

Proposed by Moorman, 1964
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

TRAT SERIES

Field Symbol: Td

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

Setting: Trat soils derived from fine grain clastic rocks namely shale, phyllite or equivalent rocks and occurred on denudation surface. Relief is gently undulating to undulating. Slope ranges from 2 to 12 percent. Elevation ranges from 20 to 50 m above sea level. The climate is Tropical Monsoon (Koppen 'Am'). Average annual precipitation is from 2,000 to 6,000 mm Average annual air temperature is from 26 °C to 27°C.

Drainage, Permeability and Surface Runoff: Drainage is well drained, permeability is rapid and surface runoff is rapid. Ground water level falls below 4 m throughout the year.

Vegetation and Land Use: Tropical Evergreen Forest. Parts are cleared and planted to para rubber, oil palm and fruit trees.

Characteristic Profile Features: The Trat series is a member of the fine, kaolinitic, isohyperthermic Typic Kandudults (soil taxonomy, 2003). They are moderately deep soils to ironstones and are characterized by a dark brown, dark reddish brown or reddish clay loam surface or A horizon overlying a yellowish red clay loam to clay (≥ 35 percent clay in control section) over very gravelly clay loam or very gravelly clay kandic B horizon. Coarse fraction consists of angular and/or subangular shale and/or phyllite fragments which occur between 50 to 100 cm from the soil surface. Moderately acid to slightly acid, reaction values range from 6.0 to 6.5 over very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Typifying Pedon: Trat clay loam - para rubber plantation, Ban Khao Thong, Tambon Khao Thong, Amphoe Muang, Changwat Krabi, 80 m above mean sea level, 3 to 5 percent slopes (sheet number 4725 II, coordinate 785965).

Profile Code Number: S-64/70, described by U. Pulsawath, 15 May 1975 (moist colors unless otherwise stated).

Horizon Depth (cm)	Description
Ap 0-11	Dark yellowish brown (10YR4/4) clay loam; weak fine and medium subangular blocky structure; very friable, slightly sticky and slightly plastic; common tubular pores; many fine and medium roots; very strongly acid (field pH 5.0); gradual smooth boundary.
Bt1 11-35	Strong brown (7.5YR5/8) clay; weak fine and medium subangular blocky structure; very friable, sticky and plastic; patchy thin cutan on ped faces; many interstitial and tubular pores; common large, common medium and many fine roots; very strongly acid (field pH 4.5); diffuse smooth boundary.
Bt2 35-84/88	Yellowish red (5YR5/8) clay; weak fine and medium subangular blocky structure; very friable, sticky and plastic; patchy thin cutan on ped faces; many interstitial and tubular pores; few coarse and fine roots; very strongly acid (field pH 4.5); clear wavy boundary.
Btc 84/88-130	Yellowish red (5YR5/8) very gravelly clay; friable, slightly sticky and slightly plastic; common interstitial and fine tubular pores; very few coarse and medium roots; gravels composed of ironstones more than 35% by volume of the soil matrix; very strongly acid (field pH 4.5).

Type Location:

Name of province, Changwat Trat.

Range of Profile Features:

The surface or A horizon clay loam is from 10 to 25 cm in thickness and has 5YR or 7.5YR or 10YR hues, values 3 or 4 and chromas 2 to 4. Structure is moderate fine and medium blocky. Strongly acid to slightly acid, reaction values range from 5.5 to 6.5.

The kandic B horizon clay over very gravelly clay within 50 to 100 cm from the soil surface has 5YR hue, values 4 or 5 and chromas 6 to 9. The colors of 7.5YR and 2.5YR hues may occur in the upper B horizon. Structure is moderate fine and medium blocky. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Similar Soil Series:

Trang series (Tng): fine, kaolinitic, isohyperthermic Typic Kandiodults, has redder color in the subsoil (2.5YR hues) and contains shale and quartz fragment, usually below 80 cm of the surface.

Khlong Chak series (Kc): clayey-skeletal, kaolinitic, isohyperthermic Typic Kandihumults, contains pseudolaterite within 50 cm depth of the surface.

Principal Associated Soils:

These include Khlong Chak, Trang, Khlong Teng, Nong Khla series.

Khlong Teng series (Klt): fine-loamy, mixed, semiactive, isohyperthermic, shallow Typic Haplohumults.

Nong Khla series (Nok): clayey-skeletal, kaolinitic, isohyperthermic Typic Kandiodults.

ANALYSIS RESULTS

(oven dry basis)

Profile code No.: S-64/70

Soil series: Trad series (Td)

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			
2-13705	0-11	Ap	47.7	33.7	18.6	0.4	0.5	8.9	21.2	16.7	l	cl	5.3	4.0		3.4	43
2-13706	11-35	Bt1	35.3	29.6	35.1	1.0	0.8	5.9	13.8	13.8	cl	c	5.6	4.1		0.7	20
2-13707	35-84/88	Bt2	30.6	28.5	40.9	1.0	0.4	4.6	12.3	12.3	c	c	5.9	4.2		0.7	23
2-13708	84/88-130	Btc	34.2	32.5	33.3	4.4	1.4	3.8	11.0	13.6	cl	vgc	6.0	4.4		1.4	13

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)	Al KCl extr. cmol _(c) kg ⁻¹ (D)	Electrical conduct ^y (ECx10 ⁶) dS m ⁻¹		
				Ca Mg K Na				SUM cations (B)		Extr. acidity (A)		SUM (B+A) NH ₄ OAc (C)		CEC 100g Clay	CEC				B/Cx100	(Bx100)/(B+A)
0-11	0.8	1.30		0.40	0.20	0.10	0.20	0.90	5.50	6.40	3.3	17.7	27	14			0.34			
11-35	1.1	0.62		0.30	0.10	0.03	0.30	0.73	4.80	5.53	3.2	9.1	23	13			0.04			
35-84/88	1.3	0.35		0.30	0.10	0.02	0.20	0.62	4.50	5.12	2.5	6.1	25	12			0.01			
84/88-130	0.8	0.12		0.30	0.10	0.02	0.30	0.72	3.40	4.12	1.9	5.7	38	17			0.01			

Surveyor: U. Pulsawath & staff

Date: May 15, 1979

Reported by: W. Sirichuaychoo

Date: Nov. 5, 1998