

Proposed by W. der Kevie, 1969
Revised by:
1. C. Changprai, 1987
2. S. Udomsri, 2004

PHAN THONG SERIES

Field Symbol: Ptg

Distribution: Occupies small extent in the southeast region, mainly in Changwat Chachoengsao and Chon Buri.

Setting: Phan Thong soils are formed from marine sediments mixed with riverine alluvium under brackish water influence. They occur in former tidal flats or alluvium plain which grade down to marine deposits and now free from tidal flooding and have been cultivated for some time. Relief is level. Slopes are 0-1%. Elevation ranges from 3-7 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Mean annual precipitation is about 1,300 mm. Mean annual temperature is 27°C.

Drainage, Permeability and Surface Runoff: Poorly drained. Permeability is moderate to slow and runoff are slow. These soils are flooded by impounded rainwater or river up to 30 cm depth for four to five months during the rainy season. Sometimes this area flooded by irrigation. Groundwater level falls below 1.5 m during the peak of the dry season.

Vegetation and Land Use: Mainly used for broadcast rice cultivation.

Characteristic Profile Features: Phan Thong series is a member of the Fine-silty, mixed, superactive, nonacid, isohyperthermic Mollic Endoaquepts. They are deep, medium acid to neutral over mildly alkaline soils. They are characterized by a thin dark coloured loam, silt loam A horizon overlying a light gray loam silt loam or silty clay loam B horizon, which in turn overlies a greenish-gray C horizon with its upper boundary about 1.5 m from the soil surface. These soils are mottled throughout with strong brown and reddish yellow coatings on root channels in the A horizon, and yellowish brown, strong brown and olive brown mottles in the B horizon.

Typifying Pedon: Phan Thong clay - paddy field, Ban Bang Na, Amphoe Phan Thong, Changwat Chon Buri, 3 m above mean sea level, less than 2 percent slopes, more than 2 m ground water table depth (sheet name Amphoe Phanut Nikhom, sheet number 5235 IV, coordinate 240922).

Profile Code Number: SE-15/15, described by Van der Kevie, 23 March 1970.

Horizon	Depth (cm)	Description
Apg1	0-10	Very dark gray (10YR3/1) clay; common fine distinct strong brown and prominent reddish yellow mottles in very fine root channels; moderate coarse subangular blocky structure; hard, firm; many fine and very fine roots; slightly acid (field pH 6.5); clear, smooth boundary.
Apg2	10-20	Black (10YR2/1) clay; common fine prominent strong brown and reddish yellow mottles in very fine root channels; massive to weak coarse subangular blocky structure; firm, hard; common very fine roots; neutral (field pH 7.0); abrupt, slightly wavy boundary.
B _{Ag}	20-34/40	Light gray to gray (10YR6/1) fine sandy clay loam; very few fine diffuse light olive brown mottles mainly in upper 2 cm of the horizon; weak prismatic; very friable; few thick dark gray and black humus clay coatings on vertical ped faces; black humus clay coatings in vertical pores; few very fine roots; mildly alkaline (field pH 7.5) gradual, wavy boundary.
B _{g1}	34/40-70	Light gray to gray (5Y6/1) fine sandy loam; many coarse distinct yellowish brown, strong brown and light olive brown mottles; weak prismatic breaking to coarse subangular blocky structure; friable,

		slightly sticky; thick black humus clay coatings in vertical pores and on few vertical ped faces; few manganese nodules; few very fine roots; mildly alkaline (field pH 7.5) gradual, wavy boundary.
Bg2	70-140	Light gray to gray (5Y6/1) fine sandy loam; common medium diffuse light olive brown mottles, few green and olive brown mottles; weak prismatic breaking to subangular blocky structure; friable, slightly sticky; black humus clay coatings in pores; many fine vertical and very fine tubular pores; very few soft manganese nodules; mildly alkaline (field pH 7.5).
BCg	140-180	Greenish gray (5GY5/1) half ripe clay; few green and olive mottles; some of which are slightly hard; moderately alkaline (field pH 8.0).
Cg	180-250	Dark greenish gray (5GY4/1) fine sandy loam; very few green mottles; many shell fragments; moderately alkaline (field pH 8.0).

Type Location:

Name of Amphoe, Amphoe Phan Thong Changwat Chonburi.

Range of Profile Features:

The A horizon is from 15 to 30 cm thick, has 10YR hue, values of 2 or 3 and chromas of 1 or 2. The texture of clay or clay loam Structure is massive to weak or moderate, coarse blocky. Field pH values range from 6.0 to 7.0.

The B horizon has 10YR or 5Y hues, values of 5 or 6 and chroma of 1. Structure is weak prismatic breaking to moderate coarse blocky. field pH values range from 7.0 to 8.0.

The C horizon has textures ranging from clay to sandy loam, is half ripe and has greenish gray or dark greenish gray colours. Few green and olive brown mottles occur in the upper layers and shell fragments are commonly found. The field pH is 8.0 or more.

Similar Soil Series:

Don Mueang series (Dm): has lower pH values throughout and contains jarosite mottles in the B horizon.

Bang Phae series (Bph): contains gypsum crystals in the B horizon and has a clayey texture between 50-100 cm from the surface.

Bang Len series (Bl): has clay textures to a depth of at least 1 m from the soil surface.

Principal Associated Soils:

These include Bang Len and Bang Phae series occupying similar positions on the former tidal flats.

ANALYSIS RESULTS
(oven dry basis)

Profile code No.: SE-15/15
Soil series : Phan Thong (Ptg)

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 water	1:1 KCl				
			sand	silt	clay	vc	c	m	f	vf	result	estim ¹						
Pa 282	0-10	Apg1	9.0	64.0	27.0							sicl	c	4.9	4.5	0.2	4.8	226
Pa 283	10-20	Apg2	8.0	59.0	33.0							sicl	c	6.3	5.6	0.9	4.6	259
Pa 284	20-34/40	BAG	5.0	69.0	26.0							sil	fscl	7.0	6.1	0.2	3.8	190
Pa 285	34/40-70	Bg1	26.0	50.0	24.0							l-sil	fsl	7.0	5.9	0.8	7.9	235
Pa 286	70-140	Bg2	28.0	51.0	21.0							sil	fsl	7.8	7.2	1.3	180.0	217
Pa 287	180-250	Cg	18.0	58.0	24.0							sil	fsl	7.5	7.3	6.1	197.5	440

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			
0-10	1.7	0.83	0.12	6.50	5.20	0.60	1.90	14.20	5.90	20.10	14.40	53.3	99	71		0.18
10-20	2.1	0.55	0.10	7.30	6.20	0.60	2.10	16.20	4.40	20.60	17.50	53.0	93	79		0.08
20-34/40	1.8	0.07	0.02	4.60	4.60	0.40	1.70	11.30	1.60	12.90	11.20	43.1	100	88		0.09
34/40-70	1.8	0.05	0.02	6.80	7.10	0.60	2.40	16.90	2.60	19.50	15.80	65.8	100	87		0.13
70-140	1.7	0.04	0.00	12.40	6.30	0.50	3.00	22.20	1.00	23.20	14.40	68.6	100	96		0.20
180-250	2.4	1.00	0.08	36.80	10.30	0.90	7.10	55.10	1.30	56.40	20.90	87.1	100	98		0.44

Surveyor : Kevie
Date:

REPORTED BY : Samruay Kruthun
Date:

