

Proposed by P. Vijarnsorn, 1981
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

THA CHANG SERIES

Field Symbol: Tac

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

Setting: The Tha Chang soils derived from fine grain clastic rocks namely shale, phyllite or mudstones and occur on denudation surface. Relief is gently undulating to undulating. Slope ranges from 2 to 12 percent. Elevation ranges from 20 to 50 m above mean sea level. The climate is Tropical Monsoon (Koppen 'Am') or Tropical Rain Forest (Koppen 'Af'). Average annual precipitation is from 1,800 to 2,500 mm. Average annual air temperature is from 26 °C to 28 °C.

Drainage, Permeability and Surface Runoff: Drainage is well to moderately well drained, permeability is moderate and surface runoff is medium. Ground water level deeper than 1.50 m throughout the year.

Vegetation and Land Uses: Para rubber.

Characteristic Profile Features: Tha Chang series is a member of the loamy-skeletal, kaolinitic, isohyperthermic Typic (Kandic) Plinthudults (soil taxonomy, 2003). They are shallow soils to ironstones and are characterized by very dark grayish brown to dark brown sandy loam surface or A horizon overlying brownish yellow, yellowish brown or yellowish red very gravelly sandy loam or clay loam argillic B horizon over mixed color of red and gray slightly gravelly clay loam or clay, occurred between 50 to 100 cm from the surface soils. The red color formed a continuous phases or more than half of the matrix. Very strongly to strongly acid reaction values range from 4.5 to 5.5 throughout the profile.

Typifying Pedon: Tha Chang sandy loam - Evergreen Forest, from Tambon Prasang, Amphoe Tha Chana, Changwat Surat Thani, 10 m above mean sea level, 2 to 3 percent slopes (sheet name Khao Daeng, sheet number 4728 II, coordinate: 978519).

Profile Code Number: S-61/163, described by Tawee Rattanavimol, 23 January 1981 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
A	0-8	Dark brown to brown (7.5YR4/4) sandy loam; weak fine and medium subangular blocky structure; friable, slightly sticky and slightly plastic; many very fine and fine roots; strongly acid (field pH 5.5); clear smooth boundary.
BA	8-32	Strong brown (7.5YR5/6) slightly gravelly sandy loam; weak fine and medium subangular blocky structure; friable, slightly sticky and slightly plastic; many fine roots; gravels composed of quartz and iron stones; strongly acid (field pH 5.5); clear smooth boundary.
Btc1	32-60	Yellowish red (5YR5/6) very gravelly sandy loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; patchy thin clay coating on ped faces and in pores; common very fine and few coarse roots; strongly acid (field pH 5.5); clear smooth boundary.
Btc2	60-103	Mixed yellowish brown (10YR5/8) and reddish yellow (2.5YR5/8) very gravelly clay loam; weak fine and medium subangular blocky structure; friable, sticky and plastic; continuous thick clay coating on ped faces; few very fine roots; strongly acid (field pH 5.5); clear smooth boundary.
Btgv	103-126	Mixed red (2.5YR4/8) red (7.5YR6/6-8) and gray (10YR5/1) slightly gravelly clay loam; weak fine and medium subangular blocky structure; friable to firm, sticky, plastic; continuous thick clay coating on ped faces; few very fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.

BCgv 126⁺ Mixed gray (10YR5/1) red (2.5YR4/8) reddish yellow (7.5YR6/8) and brownish yellow (10YR6/6) clay; weak to moderate fine and medium subangular blocky structure; very strongly acid (field pH 5.0); clear smooth boundary.

Remark: This soil is shallow to ironstones and plinthite more than 50% by volume of the soil matrix or continuous phase within 1.50 m from the soil surface.

Type Location:

Name of district, Amphoe Tha Chang, Changwat Surat Thani.

Range of Profile Features:

The surface or A horizon sandy loam ranges 10 to 30 cm in thickness and which hues 10YR or 7.5YR, values 3 to 5 and chromas 2 to 4. Very strongly acid to strongly acid, reaction values range from 5.0 to 5.5.

The kandic B horizon has hues 10YR, 7.5YR or 5YR, values 4 to 6 and chromas 4 to 6, very gravelly sandy loam to clay loam textures. Very strongly acid to strongly acid, reaction values range from 5.0 to 5.5.

The BC horizon occurred between 60 to 150 cm of mixed red color (plinthite) in continuous phases or more than half of the matrix of clay loam or clay.

Similar Soil Series:

Khao Khat series (Kkt): clayey-skeletal, kaolinitic, isohyperthermic Typic (Kandic) Plinthudults.

Principal Associated Soils:

Tha Chang series is associated with Khao Khat, Chumphon, Sawi and Tha Sae series.

Chumphon series (Cp): clayey-skeletal, kaolinitic, isohyperthermic Typic Paleudults.

Sawi series (Sw): loamy-skeletal, mixed, semiactive, isohyperthermic Typic Paleudults.

Tha Sae series (Te): fine-loamy, kaolinitic, isohyperthermic Typic Kandiudults.

ANALYSIS RESULTS

Profile code No.: S-61/163

(oven dry basis)

Soil series: Tha Chang series (Tac)

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						
420882	0-8	A	61.0	30.7	8.3	0.8	3.1	11.6	27.4	18.1	sl	sl	4.4	3.5		6.6	45	
420883	8-32	BA	58.5	30.8	10.7	4.1	4.6	9.7	24.2	15.9	sl	sli.g Sl	4.6	3.8		3.3	26	
420884	32-60	Btc1	57.6	30.3	12.1	11.2	2.8	5.5	20.5	17.6	sl	vgsl	5.0	3.8		3.1	64	
420885	60-103	Btc2	40.5	22.3	37.2	13.2	5.0	4.2	10.0	8.1	cl	vgcl	5.0	3.7		0.8	64	
420886	103-126	Btg _v	24.4	21.8	53.8	3.8	2.6	3.1	7.0	7.9	c	sli.gcl	5.0	3.8		0.8	58	
420887	126+	BCg _v	18.5	24.6	56.9	0.6	1.3	3.1	7.7	5.8	c	c	4.9	3.7		0.9	>100	

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)				
0-8	1.6	1.74		0.40	0.40	0.10	0.30	1.20	6.40	7.60	4.3	51.8	28	16			0.08	
8-32	1.3	0.82		0.30	0.20	0.06	0.20	0.76	4.70	5.46	3.1	29.0	25	14			0.05	
32-60	1.1	0.57		0.40	0.20	0.10	0.30	1.00	4.00	5.00	3.5	28.9	29	20			0.04	
60-103	2.1	0.36		0.50	0.30	0.10	0.40	1.30	8.20	9.50	6.5	17.5	20	14			0.03	
103-126	3.8	0.40		0.30	0.20	0.20	0.50	1.20	12.50	13.70	11.3	21.0	11	9			0.03	
126+	5.6	0.31		0.30	0.20	0.60	1.10	2.20	13.40	15.60	12.0	21.1	18	14			0.09	

Surveyor: T. Ratanavimol

Reported by: W. Sirichuaychoo

Date: Jan. 23, 1981

Date: Nov. 4, 1998