USA.

Type Location: Name of Tambon, Tambon Lat Ya, Amphoe Mueang Changwat Kanchanaburi.

Range of Profile Features:

The A horizon is from 10 to 20 cm thick and may have a loam or sandy loam texture. Matrix colours are in 10YR and 7.5YR hues with values of 3 through 5 and chromas of 2 through 4. Structure is moderate, fine and medium blocky and field pH values range from 5.0 to 6.0.

The argillic B horizon may have sandy loam, sandy clay loam or loam textures and contains gravels of more than 35% by volume between 50-125 cm. Matrix colours are in the 7.5YR and 5YR hues with values of 4 or more and dry values of 5 or more with chromas of 4 through 8. Structure is moderate, fine and medium blocky and field pH values range from 4.5 to 5.5.

Similar Soil Series:

Tha Yang series (Ty): is very gravelly within 50 cm of the soil surface.

Phato series (Pto): similar profile with regard to morphology, genesis and parent material, but with an udic moisture regime.

Principal Associated Soils: These include Tha Yang occurring on residual hills, Mae Rim and Yasothon series on uplifted terraces, and Chiang Khan and Ban Chong series on dissected erosion surfaces and coalescing fans.

ANALYSIS RESULTS

Profile code No.:17

(oven dry basis)

Soil series : Lat Ya (Ly)

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			
	0-20	Ap	42.6	35.4	22.0	3.3	5.8	8.9	13.3	11.3	Cl	cl	4.9	4.3			
	20-42	BA	41.6	33.3	25.1	3.2	5.6	8.6	13.1	11.1	Cl	cl	4.8	4.2			
	42-66	B11	34.1	35.6	30.3	3.6	4.4	7.3	10.1	8.7	Cl	cl	4.7	3.9			
	66-96	B12	28.7	34.8	36.5	3.7	4.3	5.8	7.6	7.3	Cl	cl	4.7	4.1			
	96-127	BC	28.6	26.0	45.4	15.9	3.9	2.5	3.0	3.3	c	-	4.9	4.2			

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol _(c) kg ⁻¹)								Base satur ⁿ (%)		ECEC cmol _(c) kg ⁻¹ (B+D)	Al KCl extr. cmol _(c) kg ⁻¹ (D)	Electrical conduct ^y (ECx10 ⁶) dS m ⁻¹			
				Ca		Mg		K		Na		SUM	CEC				CEC	B/Cx100	(Bx100)/(B+A)
				cations	acid	(B)	(A)	(B+A)	NH ₄ OAc	100g	Clay								
0-20		1.62	0.10	2.00	1.40	0.20	TR	3.60			9.00	40.9	40						
20-42		1.41	0.09	0.80	0.90	0.20	TR	1.90			7.60	30.3	25						
42-66		0.54	0.05	0.20	0.30	0.10	TR	0.60			6.90	22.8	9						
66-96		0.44	0.05	0.30	0.60	0.10	TR	1.00			8.40	23.0	12						
96-127		0.21		1.10	2.00	0.20	0.20	3.50			12.30	27.1	28						