

Proposed by P. Vijarnsorn, 1978
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

PHATTHALUNG SERIES

Field Symbol: Ptl

Distribution: Occupied moderate to large extent in Peninsular Thailand and some areas in Southeast Coast of Thailand.

Setting: Phatthalung soils are formed alluvium on alluvial plain (low terrace). Relief is level to nearly level. Slopes is less than 2 percent. The climate is Tropical Monsoon (Koppen 'Am'). Average annual precipitation is from 1,800 to 2,000 mm Average annual air temperature is from 26 °C to 28°C.

Drainage, Permeability and Surface Runoff: Drainage is poorly drained, permeability is slow and surface runoff is slow. Ground water below 1.50 m, flooding every year in rainy season.

Vegetation and Land Use: Transplanted rice.

Characteristic Profile Features: Phatthalung series is a member of the fine, kaolinitic, isohyperthermic Plinthic Paleaquults (soil taxonomy, 2003). They are very deep soils and are characterized by gray, light gray, light brownish gray or light brownish yellow clay loam surface or A horizon overlying a light gray, light brownish gray or gray clay argillic B horizon. Brownish mottles throughout the profile and have red mottles (plinthite) between 5 to 50 percent of the soil matrix within 150 cm from the soil surface. Very strongly acid to slightly acid, reaction values range from 5.0 to 6.5 throughout the profile.

Typifying Pedon: Phatthalung clay loam - paddy field of Khuan Kut Rice Experiment Station, Ban Khuan Kut, Tambon Khuan Maphrao, Amphoe Muang, Changwat Phatthalung, 8 m above mean sea level, less than 1 percent slopes, 10 to 50 cm flooding depth, 70 cm ground water table depth (sheet name Changwat Phatthalung, sheet number 5024 III, coordinate: 247364).

Profile Code Number: S-66/51, described by Decha Wisatesin, 24 April 1978 (moist colors unless otherwise stated).

Horizon Depth (cm)	Description
Apg 0-14/16	Grayish brown to light brownish gray (10YR5-6/2) clay loamy; common fine distinct yellowish brown (10YR5/6) along roots channels and common fine distinct strong brown (7.5YR4/6) mottles; moderate medium subangular blocky structure; firm, slightly sticky and slightly plastic; common fine and medium roots; very strongly acid (field pH 5.0); clear wavy boundary.
Bg 14/16-23/25	Light gray (10YR7/1) clay; common fine distinct reddish yellow (7.5YR6/8) along root channels, common fine distinct strong brown (7.5YR5/6) and few fine prominent yellowish red (5YR5/6) mottles; strong coarse subangular blocky structure; firm, sticky and plastic; few fine and common medium roots; very strongly acid (field pH 4.5); gradual wavy boundary.
Btgv1 23/25-60	Light gray (10YR7/1) clay; common medium distinct yellowish brown (10YR5/6), common fine distinct strong brown (7.5YR5/6) and common fine prominent red (2.5YR4/8) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; patchy thin clay coating on ped faces; common medium roots; extremely acid (field pH 4.0); clear smooth boundary.
Btgv2 60-95	Light gray (10YR7/1) clay; many coarse distinct yellowish brown (10YR5/8), common coarse distinct strong brown (7.5YR5/8), common fine prominent yellowish red (5YR5/8) and red (10R4/8) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; patchy thin clay coating on ped faces; plinthite about 10%; few fine roots; extremely acid (field pH 4.0); clear, smooth boundary.

Btgv3 95-110 Light gray (10YR7/1) clay; many coarse distinct yellowish brown (10YR5/8), common coarse distinct strong brown (7.5YR5/6) and many coarse prominent red (10R4/8) and yellowish red (5YR5/6) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; patchy thin clay coating on ped faces and in pores; plinthite about 20%; few fine roots; extremely acid (field pH 4.0); clear smooth boundary.

Type Location:

Name of province, Changwat Phatthalung.

Range of Profile Feature:

The surface or A horizon clay loam, is 10 to 20 cm in thickness and has 10YR or 7.5YR hue, values 5 to 6 and chromas 1 to 3. Texture is silt loam, loam, silty clay loam or clay may occur. Very strongly acid to slightly acid, reaction values range from 5.0 to 6.5.

The argillic B horizon clay or silty clay, has 10YR or 7.5YR hues, values 6 to 8 and chromas 1 to 2. Mottles is brownish to yellowish throughout the profile and has red mottles (plinthite) 5 to 50 percent of the soil matrix within 1.50 meter from the soil surface or form a continuous phases. Very strongly acid to slightly acid, reaction values range from 5.0 to 6.5.

Similar Soil Series:

Bangnara series (Ba): fine, kaolinitic, isohyperthermic Typic Paleaquults, not plinthite.

Klaeng series (Kl): very-fine, kaolinitic, isohyperthermic Typic Plinthaquults, has red plinthite ≥ 50 percent or continuous phase within 1.50 m from the soil surface.

Principal Associated Soils:

This included with Bangnara and Klaeng series.

ANALYSIS RESULTS
(oven dry basis)

Profile code No.: S-66/17

Soil series: Phatthalung series (PtI)

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				
P1-1340	0-14/16	Apg	17.1	74.9	8.0							sil	cl	5.2	4.1		6.2	23
P1-1341	16-23/25	Bg	20.0	61.9	18.1							sil	c	5.0	3.9		3.4	14
P1-1342	23/25-60	Btgv1	3.8	48.5	47.7							sic	c	5.1	3.8		4.4	25
P1-1343	60-95	Btgv2	4.8	44.6	50.6							sic	c	5.0	3.6		5.8	38
P1-1344	95-110	Btgv3	5.9	47.1	47.0							sic	c	4.9	3.6		3.9	49

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol ₍₊₎ kg ⁻¹)										Base satur ⁿ (%)		ECEC cmol ₍₊₎ kg ⁻¹ (B+D)	Al KCl extr. cmol ₍₊₎ kg ⁻¹ (D)	Electrical conduct ^y (ECx10 ⁶) dS m ⁻¹
								SUM	Extr.	SUM	CEC	CEC	B/Cx100	(Bx100)/				
				Ca	Mg	K	Na	cations (B)	acidity (A)	(B+A)	NH ₄ OAc (C)	100g Clay		(B+A)				
0-14/16	0.7	1.40		2.40	0.10	0.04	0.30	2.84	3.40	6.24	3.5	43.8	81	46			0.12	
16-23/25	0.6	0.90		2.20	0.04	0.03	0.30	2.57	2.60	5.17	3.8	21.0	68	50			0.08	
23/25-60	2.9	0.84		2.40	0.04	0.05	0.30	2.79	10.10	12.89	9.0	18.9	31	22			0.04	
60-95	3.0	0.58		1.80	0.04	0.10	0.40	2.34	13.60	15.94	12.1	23.9	19	15			0.04	
95-110	2.5	0.22		1.40	0.04	0.10	0.30	1.84	13.40	15.24	11.4	24.3	16	12			0.04	

Surveyor: D. Wisatesin

Reported by: W. Sirichuaychoo

Date: April 24, 1978

Date: Nov. 7, 1998