

Proposed by: -, 1970
Revised by:
1. N. Chorhaka, 1988
2. P. Wiwatwongwana, 2004

PHETCHABUN SERIES

Field Symbol: Pe

Distribution: Occupies small extent in the Central Highlands, mainly in Changwat Phetchabun.

Setting: Phetchabun soils are formed from alluvium on the terrace. Relief is undulating to gently rolling which slopes range from 2 to 8 percent. Elevation is approximately from 120 to 180 m above sea level. The climate is Tropical Savannah (Koppen 'Aw'). Average annual precipitation ranges from 1,100 to 1,600 mm. Mean annual air temperature ranges from 26 to 28 °C.

Drainage, Permeability and Runoff: Moderately well drained. Permeability is estimated to be moderate and surfaces runoff is medium. Ground water table falls below 2.5 m during the dry season.

Vegetation and Land Use: Mainly used for upland crops such as corn and partly covered by dipterocarp forest, bush and shrub.

Characteristic Profile Features: Phetchabun series is a member of fine-loamy, mixed, semiactive, isohyperthermic Ultic Paleustalfs. They are moderately deep soils characterized by a dark brown, brown or dark grayish brown sandy loam or loam A horizon and reddish brown to yellowish red sandy clay loam grading to clay loam or sandy clay B horizon which in turn overlies yellowish brown gravelly or very gravelly clay loam. Reaction is strongly acid to neutral over very strongly acid to strongly acid in A and upper B horizon and slightly acid to mildly alkaline in the lower B horizon. Mottles are brown or brownish yellow in the subsoil.

Typifying Pedon: Profile code no. is NC-47/115 (moist colors unless otherwise stated).

Location: Ban Tin Khok, about 2 km south-west of Amphoe Muang Changwat Phetchabun.

Sheet Name: Changwat Phetchabun

Sheet No.: 5241 IV

Coordinate: -

Elevation: 120 m (MSL)

Relief: gently undulating

Slope: 3-4 %

Physiography: terraces

Parent material: alluvium

Drainage: moderately well drained

Permeability: moderate

Runoff: moderate

Ground water depth: >2 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,124.7 mm

Mean temp.: 27.5 °C

Climate type: Tropical Savannah (Aw)

Natural vegetation or land use: dipterocarp forest

Described by: N. Chorhaka

Date: 26 April, 1982

Revised by: Phusit Wiwatwongwana

Date: 24 May, 2004

Horizon	Depth (cm)	Description
A	0-17	Brown to dark brown (7.5YR4/2) sandy loam; moderate fine and medium subangular blocky structure; extremely hard, friable, slightly sticky, slightly plastic; many very fine roots; mildly alkaline (field pH 7.5); clear, smooth boundary.
Bt1	17-37	Brown to dark brown (7.5YR4/4) sandy loam; weak coarse subangular blocky structure; extremely hard, friable, slightly sticky, slightly plastic; patchy thin cutans on ped faces; few very fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.
Bt2	37-73	Yellowish red (5YR5/6) sandy clay loam; moderate medium and coarse subangular blocky structure; very hard, friable, sticky, plastic; broken moderately thick cutans on ped faces and in pores; few very fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.

Bt3	73-93	Yellowish red (5YR4/6) sandy clay loam; common fine distinct mottles of brownish yellow (10YR6/6); moderate medium and coarse subangular blocky structure; hard, friable, sticky, plastic; broken moderately thick cutans on ped faces and in pores; very few very fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.
Btc	93-150	Yellowish brown to light yellowish brown (10YR5-6/4) very gravelly sandy clay loam; weak fine and medium subangular blocky structure; hard, friable, sticky, slightly plastic; patchy thin cutans on ped faces and gravels. Gravels are mainly laterite and few quartz about 70-80%; neutral (field pH 7.0); clear, smooth boundary.
C	150-195	Yellowish brown (10YR5/4) gravels; gravels are mainly quartz few sandstones and laterite diameter up to 10 cm; mildly alkaline (field pH 7.5); clear, smooth boundary.
2C	195-220	Yellowish brown (10YR5/6) gravelly clay; many fine and medium distinct mottles of yellowish red (5YR5/8); mildly alkaline (field pH 7.5).

Type Location:

Phetchabun series was named for Changwat Phetchabun in which soils of this series were firstly described in the areas of Amphoe Muang, Changwat Phetchabun.

Range of Profile Features:

The A horizon is from 10 to 25 cm thick and has 7.5YR or 10YR hues, values of 3 to 5 and chromas of 2 to 4. Structure is weak to moderate fine and medium subangular blocky. Field pH values range from 5.5 to 7.0.

The argillic B horizon has 5YR to 2.5YR hues, values of 3 to 5 and chromas of 3 to 6. Structure is moderate medium and coarse subangular blocky. Field pH values range from 4.5 to 5.5.

The C horizon occurs at some depth below 1 m and has 7.5YR to 10YR hues, values of 4 to 5 and chromas of 4 to 8. Field pH values range from 6.5 to 8.0.

Similar Soil Series:

Warin series (Wn): is very deep soils, well drained and lower pH values in deeper subsoil.

Nam Duk series (Nd): is fine-silty family and deeper profile.

Principal Associated Soils:

These include Warin, Nam Chun, Nam Duk and Nam Len series.

ANALYSIS RESULTS
(oven dry basis)

Profile code no.: NC-47/115
Soil series: Phetchabun (Pe)

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			
518743	0-17	A	63.2	22.9	13.9	0.2	4.2	17.3	25.7	15.8	sl	sl	5.3	4.3		18.2	116
518744	17-37	Bt1	64.8	15.4	19.8	1.2	3.8	17.6	28.8	13.4	sl	sl	5.0	3.7		4.3	57
518745	37-73	Bt2	47.2	18.9	33.9	1.9	4.1	12.5	20.2	8.5	scl	scl	4.8	3.8		2.4	33
518746	73-93	Bt3	51.8	14.4	33.8	4.2	4.7	12.7	19.2	11.0	scl	scl	5.0	4.0		1.4	28
518747	93-150	Btc	50.9	23.2	25.9	9.2	6.6	11.1	15.5	8.5	scl	vgcl	5.7	4.9		2.0	38
518748	195-220	2C	45.9	22.3	31.8	1.7	3.1	16.3	18.7	6.1	scl	gc	6.4	5.5		0.6	34

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)	AI KCl extr. cmol _(c) kg ⁻¹ (D)	Electrical conduct ^y (ECx10 ⁶) dS m ⁻¹
				Ca Mg K Na				SUM	Extr.	SUM	CEC	CEC	B/Cx100	(Bx100)/				
				cations (B)	acidity (A)	(B+A)	NH ₄ OAc (C)	100g Clay	(B+A)									
0-17	2.1	1.96		4.20	1.60	0.30	0.20	6.30	5.90	12.20	9.7	69.8	65	52			0.16	
17-37	1.8	2.53		2.60	1.10	0.10	0.20	4.00	7.40	11.40	8.2	41.4	49	35			0.10	
37-73	3.8	0.59		5.70	1.70	0.10	0.20	7.70	9.00	16.70	12.8	37.8	60	46			0.07	
73-93	3.6	1.40		6.90	1.70	0.10	0.20	8.90	6.80	15.70	12.6	37.3	71	57			0.08	
93-150	3.5	1.46		7.20	1.60	0.10	0.30	9.20	5.40	14.60	10.9	42.1	84	63			0.11	
195-220	3.8	0.28		12.50	1.70	0.10	0.40	14.70	3.20	17.90	14.9	46.9	99	82			0.22	

Surveyor: N. Chorphaka

Date: 26 April, 1982