

Proposed by: N. Chorphaka, 1982  
 Revised by:  
 1. N. Chorphaka, 1988  
 2. A. Potichan, 2004

**TAPHAN HIN SERIES**

**Field Symbol: Tph**

**Distribution:** Occupies small extent in the northern part of Thailand along Mae Nam Nan.

**Setting:** Taphan Hin soils are formed from alluvium and occur on river levee. Relief is nearly level to gently undulating. Slopes range from 1 to 3 percent. Elevation is approximately from 30 to 65 m above sea level. The climate is Tropical Savannah (Aw). Average annual precipitation ranges from 1,100 to 1,400 mm. Mean annual air temperature ranges from 26 to 28 °C.

**Drainage, Permeability and Runoff:** Well drained. Permeability is estimated to be moderate. Surface runoff is slow. Ground water table falls below 2 m during the dry season.

**Vegetation and Land Use:** Mainly used for upland crop such as sugar cane, corn, beans, tobacco and some fruit trees.

**Characteristic Profile Features:** Taphan Hin series is a member of fine-silty, mixed, active, isohyperthermic Ultic Haplustalfs. They are very deep soils characterized by a brown, dark brown or dark reddish brown loam or silt loam A horizon, overlying a reddish brown silt loam or silty clay loam argillic B horizon. These inturn overlies lighter texture horizon which commonly occurs below 100 cm but within 1.5 m of the soil surface. Reaction is moderately acid to neutral.

**Typifying Pedon:** Profile code no. is N-41/65 (moist colors unless otherwise stated).

**Location:** Ban Wang Kaphi, Tambon Wang Kaphi, Amphoe Muang Changwat Uttaradit.

**Sheet Name:** Changwat Uttaradit

**Sheet No.:** 5044 III

**Coordinate:** 184405

**Elevation:** 62 m (MSL)

**Relief:** nearly level

**Slope:** 1-2 %

**Physiography:** levee

**Parent material:** semi-recent alluvium

**Drainage:** well drained

**Permeability:** moderate

**Runoff:** slow

**Ground water depth:** >2 m

**Flooding depth:** -

**Duration:** -

**Frequency:** -

**Annual rainfall:** 1,432.6 mm

**Mean temp.:** 27.1 °C

**Climate type:** Tropical Savannah (Aw)

**Natural vegetation or land use:** dipterocarp forest

**Described by:** Pongsak Choldamrongkul

**Date:** 10 April, 1980

**Revised by:** Aniruth Potichan

**Date:** 30 May, 2004

Horizon	Depth (cm)	Description
Ap	0-18	Dark reddish brown (5YR3/4) silt loam; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; many fine and few medium roots; slightly acid (field pH 6.5); abrupt and smooth boundary.
Bt1	18-47	Reddish brown (5YR4/3) silty clay loam; weak fine and medium angular and subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; broken moderately thick cutans on ped faces and in pores; few fine roots; neutral (field pH 7.0); gradual and smooth boundary.
Bt2	47-82	Reddish brown (5YR4/4) silty clay loam; weak to moderate medium prismatic breaking to moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; broken moderately thick cutans on ped faces and in pores; very few fine roots; few fine soft iron-manganese nodules; neutral (field pH 7.0); gradual and smooth boundary.

Bt3	82-116	Reddish brown (5YR4/4) silty clay loam; moderate medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; broken moderately thick cutans on ped faces and in pores; very few fine soft iron-manganese nodules; neutral (field pH 7.0); gradual and smooth boundary.
BC1	116-140	Reddish brown (5YR4/4) silt loam; few fine faint mottles of yellowish red (5YR4/6); weak fine subangular blocky structure; friable, slightly sticky and nonplastic; patchy thin cutans in pores; very few fine roots; neutral (field pH 7.0); gradual and smooth boundary.
BC2	140-160+	Reddish brown (5YR4/4) silt loam; many fine distinct mottles of strong brown (7.5YR5/6); weak fine and medium subangular blocky structure; friable, slightly sticky and nonplastic; very few fine roots; few small soft iron-manganese nodules; neutral (field pH 7.0).

**Type Location:**

Taphan Hin series was named for Amphoe Taphan Hin, Changwat Phichit in which soil of this series was first described.

**Range of Profile Features:**

The A horizon is from 10 to 20 cm thick and has 7.5YR or 5YR hues, value of 3 to 4 and chroma of 2 to 4. Texture of fine sandy loam may occur. structure is weak to moderate fine to medium subangular blocky. Field pH values range from 6.0 to 7.0.

The argillic B horizon has 5YR hues, value of 4 to 5 and chroma of 3 to 4. structure is moderate fine to medium subangular blocky. Field pH values range from 6.0 to 7.0. At depth between 100 to 150 cm of the soil surface, texture become lighter varying from silt loam to loam or sandy loam. The soil color is 5YR or 7.5YR hues, value of 4 to 5 and chroma of 3 to 4 in 5YR hues or 2 to 4 in 7.5 hues. Structure is weak subangular blocky. Field pH values range from 6.0 to 7.0.

**Similar Soil Series:**

Kamphaeng Phet series (Kp): has similar profile but browner in color.

That Phanom series (Tp): has similar profile but moderately well drained and has red matrix in the lower part of argillic B horizon.

Dong Yang En series (Don): the percentage of clay is not decreased by as much as 20 percent of the maximum within a depth of 1.5 m from the soil surface.

**Principal Associated Soils:**

These include Dong Yang En series on the same position and Uttaradit series or Nan series on the lower position.

**ANALYSIS RESULTS**  
(oven dry basis)

Profile code no.: N-41/65  
Soil series: Taphan Hin (Tph)

Lab No.	Depth (cm)	Horizon	Particle size distribution analysis (% by weight)								Texture		pH		CaCO <sub>3</sub> %	P, mg kg <sup>-1</sup> Bray 2	K, mg kg <sup>-1</sup> NH <sub>4</sub> OAc
			USDA grading			Sand-fraction grading					Lab	Field	1:1	1:1			
			sand	silt	clay	vc	c	m	f	vf	result	estim <sup>n</sup>	water	KCl			
3/14804	0-18	Ap	15.4	66.4	18.2	0.0	0.1	0.2	0.6	14.5	sil	sil	5.6	4.9		35.3	81
3/14805	18-47	Bt1	1.3	60.9	37.8	0.0	0.1	0.0	0.4	0.8	sicl	sicl	6.2	5.0		11.2	43
3/14806	47-82	Bt2	1.6	67.8	30.6	0.0	0.0	0.2	0.2	1.2	sicl	sicl	6.2	5.0		19.0	49
3/14807	82-116	Bt3	11.9	61.8	26.3	0.0	0.1	0.0	0.1	11.7	sil	sicl	6.3	4.9		20.2	33
3/14808	116-140	BC1	15.9	59.4	24.7	0.0	0.0	0.0	0.2	15.7	sil	sil	6.1	4.8		19.7	33
3/14809	140-160	BC2	17.1	58.1	24.8	0.3	0.3	0.6	0.8	15.1	sil	sil	6.4	4.8		17.3	33

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol <sub>(c)</sub> kg <sup>-1</sup> )								Base satur <sup>n</sup> (%)		ECEC cmol <sub>(c)</sub> kg <sup>-1</sup> (B+D)	Al KCl extr. cmol <sub>(c)</sub> kg <sup>-1</sup> (D)	Electrical conduct <sup>y</sup> (ECx10 <sup>6</sup> ) dS m <sup>-1</sup>
				Ca	Mg	K	Na	SUM cations (B)	Extr. acidity (A)	SUM (B+A)	CEC NH <sub>4</sub> OAc (C)	CEC 100g Clay	B/Cx100			
0-18	0.9	1.23	-	8.40	2.90	0.20	0.20	11.70	4.60	16.30	11.9	65.4	98	72		0.54
18-47	2.8	1.08	-	11.50	3.30	0.10	0.20	15.10	6.30	21.40	16.5	43.7	92	71		0.21
47-82	2.3	0.70	-	10.40	3.90	0.10	0.20	14.60	5.70	20.30	15.5	50.7	94	72		0.19
82-116	2.2	0.72	-	9.80	3.10	0.10	0.20	13.20	4.70	17.90	13.3	50.6	99	74		0.19
116-140	2.2	0.53	-	8.70	3.20	0.10	0.20	12.20	4.80	17.00	12.4	50.2	98	72		0.23
140-160	2.3	0.59	-	9.30	3.20	0.10	0.15	12.75	5.10	17.85	13.0	52.4	98	71		0.14

Surveyor: Pongsak

Date: 10 April, 1980