

Proposed by F.R. Moormann, 1962
Revised by :
P. Vijarnsorn, 1988
W. Sirichuaychoo, 2004

CHUMPHON SERIES

Field Symbol: Cp

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

Setting: Chumphon soils are formed from alluvium on alluvial plain (terrace) and occurred on gently undulating to undulating. Slope range from 2 to 12 percent. The climate is Tropical Monsoon (Koppen 'Am') and Tropical Savanna (Koppen 'Aw'). Average annual precipitation is from 1,500 to 3,000 mm. Average annual air temperature is from 26 °C to 28°C.

Drainage, Permeability and Surface Runoff: Drainage is moderately well drained, permeability is estimated to be moderate over slow and surface runoff is rapid. The ground water level is below 2 m for most of the year.

Vegetation and Land Use: Planted to para rubber, oil palm, banana, coconut and pineapple. Many places have been abandoned leading to the development of low secondary forest and bare patches.

Characteristic Profile Features: Chumphon series is a member of the clayey-skeletal, kaolinitic, isohyperthermic Typic Paleudults (Soil Taxonomy, 2003). They are shallow soils to very gravelly of ironstones and are characterized by a dark grayish brown or brown sandy clay loam surface or A horizon, strong brown, yellowish red or red very gravelly clay loam over very gravelly clay argillic B horizon. The layer of unconsolidated ironstone nodules occurs within 50 cm of the soil surface. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Typifying Pedon: Chumphon sandy clay loam – para rubber, Ban Suan Thrup, Amphoe Tha Sae, Changwat Chumphon, 50 m above mean sea level, 2 to 5 percent slopes (sheet number: 4843 III, coordinate 977234).

Profile Code Number: S-58/46, described by Udom Pulsawath, 14 May 1970 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
A1	0-9	Dark brown to brown (7.5YR4/2) sandy clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky and slightly plastic; many interstitial pores, many fine and large tubular pores; many fibrous and medium roots; strongly acid (field pH 5.5); clear smooth boundary.
A2	9-20	Brown to dark brown (7.5YR4/4) sandy clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky and slightly plastic; many interstitial and tubular pores; many fibrous and few medium roots; very strongly acid (field pH 5.0); gradual smooth boundary.
Bw	20-38	Strong brown (7.5YR5/6) sandy clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky and slightly plastic; many interstitial and tubular pores; few large animal holes; few fine and common medium roots; very strongly acid (field pH 5.0); clear smooth boundary.
Btc1	38-75	Yellowish red (5YR5/8 and 5YR4/6) very gravelly sandy clay; moderate fine to medium subangular blocky structure; friable, slightly sticky and slightly plastic; cutan between laterite fragment; common fibrous roots; gravels composed of rounded laterite, sandstone and quartzite about 90-95% in soil; very strongly acid (field pH 5.0); diffuse smooth boundary.
Btc2	75-100 ⁺	Red (2.5YR5/8) very gravelly clay; moderate fine to medium subangular blocky structure; friable, slightly sticky and slightly plastic; cutan between

laterite; gravels composed of rounded laterite, sandstone and quartzite about 90-95% in soil; very strongly acid (field pH 5.0).

Type Location:

Name of province, Changwat Chumphon.

Range of Profile Features:

The surface or A horizon sandy loam texture (gravelly sandy loam or sandy clay loam may occurred due to the erosion of the surface soil) ranges from 10 to 30 cm in thickness and has 10YR or 7.5YR hues, values 3 or 4 and chromas 2 to 4. The structure is weak fine and medium blocky. Strongly acid to slightly acid, reaction values range from 5.5 to 6.5.

The subsurface of argillic B horizon very gravelly clay texture (very gravelly sandy clay loam or clay loam textures occasionally occur in this horizon, ≥ 35 percent clay) within 50 cm from the soil surface, has 7.5YR, 5YR or 2.5YR hues, values 4 to 6 and chromas 6 to 8. Structure is moderate medium blocky. Very strongly acid to slightly acid, reaction values range from 5.5 to 6.5.

Similar Soil Series:

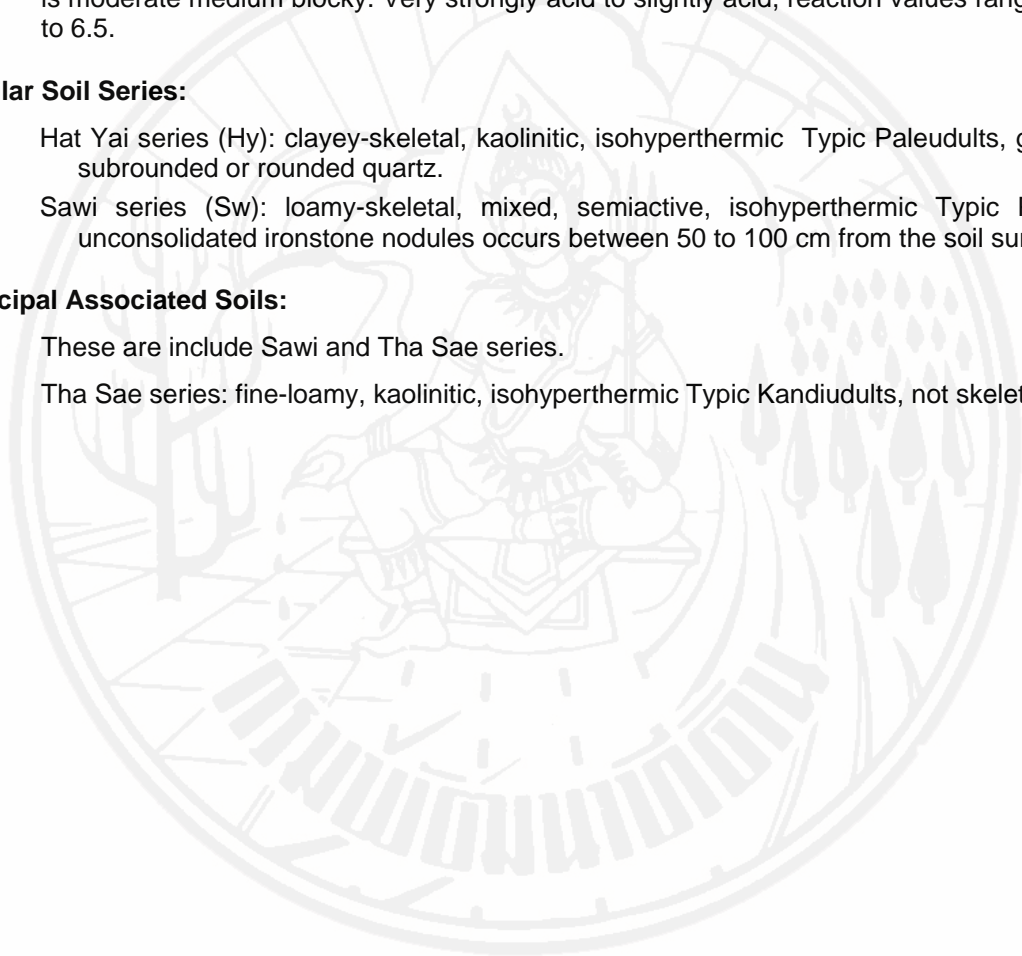
Hat Yai series (Hy): clayey-skeletal, kaolinitic, isohyperthermic Typic Paleudults, gravels are subrounded or rounded quartz.

Sawi series (Sw): loamy-skeletal, mixed, semiactive, isohyperthermic Typic Paleudults, unconsolidated ironstone nodules occurs between 50 to 100 cm from the soil surface.

Principal Associated Soils:

These are include Sawi and Tha Sae series.

Tha Sae series: fine-loamy, kaolinitic, isohyperthermic Typic Kandudults, not skeletal soils.



ANALYSIS RESULTS

Profile code No.: S-58/11

(oven dry basis)

Soil series: Chumphon series (Cp)

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					
Pa-629	0-9	A1	55.0	33.0	12.0						sl	scl	5.8	4.7	0.2	4.6	125
Pa-630	9-20	A2	60.0	28.0	12.0						sl	scl	4.9	3.7	0.3	1.2	60
Pa-631	20-38	Bw	59.0	26.0	15.0						sl	scl	4.8	3.8	0.0	0.8	27
Pa-632	38-75	Btc1	40.0	14.0	46.0						c	gsc	5.1	3.8	0.0	1.4	60
Pa-633	75-100+	Btc2	34.0	16.0	50.0						c	gc	4.9	3.6	0.6	1.9	91

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	Extr.	SUM	CEC	CEC	B/Cx100	(Bx100)				
								cations (B)	acidity (A)	(B+A)	NH ₄ OAc (C)	100g Clay						
0-9	0.9	1.44		1.70	0.50	0.30	0.10	2.60	6.20	8.80	6.4	53.3	41	30			0.50	
9-20	0.8	0.79		0.50	0.20	0.10	0.10	0.90	5.00	5.90	4.0	33.3	23	15			0.04	
20-38	0.3	0.34		0.20	0.10	0.10	0.10	0.50	4.10	4.60	3.1	20.7	16	11			0.02	
38-75	2.0	0.31		1.40	0.50	0.10	0.20	2.20	10.90	13.10	10.2	22.2	22	17			0.01	
75-100+	2.0	0.26		0.30	0.60	0.20	0.20	1.30	15.20	16.50	8.7	17.4	15	8			0.02	

Surveyor: U. Pulsawath

Reported by: W. Sirichuaychoo

Date: May 14, 1970

Date: Nov. 24, 1998