

Proposed by F.J. Dent, 1967
Revised by :
P. Vijarnsorn and staffs, 1988
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PHUKET SERIES

Field Symbol: Pk

Distribution: Occupies large extent throughout Peninsular Thailand and in Southeast Coast of Thailand.

Setting: Phuket soils derived from granite or equivalent rocks and occurred on granitic terrain. Relief is gently undulating to hilly. Slopes ranges from 2 to 20 percent. The climate is Tropical Monsoon (Koppen 'Am'). Annual precipitation is from 1,800 to 3,000 mm Average annual temperature is from 26 °C to 28°C.

Drainage, Permeability and Surface Runoff: Drainage is well drained, permeability is estimated to be moderate and surface runoff is medium to rapid. Groundwater level is below 2 m throughout the year.

Vegetation and Land Use: Tropical Evergreen Forest still remains on the steeper slopes and part of rolling terrain, however, large parts have been cleared and planted to para rubber, fruit crops and coffee.

Characteristic Profile Features: Phuket series is a member of the fine, kaolinitic, isohyperthermic Typic Kandiodults (soil taxonomy, 2003). They are very deep soils and are characterized by a dark brown, dark grayish brown or brown sandy clay loam surface or A horizon overlying a reddish yellow, yellowish red or red sandy clay or slightly gravelly sandy clay argillic B horizon. Very strongly acid to strongly acid, reaction values range from 5.0 to 5.5 throughout the profile.

Typifying Pedon: Phuket sandy clay loam - para rubber plantation from Amphoe Rueso, Changwat Narathiwat, 7 to 8 percent slopes.

Profile Code Number: S-71/5, described by F. J. Dent and S. Charoenpong, 18 December 1968 (moist colors unless otherwise stated).

Horizon Depth (cm)	Description
Ap 0-19	Dark brown to brown (10YR4/3) sandy clay loam; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; common tubular pores; many large, medium and fine roots; very strongly acid (field pH 5.0); gradual smooth boundary.
Bw 19-34	Strong brown (7.5YR5/8) and dark brown to brown (10YR4/3) coarse sandy clay loam; strong medium subangular blocky structure; firm, sticky and plastic; common tubular and interstitial pores; common medium and many fine roots; very strongly acid (field pH 5.0); diffuse smooth boundary.
Bt1 34-53	Yellowish red (5YR5/8) slightly gravelly sandy clay; strong medium subangular blocky structure; firm, sticky and plastic; patchy thin cutan on ped faces; common tubular and many interstitial pores; common fine and very fine roots; very strongly acid (field pH 5.0); diffuse smooth boundary.
Bt2 53-80	Yellowish red (5YR5/8) slightly gravelly sandy clay; strong medium subangular blocky structure; firm, sticky and plastic; patchy thin cutan on ped faces; common tubular and many interstitial pores; few fine and very fine roots; very strongly acid (field pH 5.0); gradual wavy boundary.
Bt3 80-100 ⁺	Red (2.5YR5/6) and yellowish red (5YR5/8) coarse sandy clay; moderate medium subangular blocky structure; firm, sticky and plastic; patchy thin cutan on ped faces; common tubular and many interstitial pores; few very fine roots; very strongly acid (field pH 5.0).

Remark: gravel are quartz grain.

Type Location:

Name of province, Changwat Phuket.

Range of Profile Features:

The surface or A horizon sandy clay loam, is from 10 to 20 cm in thickness, has 10YR hues, values 3 to 5 and chromas 4 to 2 and occasionally has sandy loam textures. Structure is moderate fine and medium blocky. Very strongly acid to strongly acid, reaction values range from 5.0 to 6.0.

The kandic B horizon has 7.5YR, 5YR and 2.5YR hues, values 5 or 6 and chromas 6 or 8. Structure is moderate and strong medium blocky. Very strongly acid to strongly acid, reaction values range from 5.0 to 6.0.

The C horizon occurs at some depth below 150 cm from the soil surface and is composed of a light gray gravelly clay with multicolored mottles and grades down to bedrock at depths of up to 10 m from the soil surface. Very few mica flakes (muscovite) occur throughout the profile but are not diagnostic for the series. The gritty feel caused by the angular and subangular quartz is characteristic. Very strongly acid to strongly acid, reaction values range from 5.0 to 6.0.

Similar Soil Series:

Phangnga series (Pga): fine, kaolinitic, isohyperthermic Typic Kandiaquults, brownish colors.

Thai Mueang series (Tim): fine, kaolinitic, isohyperthermic Typic Kandiaquults, weathered bed rocks within 150 cm from the soil surface.

Khok Kloi series (Koi): fine, kaolinitic, isohyperthermic Typic Kandiaquults, weathered bed rocks within 150 cm from the soil surface.

Principal Associated Soils:

These include La Han, Thung Wa, Khok Khain and Su-ngai Kolok series. La Han soils occupy slightly lower positions with a more level relief. Thung Wa soils are found on coalescing fans, whereas Khok Khain and Su-ngai Kolok soils occupy poorly drained flat land and depressions adjacent to Phuket soils.

La Han series (Lh): fine-loamy, siliceous, subactive, isohyperthermic Typic Paleudults, has 10YR and 7.5YR hues and grayer colors in the B horizon.

Thung Wa series (Tg): coarse-loamy, siliceous, subactive, isohyperthermic Typic Paleudults, brown colors.

Khok Khain series (Ko): fine-loamy, kaolinitic, isohyperthermic Typic Kandiaquults.

Su-ngai Kolok series (Gk): fine, kaolinitic, isohyperthermic Typic Endoaquults.

ANALYSIS RESULTS

Profile code No.: S-71/5

(oven dry basis)

Soil series: Phuket series (Pk)

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 ⁿ				
P-106	0-19	Ap	69.2	9.2	21.6					scl	scl	4.4	3.8	0.4	4.1	16
P-107	19-34	Bw	65.1	9.7	25.2					scl	coscl	4.6	3.8	0.1	3.8	22
P-108	34-53	Bt1	41.4	10.0	48.6					c	sli.gsc	4.8	3.9	0.6	4.4	16
P-109	53-80	Bt2	40.1	11.4	48.5					c	sli.gsc	4.8	3.9	0.4	2.9	10
P-110	80-100+	Bt3	29.7	11.1	59.2					c	cosc	4.9	3.9	0.5	3.5	10

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
				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)				
				0-19	0.8	1.03		0.32	0.11	0.02	0.22	0.67	7.50	8.17	5.1			
19-34	0.9	0.54		0.32	0.11	0.02	0.22	0.67	5.41	6.08	5.5	21.8	12	11			0.01	
34-53	0.9	0.36		0.32	0.11	0.02	0.27	0.72	6.31	7.03	7.5	15.4	10	10			0.01	
53-80	1.3	0.16		0.22	0.32	0.02	0.25	0.81	5.69	6.50	6.5	13.4	12	12			0.01	
80-100+	1.3	0.41		0.32	0.11	0.02	0.25	0.70	5.79	6.49	8.5	14.4	8	11			0.01	

Surveyor: F. J. Dent & S. Charoenpong

Reported by: W. Sirichuaychoo

Date: Dec. 18, 1968

Date: Nov. 3, 1998