

Proposed by: F.R. Moormann, 1967  
Revised by:  
1. N. Chorphaka, 1987  
2. P. Wiwatwongwana, 2004

**LOM KAO SERIES**

**Field Symbol: Lk**

**Distribution:** Moderate extent in valleys of the Central Highlands of Thailand.

**Setting:** Lom Kao soils are formed from alluvium and occur on level or nearly level low terraces. Slopes are 2% or less. The climate is Tropical Savanna (Koppen 'Aw'). The mean annual precipitation ranges from 1,100 to 1,600 mm.

**Drainage, Permeability and Runoff:** Somewhat poorly drained. Permeability and runoff are slow. Flooded by impounded rainwater up to 30 to 50 cm for about 4 months during the rainy season. Groundwater level falls below 1.5 m during the peak of the dry season. Permeability and runoff are slow.

**Vegetation and Land Use:** Secondary dipterocarp forest, mostly cleared for transplanted rice.

**Characteristic Profile Features:** Lom Kao series is a member of the fine-loamy, mixed, semiactive isohyperthermic Typic (Aquic) Paleustults. They are very deep soils and are characterized by a dark brown to brown sandy loam or loam A horizon overlying a reddish brown or light reddish brown in the upper B grading to pinkish gray or light brownish gray in the lower B, sandy clay loam to sandy clay argillic B horizon. Mottles are brown in the surface and distinct yellowish red and yellowish brown in the subsoil. The reaction is slightly to medium over strongly to very strongly acid.

**Typifying Pedon:** Profile code no. is NC-47/16 (moist colors unless otherwise stated).

**Location:** 11.5 km south of Lom Sak, on west side of Lom Sak-Phetchabun road, Ban Dong Khwang, Amphoe Lom Sak Changwat Phetchabun.

**Sheet Name:** Ban Tha Phon

**Sheet No.:** 5242 III

**Coordinate:** 323473

**Elevation:** 150 m (MSL)

**Relief:** level to nearly level

**Slope:** 1 %

**Physiography:** low terrace

**Parent material:** alluvium

**Drainage:** somewhat poorly drained

**Permeability:** slow

**Runoff:** slow

**Ground water depth:** >1.5 m

**Flooding depth:** -

**Duration:** -

**Frequency:** -

**Annual rainfall:** 1,124.7 mm

**Mean temp.:** 27.5 °C

**Climate type:** Tropical Savannah (Aw)

**Natural vegetation or land use:** secondary dipterocarp forest

**Described by:** Thamrong and J.D. Cowie

**Date:** 15 June, 1968

**Revised by:** Phusit Wiwatwongwana

**Date:** 23 May, 2004

Horizon	Depth (cm)	Description
A	0-10	Dark brown (7.5YR3/2) sandy loam; common fine faint brown mottles; weak medium subangular blocky structure; slightly sticky, slightly plastic; friable; many medium and fine roots; moderately acid (field pH 6.0); clear, smooth boundary.
Bw1	10-23	Reddish brown (5YR5/3) sandy loam; many medium distinct yellowish red mottles; moderate medium and fine subangular blocky structure; slightly sticky, slightly plastic; friable; common roots; very strongly acid (field pH 4.5); clear, smooth boundary.
Bw2	23-42	Reddish brown (5YR5/3) loam; common medium distinct yellowish red mottles; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; very strongly acid (field pH 4.5); abrupt, smooth boundary.

Btg1	42-68	Light reddish brown (5YR6/3) clay loam; many medium distinct yellowish red mottles; weak medium and coarse subangular blocky structure; friable, sticky, plastic; patchy thin cutans along pores; few fine and medium roots; very strongly acid (field pH 4.5); clear, smooth boundary.
Btg2	68-100+	Pinkish gray (5YR6/2) clay loam; few medium distinct yellowish red and many fine prominent light red mottles; moderate medium subangular blocky breaking to granular structure; sticky, friable, plastic; plastic; patchy thin cutans along pores; few fine hard reddish and black iron and manganese concretion; very strongly acid (field pH 4.5).

**Remark:** Concretions increase below 105 cm A light gray heavy clay occurs with many black concretion and reddish mottles. The soil becomes harder and drier below 150 cm. Concretions increase below 105 cm A pale grey heavy clay occurs with many blocky concretion and reddish mottles. The soil becomes harder and drier below 150 cm.

**Range of Profile Features:**

The A horizon ranges from 10 to 20 cm in thickness and has hues of 7.5YR or 10YR, values of 3 to 5, chromas of 2 to 3 in 10YR and 2 to 4 in 7.5YR. The structures is weak fine and medium blocky. The field pH values range from 5.0 to 6.5.

The B horizon has hue of 5YR, values of 4 to 6, chromas of 3 to 4 and texture of loam in the upper part. The color grades to 7.5YR and 5YR hues with values of 6 to 7 and chromas of 2 to 3 in the lower B horizon. The structure is moderate medium and coarse blocky. The field pH values are 4.5 to 5.5. Some iron manganese nodules may occur in the deeper subsoil.

**Similar Soil Series:**

Wichian Buri series (Wb): shows lithologic discontinuity within 100 cm from the surface and usually contains some lime concretions.

Roi Et series (Re): has a similar profile but browner in color (10 to 7.5YR hues) in the subsoil.

**Principal Associated Soils:**

These include Mae Rim series occupying higher positions. Wichian Buri and Na Chaleang series occupying similar or slightly higher positions on low and middle terraces.

**ANALYSIS RESULTS**  
(oven dry basis)

Profile code no.: NC-47/16  
Soil series: Lom Kao (Lk)

Lab No.	Depth (cm)	Horizon	Particle size distribution analysis (% by weight)							Texture		pH		CaCO <sub>3</sub> %	P, mg kg <sup>-1</sup> Bray 2	K, mg kg <sup>-1</sup> NH <sub>4</sub> OAc	
			USDA grading			Sand-fraction grading				Lab	Field	1:1	1:1				
			sand	silt	clay	vc	c	m	f	vf	result	estim <sup>n</sup>	water				KCl
P-1098	0-10	A	53.3	34.7	12.0						sl	sl	4.5	4.0	0.6	3.8	40
P-1099	10-23	Bw1	55.1	32.0	12.9						sl	sl	5.2	3.9	0.3	2.0	22
P-1100	23-42	Bw2	49.7	34.8	15.5						scl	l	5.3	3.7	0.4	1.6	16
P-1101	42-68	Btg1	40.9	30.5	28.6						cl	cl	5.5	3.9	0.7	1.9	25
P-1102	68-100+	Btg2	36.0	29.5	34.5						cl	cl	5.8	3.8	0.7	1.4	19

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol <sub>(+)</sub> kg <sup>-1</sup> )										Base satur <sup>n</sup> (%)		ECEC cmol <sub>(+)</sub> kg <sup>-1</sup> (B+D)	Al KCl extr. cmol <sub>(+)</sub> kg <sup>-1</sup> (D)	Electrical conduct <sup>y</sup> (ECx10 <sup>6</sup> ) dS m <sup>-1</sup>
				Ca	Mg	K	Na	SUM cations (B)	Extr. acidity (A)	SUM (B+A)	CEC NH <sub>4</sub> OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/(B+A)				
0-10	70.0	0.74	0.07	1.91	0.85	0.06	0.26	3.08	5.47	8.55	4.9	40.8	63	36			0.07	
10-23	7.6	0.37	0.01	0.96	0.85	0.02	0.22	2.05	3.41	5.46	3.9	30.2	53	38			0.01	
23-42	4.4	0.21	0.01	0.32	0.75	0.02	0.31	1.40	4.18	5.58	4.5	29.0	31	25			0.00	
42-68	6.3	0.22	0.02	0.43	0.33	0.02	0.64	1.42	8.37	9.79	9.2	32.2	15	15			0.01	
68-100+	5.8	0.13	0.04	0.64	0.86	0.03	0.83	2.36	9.93	12.29	11.0	31.9	21	19			0.01	

Surveyor: Thamrong and J.D. Cowie

Date: 15 June, 1968