

Proposed by: S. Nonthapan, 1968
Revised by:
1. N. Chorphaka, 1987
2. P. Wiwatwongwana, 2004

DONG LAN SERIES

Field Symbol: DI

Distribution: Occupies small extent in the Northeast Thailand.

Setting: Dong Lan soils are formed from alluvium and colluvium occur on alluvial fans (or coalescing fans) near the limestone hills. Relief is nearly level to gently undulating which range of slopes are 1 to 4 percent. Elevation above sea level is from 180 up to 300 m. The climate is Tropical Savanna (Koppen `Aw'). Average annual precipitation is from 1,100 to 1,500 mm. Mean annual air temperature is around 27 °C.

Drainage, Permeability and Runoff: Somewhat poorly drained. Permeability is slow and surface runoff is slow to medium. Water level is above 1 m during the rainy season and falls below 2 m during the dry season.

Vegetation and Land Use: Mostly is mixed deciduous forest and Parts are cleared for upland crops such as upland rice, cotton and some beans.

Characteristic Profile Features: Dong Lan series is a member of the fine, mixed, act, isohyperthermic Vertic (Aquic) Haplustolls. They are deep soils and are characterized by a black or very dark gray or very dark grayish brown clay loam or clay A horizon overlying a dark gray, light gray or light brownish gray clay or silty clay cambic B horizon. They are mottled in the subsurface and subsoil with reddish, yellowish and/or brownish colors. Reaction is slightly acid to neutral over medium acid to slightly acid in the subsoils.

Typifying Pedon: Profile code no. is N-30/27 (Colors are for moist soil unless otherwise stated).

Location: At km 22 on the road from Amphoe Chum Phae-Loei, Ban Dong Lan, Amphoe Chum Phae Changwat Khon Kaen.

Sheet Name: Amphoe Chum Phae

Sheet No.: 5412 II

Coordinate: -

Elevation: -

Relief: level to nearly level

Slope: 1-2 %

Physiography: alluvial fan or coalescing fan

Parent material: alluvium and colluvium near limestone hills

Drainage: poorly drained

Permeability: slow

Runoff: slow to medium

Ground water depth: >2 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,207.6 mm

Mean temp.: 26.7 °C

Climate type: Tropical Savannah (Aw)

Natural vegetation or land use: Dipterocarp forest with ground cover of low bamboo and sedges

Described by: J.D. Cowie and Somnuk

Date: 15 November, 1968

Revised by: Phusit Wiwatwongwana

Date: 22 May, 2004

Horizon	Depth (cm)	Description
A1	0-16	Black (7.5YR2/0) silty clay; strongly developed medium subangular blocky structure; friable, sticky, plastic; few very fine rounded concretion; many fine roots; slightly acid (field pH 6.5); clear, slightly wavy boundary.
A2	16-31	Black (10YR2/1) silty clay; moderate fine and medium subangular blocky structure; friable, sticky, plastic; few very fine rounded concretions and some fine quartz grains; some roots; slightly acid (field pH 6.5); gradual, smooth boundary.
AB	31-45	Very dark gray (10YR3/1) silty clay; weak medium subangular blocky structure; friable, sticky, plastic; few fine rounded concretions and some quartz grains; moderately acid (field pH 6.0); clear, wavy boundary.

Bw	45-64	Dark gray (10YR4/1) clay; massive to weak medium subangular blocky structure; firm, sticky, plastic; weak development of fine slickensides; many rounded concretions and some quartz grains; many faint reddish brown mottles which become more prominent with depth; few fine roots; moderately acid (field pH 6.0) gradual, smooth boundary.
Cg	64-90+	Light brownish gray (10YR6/2) silty clay; many medium distinct strong brown and yellowish brown mottles; weak medium and coarse subangular blocky with some platy structure; sticky, plastic; some quartz grains; few very fine rounded iron-manganese concretions; few roots; moderately acid (field pH 6.0).

Type Location:

Dong Lan series was named for Dong Lan (name of the reserved forest area) in which soils of this series were first described. The location is on the left side of km 22 of Chum Phae.

Range of Profile Features:

The thickness of an A horizon varies from 25 to 50 cm and has 7.5YR or 10YR hues, values of 2 to 4 and chromas of 2 or less. Textured of silty clay loam or silty clay may occur. Structure is weak to moderate fine and/or medium granular or blocky. Field pH values are from 6.0 to 7.0.

The subsoil (B and C) horizon has 10YR hues, values of 4 to 6 and chromas of 2 or less. Structure is massive to weak blocky. Field pH values are from 5.5 to 6.5.

The Dong Lan soils usually contain slickenside and small iron manganese concretions in the subsoils. In places, the limestone outcrops may occur.

Similar Soil Series:

Lob Buri series (Lb): is Typic Haplusterts and occur on alluvium plain.

Wattana series (Wa): is Ustic Endoaquerts and derived from basalt.

Principal Associated Soils:

These include Takhli, Thap Kwang and Korat series.

ANALYSIS RESULTS
(oven dry basis)

Profile code no.: N-30/27
Soil series: Dong Lan (DI)

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 ⁿ	water				KCl
P-72	0-16	A1	10.4	49.5	40.1						sic	sic	6.3	5.2	2.7	4.0	75
P-73	16-31	A2	12.7	40.3	47.0						sic	sic	6.4	5.0	2.6	7.0	70
P-74	30-45	AB	12.4	40.3	47.3						sic	sic	6.1	4.6	2.3	7.0	70
P-75	45-64	Bw	12.4	17.8	69.8						c	c	6.0	4.3	1.7	8.0	75
P-76	64-90+	Cg	10.6	40.3	49.1						sic	sic	5.5	4.0	1.7	7.0	72

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 cations (B)	Extr. acidity (A)				SUM (B+A)	CEC NH ₄ OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/(B+A)
0-16	5.2	2.96	0.23	29.10	1.20	0.10	0.40	30.80	11.80	42.60	46.9	117.0	66	72				0.03					
16-31	5.1	1.29	0.15	32.00	4.40	0.10	0.40	36.90	10.00	46.90	42.6	90.6	87	79				0.02					
30-45	5.0	0.86	0.10	26.70	5.20	0.10	0.40	32.40	12.40	44.80	40.0	84.6	81	72				0.01					
45-64	3.9	0.39	0.09	26.00	4.50	0.10	0.40	31.00	13.30	44.30	39.7	56.9	78	70				0.01					
64-90+	14.2	0.27	0.04	25.80	3.50	0.10	0.50	29.90	9.60	39.50	34.9	71.1	86	76				0.01					

Surveyor: J.D. Cowie and Somnuk

Date: 15 November, 1968