

Proposed by: W. Boonyawat, 1969
Revised by:
1. N. Chorphaka, 1987
2. A. Potichan, 2004

PONG TONG SERIES

Field Symbol: Po

Distribution: Occupies small extent in Northern Thailand.

Setting: Pong Tong soils are formed from colluvium and residuum of porphyritic granite and granodiorite and occur on gently undulating to hilly terrains. The range of slopes is from 3 to 35%. The climate is Tropical Savanna (Koppen 'Aw'). The average annual precipitation range from 1,100 to 2,000 mm.

Drainage, Permeability and Runoff: Well drained. Permeability is estimated to be moderate. Runoff is slow to rapid.

Vegetation and Land Use: The soils are generally covered with mixed deciduous and dry evergreen forest. Some areas are cleared for upland crops and fruit trees such as upland rice, maize, pineapple, longan, lychee, mango etc.

Characteristic Profile Features: Pong Tong series is a member of the clayey-skeletal, kaolinitic, isohyperthermic Typic (Kandic) Paleustults. They are deep soils and are characterized by a very dark grayish brown and dark reddish brown silty clay loam or clay loam A horizon overlying a yellowish red or red very gravelly clay argillic B horizon. The coarse fraction is composed of angular quartz gravel which increases with depth. Reaction is slightly acid to very strongly acid, decreasing with depth.

Typifying Pedon: Profile code no. is N-36/2, (Type location) (moist colours unless otherwise stated).

Location: Ban Suan Sak, Amphoe Mae Chan, Changwat Chiang Rai.

Sheet Name: Amphoe Mae Chan

Sheet No.: 4949 II

Coordinate: 918245

Elevation: 450 m (MSL)

Relief: undulating

Slope: 8-10 %

Physiography: dissected foothills and erosion surfaces

Parent material: residuum and colluvium derived from coarse grained granite with large phenocrysts of feldspar, large quartz crystals, mica and dark minerals

Drainage: well drained

Permeability: moderate

Runoff: moderate

Ground water depth: >2 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,733.5 mm

Mean temp.: 24 °C

Climate type: Tropical Savannah (Aw)

Natural vegetation or land use: secondary forest, shrubs and weed

Described by: Thamrong and J.D. Cowie

Date: 25 June, 1968

Revised by: Aniruth Potichan

Date: 27 May, 2004

Horizon	Depth (cm)	Description
A	0-7	Very dark grayish brown (10YR3/2) clay loam; (slightly gritty); moderate medium and fine subangular blocky structure; friable, slightly sticky and slightly plastic; few fine angular quartz gravels; many medium and fine roots; moderately acid (field pH 6.0); abrupt and irregular boundary.
BA	7-23	Dark reddish brown (5YR3/3); gravelly clay loam moderate medium and fine subangular blocky structure; friable, sticky and slightly plastic; many very fine angular quartz gravels; many medium roots; moderately acid (field pH 6.0); clear and smooth boundary.
Bt1	23-47	Dark reddish brown (5YR3/3) gravelly clay; moderate medium and fine subangular blocky structure; friable, sticky and slightly plastic; moderately thick clay coatings on ped faces; patchy thick clay coatings in pores; many fine angular quartz fragments up to 1 cm in diameter; many medium and

		very fine roots; very strongly acid (field pH 4.5); gradual and smooth boundary.
Bt2	47-62	Yellowish red (5YR4/8), very gravelly clay; many medium faint dark reddish brown (5YR3/4) spots; moderate fine and medium subangular blocky structure; friable, sticky and slightly plastic; moderately thick clay coatings on ped faces and in pores; very frequent fine angular quartz gravels; few fine and medium roots; very strongly acid (field pH 4.5); clear and wavy boundary.
Bt3	62-88	Red (2.5YR4/6); very gravelly clay; massive to weak medium subangular blocky structure; firm in places, friable when dug out, sticky and nonplastic; many angular quartz fragments (0.1 to 1.5 cm diameter); few fine roots; strongly acid (field pH 5.5); gradual and smooth boundary.
Bt4	88-145+	Red (2.5YR4/6); very gravelly clay; massive to weak subangular blocky structure, firm in places and friable when dug out, sticky and nonplastic; patchy moderately thick clay coatings on ped faces; many fine angular quartz fragments (0.5 to 1.5 cm diameter); few fine roots; strongly acid (field pH 5.5).

Range of Profile Features:

The A horizon is from 10 to 15 cm thick and has 10YR to 5YR hues, value of 3 or 4 chromas of 2 or 3. The structure is moderate medium and fine blocky. Field pH values range from 5.5 to 6.5.

The B horizon has hues of 5YR or 2.5YR, values of 3 to 5 and chromas of 6 or 8. The B horizon is argillic showing evidence of illuviation in the form of cutans on ped faces and in pores. The structure is weak to moderate medium and fine blocky. Field pH values range from 4.5 to 5.5.

Similar Soil Series:

Nong Mot series (Nm): angular quartz gravels may be found in the lower subsoil deeper than 100 cm.

Chiang Khan series (Ch): derived from shale and gravels are iron-coated shale fragments.

Principal associated Soils:

These include Nong Mot and Chiang Saen series.

ANALYSIS RESULTS
(oven dry basis)

Profile code no.: N-36/2
Soil series: Pong Tong (Po)

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-1170	0-7	A	27.3	40.4	32.3						cl	cl	5.1	4.7		13.9	180
P-1171	7-23	BA	27.3	32.8	39.9						cl	gcl	4.6	4.0		9.7	81
P-1172	23-47	Bt1	30.1	26.4	43.5						c	gc	4.6	4.6		8.0	46
P-1173	47-62	Bt2	32.5	25.4	42.1						c	vgc	4.8	4.8		6.0	31
P-1174	62-88	Bt3	22.4	23.8	53.8						c	gc	5.0	5.0		11.3	31
P-1175	88-145+	Bt4	23.1	23.6	53.3						c	gc	5.1	5.1		12.0	37

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)				
				0-7	1.63		7.10	6.00	0.30	0.30	13.70	16.20	29.90	21.4	66.3			
7-23	1.55		1.20	0.60	0.10	0.30	2.20	16.90	19.10	12.7	31.8	17	12			0.00		
23-47	1.01		0.60	0.50	0.10	0.20	1.40	14.30	15.70	9.9	22.8	14	9			0.02		
47-62	0.69		0.80	0.10	0.10	0.30	1.30	11.60	12.90	7.5	17.8	17	10			0.01		
62-88	0.46		0.50	0.20	<0.1	0.20	0.90	10.80	11.70	8.8	16.4	10	8			0.01		
88-145+	0.18		0.40	0.60	<0.1	0.30	1.30	8.40	9.70	10.7	20.1	12	13			0.01		

Surveyor: Thamrong and J.D. Cowie

Date: 25 June, 1968