

Proposed by: S. Panichapong et.al-1961
Revised by: 1. P. Hemsrichart, 1988
B. Boonsompopphan,
2. A. Suchinai, 2004

THA TUM SERIES

Field Symbol: Tt

Distribution: Occupies moderate extent in Northeast Thailand.

Setting: Tha Tum soils are formed from alluvium and occur on the lower parts of the peneplain. Relief is level to nearly level. Slope is 1 percent or less. Elevation varies from 120 to 140 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Average annual precipitation is from 1,100 to 1,400 mm. Mean annual air temperature varies from 26 to 28°C.

Drainage, Permeability and Runoff: Somewhat poorly drained to poorly drained. They are subject to recurrent flash flood by river water and impounded rain water up to 1 meter deep for 3 to 4 months. Ground water table falls below 1.5 m during the peak of the dry period. Permeability is moderate over slow. Surface runoff is slow.

Vegetation and Land Use: Mainly used for transplanted rice and broadcasted rice; Some are natural grass land.

Characteristic Profile Features: The Tha Tum series is a member of the fine, mixed, semiactive, isohyperthermic, Aeric (Plinthic) Endoaqualfs. They are deep soils and are characterized by a brown or pale brown or grayish brown sandy loam or loam A horizon overlying a pale brown, pinkish gray, reddish gray, or gray clay or sandy clay argillic B horizon which in turn overlies sandy 2C horizon. Dominant red and/or yellowish red mottles occur in the subsoil. Reaction is medium acid over strongly acid to very strongly acid. The pH value may increase to neutral or mildly alkaline at transitional zone between B and C horizon.

Typifying Pedon: Profile code no. is NE-N-31/44 (moist color unless otherwise stated).

Location: 250 m east of Ban Non Bo, Tambon Mueang Tao, Amphoe Phayakkhaphum Phisai
Changwat Maha Sarakham

Sheet Name: Amphoe Chumphon Buri

Sheet No.: 5369 I

Coordinate: 279083

Elevation: 133 m

Relief: level to nearly level

Slope: <1%

Physiography: lower part of peneplain

Parent material: alluvium

Drainage: somewhat poorly drained

Permeability: moderate over slow

Runoff: slow

Ground water depth: >1.5 m

Flooding depth: 10-15 cm

Duration: 4-5 month

Frequency: every year

Annual rainfall: 1,415 mm

Mean temp: 26.7 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: transplanted and broadcasting rice

Other:

Described by: Udol & staff

Date: 26 Jan.1981

Revised by:

Horizon	Depth (cm)	Description
Ap	0-11	Brown (7.5YR 5/2) loam; few fine strong brown (7.5YR 5/8) mottles; massive; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots; strongly acid (field pH 5.5); clear, smooth boundary.
AB	11-23	Pale brown (10YR 6/3) loam; common medium yellowish red (5YR 5/8) mottles; massive; slightly hard, friable, slightly sticky, slightly plastic; few very fine roots; strongly acid (field pH 5.5); gradual, smooth boundary.

Bt1	23-55	Dark reddish gray (5YR 4/2) clay; common fine red (2.5YR 4/8) mottles; massive breaking to fine subangular blocky structure, firm, very sticky, very plastic; continuous thick clay coating on ped faces and in pores; few very fine roots; plinthite 20-30 %, very strongly acid (field pH 5.0); gradual, smooth boundary.
Bt2	55-87	Reddish gray (5YR 5/2) clay; common medium prominent red (2.5YR 4/8) and common fine and medium distinct yellowish red (5YR 5/8) mottled; strong fine and medium subangular blocky structure; firm, very sticky, very plastic; continuous thick clay coating on ped faces and in pores; few very fine roots; plinthite 5-8%; very strongly acid (field pH 5.0); clear, smooth boundary.
Bt3	87-148	Pinkish gray (5YR 6/2) clay; many medium and coarse red (10R 4/6) and many fine and medium strong brown (7.5YR 5/8) mottles; massive breaking to coarse subangular blocky structure; firm, sticky, plastic; patchy thin clay coating on ped faces and in pores; plinthite 3-5%; very strongly acid (field pH 5.0); clear, smooth boundary.
2C	148-180	Pinkish gray (5YR 7/2) sandy; common medium yellowish red (5YR 5/8) mottles; nonsticky, nonplastic; strongly acid (field pH 5.5); (this horizon described by Auguring).

Type location: : The Tha Tum series was named for Amphoe Tha Tum Changwat Mahasarakham, which a profile were first described and proposed.

Range of Profile Feature:

The thickness of the A horizon varies from 10 to 25 cm and has 7.5YR and 10YR hues, values of 3 to 6 and chromas of 2 to 4. Texture of silt loam may occur in places; structure is weak to moderate fine to medium blocky. Field pH value is from 5.0 to 6.0.

The B horizon has 7.5YR or 5YR hues or 10YR hues. values of 4 to 7 and chromas of 2 or less. Structure is moderate to strong medium and/or coarse blocky. Field pH value is from 5.0 to 6.0.

The 2C horizon occurs at some depth below 1 m but within 1.5 m. The matrix color has 7.5YR or 5YR or 10YR hues; values of 6 to 7 and chromas of 2 or 1. Structure is single grain to weak blocky. Field pH value is from 6.0 to 8.0.

Similar Soil Series:

Kula Ronghai series (Ki): has higher pH value in the B horizon (6 to 8) and dominant brownish mottles. Classified as Natraqualfs.

Roi Et series (Re): has lighter texture in the B horizon and no dominant red mottles.

Principal Associated Soils: These include Kula Ronghai, Roi Et soils.

ANALYSIS RESULTS **Profile code no.:NE-N-31/44**
(oven dry basis) **Soil series : Tha Tum (Tt)**

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				
4/12384	0-11	AP	43.6	47.9	8.5	0.0	0.4	2.1	13.6	27.5	l	l	4.6	3.7		3.0	12	
4/12385	11-23	AB	33.8	42.3	23.9	0.1	0.3	2.2	11.7	19.5	l	l	5.0	3.7		2.3	10	
4/12386	23-55	B11	15.2	24.6	60.2	0.5	0.4	0.9	4.4	9.0	c	c	4.7	3.5		2.6	19	
4/12387	55-87	B12	23.3	24.1	52.6	0.1	0.4	1.2	9.5	11.6	c	c	4.8	3.5		2.6	21	
4/12388	87-148	B13	40.7	15.8	43.5	0.0	0.4	3.0	20.5	16.8	c	c	4.5	3.3		1.9	19	
4/12389	148-180	2C	91.5	0.6	7.9	0.0	0.0	3.3	77.9	10.3	s	s	4.8	3.6		2.2	18	

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 ² (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)			
0-11	0.5	0.67		1.00	0.20	0.03	0.60	1.83	4.30	6.13	3.20	37.6	57	30			0.38	
11-23	2.9	0.48		1.70	0.20	0.02	0.90	2.82	5.80	8.62	5.90	24.7	48	33			0.33	
23-55	4.4	0.35		5.00	0.40	0.04	3.60	9.04	14.90	26.94	18.90	31.4	48	38			0.09	
55-87	3.1	0.24		5.00	0.40	0.04	3.70	9.14	11.60	20.74	15.90	30.2	57	44			1.00	
87-148	1.9	0.07		4.00	0.50	0.04	2.80	7.34	8.20	15.54	10.90	25.1	67	47			1.00	
148-180	0.9	0.01		1.50	0.30	0.04	1.60	3.44	2.20	5.64	3.80	48.1	91	61			0.75	