

Proposed by: P. Vichaidit, 1977
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CHUM PHUANG SERIES

Field Symbol: Cpg

Distribution: Occupies moderate extent in Northeast Plateau and small extent in North and Central Plain.

Setting: Chum Phuang soils are formed from washed deposit of sandstone and occur on the gently undulating to rolling slopes of the upper part of peneplain. Slopes range from 2 to 10 percent. Elevation is from 150 to 350 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). The average annual precipitation varies from 1,100 to 1,500 mm. Mean annual air temperature is from 26 to 28°C.

Drainage, Permeability and Runoff: Somewhat excessively drained, Permeability and surface runoff are rapid. Ground water table falls below 5 meters during the peak of the dry period.

Vegetation and Land Use: Originally dipterocarp and mixed deciduous forests. Parts are cleared for upland crops such as kenaf, corn, castor bean, sorghum, cassava and some fruit trees, mango, jack fruit.

Characteristic Profile Features: Chum Phuang series is a member of the coarse-loamy, siliceous, isohyperthermic Typic Kandistults. They are deep soil which are characterized by dark reddish brown or reddish brown sandy loam or loamy sand A horizon overlying a yellowish red or red sandy loam upper argillic B horizon which in turn overlies a red or dark red sandy loam or sandy clay loam lower argillic B horizon. Reaction is medium acid over very strongly acid to strongly acid.

Typifying Pedon: Profile code no. is NE-S-22/54 (moist colors unless otherwise stated).

Location: 1 km east of Ban Phon Tha, Tambon Tha Tum, Amphoe Tha Tum Changwat Surin.

Sheet Name: Amphoe Tha Tum

Sheet No.: 5739 IV

Coordinate: 604917

Elevation: 162 m

Relief: gently undulating to undulating

Slope: 2-5%

Physiography: upper part of peneplain

Parent material: washed deposit from sandstone

Drainage: somewhat excessively drained

Permeability: rapid

Runoff: rapid

Ground water depth: >2.0 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,100-1,500 mm

Mean temp: 26-28 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: Dipterocarp and mixed deciduous forests. Parts are cleared for upland crops and some fruit trees

Described by:

Date:

Revised by:

Horizon	Depth (cm)	Description
A1	0-12	Dark reddish brown (5YR 3/3) sandy loam; weak fine and medium subangular blocky structure; friable, slightly sticky; slightly plastic; common very fine and fine roots; strongly acid (field pH 5.5); clear, smooth boundary.
BA	12-32	Reddish brown (5YR 4/4) sandy loam; weak medium and coarse subangular blocky structure; hard, friable, slightly sticky, slightly plastic; few very fine and fine roots, medium acid (field pH 6.0); clear, smooth boundary.

Bt1	32-69	Red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; patchy thin clay coating in pores; few very fine roots; medium acid (field pH 6.0); diffuse, smooth boundary.
Bt2	69-106	Dark red (2.5YR 3/6) sandy loam; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces and in pores; few very fine roots; strongly acid (field pH 5.5); diffuse, smooth boundary.
Bt3	106-141	Red (2.5YR-10R 4/6) sandy loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces and in pores; few very fine roots; strongly acid (field pH 5.5); diffuse, smooth boundary.
Bt4	141-220	Red (10YR 4/6) sandy loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces; few very fine roots; strongly acid (field pH 5.5).

Remark: Bt4 depth 141 to 220 cm sampling at 180 cm.

Type Location: The Chum Phuang series was name for Amphoe Chum Phuang, Changwat Nakhon Ratchasima, in which soils of this series were first described at 3 km southeast part of Ban Bu Rhi Mu, Amphoe Chum Phuang.

Range of Profile Features:

The thickness of the A horizon varies from 10 to 25 cm and has 7.5YR or 5YR hues, values of 3 to 5 and chromas of 2 to 4. Structure is fine granular and/or blocky. Field pH value is from 5.5 to 7.0.

The B horizon has 2.5YR or 5YR values of 3 to 5 and chroma of 6 to 8. on the upper parts, where as the lower part has 2.5YR or 10R hues, value of 4 to 6 and chroma as above. Structure is weak to moderate medium and/or coarse blocky. Field pH value is from 4.5 to 5.5. They are very porous in B horizon.

Similar Soil Series:

Yasothon series (Yt): is a similar profile but has more clay in texture and has particle size class is fine-loamy.

Warin series (Wn): is fine-loamy with yellowish red color in B horizon (5YR hue).

Principal Associated Soils: These include Yasothon, Warin and Satuek soils, but Chum Phuang and Yasothon soils occupying similar position on the higher part whereas the Warin and Satuek soils occupy on the lower ones.

ANALYSIS RESULTS

Profile code no.:NE-S-22/54

(oven dry basis)

Soil series : Chum Phuang (Cpg)

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 ¹	water	KCl				
	0-12	A	78.8	14.7	6.5	0.4	0.4	16.1	37.0	24.9	ls	sl	4.9	4.4		6.0	33	
	12-32	BA	72.0	17.5	10.5	0.5	4.7	19.6	29.1	18.1	sl	sl	4.7	3.7		2.1	9	
	32-69	B11	68.5	15.5	16.0	0.4	5.8	17.0	28.3	17.0	sl	sl	4.8	3.7		2.2	8	
	69-106	B12	67.2	15.2	17.6	0.9	5.1	16.7	26.6	17.9	sl	sl	4.7	3.6		2.7	8	
	106-141	B13	67.4	16.0	16.6	0.8	5.5	17.4	28.7	15.0	sl	sl	4.7	3.5		2.2	8	
	141-220	B14	65.4	17.6	17.0	0.7	4.3	16.6	27.2	16.6	sl	sl	5.0	3.6		2.3	10	

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol ₍₊₎ kg ⁻¹)										Base satur ¹ (%)		ECEC cmol ₍₊₎ kg ⁻¹ (B+D)	Al KCl extr. cmol ₍₊₎ kg ⁻¹ (D)	Electrical conduct ¹ (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)			
0-12	0.2	0.79		1.00	0.50	0.10	0.20	1.80	2.70	4.50	3.00	46.2	60	40			0.27	
12-32	0.6	0.26		0.60	0.20	0.10	0.30	1.20	1.80	3.00	1.70	16.2	71	40			0.04	
32-69	1.1	0.24		0.60	0.30	0.03	0.30	1.23	2.10	3.33	14.80	11.3	68	37			0.02	
69-106	0.8	0.18		0.40	0.30	0.04	0.30	1.04	2.90	3.94	1.90	10.8	55	26			0.01	
106-141	0.3	0.14		0.20	0.10	0.02	0.20	0.52	2.30	2.82	1.60	9.6	33	18			0.01	
141-220	0.9	0.12		0.20	0.20	0.03	0.30	0.73	2.10	2.83	1.80	10.6	41	26			0.01	