

Proposed by F. J. Dent, 1960
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

KHO HONG SERIES

Field Symbol: Kh

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

Setting: Kho Hong soils derived from sandstone on coarse grain clastic rocks and occurred on denudation surface. Elevation ranges from 20 to 100 m above mean sea level. Relief is gently undulating to undulating. Slope ranges from 2 to 12 percent. The climate is Tropical Monsoon (Koppen 'Am') or Tropical Rain Forest (Koppen 'Af'). Average annual air temperature is from 26 °C to 28°C. Average annual precipitation is from 1,800 to 3,000 mm.

Drainage, Permeability and Surface Runoff: Drainage is well drained, permeability is estimated to be rapid and surface runoff is rapid, if occurs on sloping land.

Vegetation and Land Use: Almost exclusively used for para rubber, oil palm, coconut and fruit trees growing. Low secondary shrubs and grasses (*Imperata cylindrica*) are also developed in many abandoned parts or in recently open forest areas.

Characteristic Profile Features: Kho Hong series is a member of the coarse-loamy, kaolinitic, isohyperthermic Typic Kandiodults (soil taxonomy, 2003). They are very deep soils and are characterized by a dark brown or very dark grayish brown sandy loam surface or A horizon overlying a strong brown, yellowish brown or brownish yellow sandy loam kandic B horizon. However, at the greater depth of the solum (approximately below 80 cm from the soil surface) sandy clay loam texture may occur. Very strongly acid to strongly acid, reaction ranges from 4.5 to 5.5.

Typifying Pedon: Kho Hong sandy loam – para rubber, from Ban Plak Nu, Amphoe Na Thawi, Tambon Plak Nu, Changwat Songkhla, 50 m above mean sea level, 2 to 5 percent slopes (sheet number 5122 II NE).

Profile Code Number: S-68/114, described by Somsak Laungsirorat and staffs, 10 March 10, 1972 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
A	0-11	Dark brown (7.5YR3/2) sandy loam; weak fine subangular blocky breaking to granular structure; friable, nonsticky and nonplastic; porous; abundant very fine and roots; strongly acid (field pH 5.5); gradual smooth boundary.
AB	11-26	Dark brown to brown (7.5YR4/4) sandy loam; very weak fine subangular blocky structure breaking to granular structure; friable, nonsticky and nonplastic; common fine discontinuous tubular and interstitial pores; plentiful very fine and fine roots; strongly acid (field pH 5.5); gradual smooth boundary.
Bw	26-58	Strong brown (7.5YR5/6) sandy loam; weak fine subangular blocky breaking to granular structure; friable, nonsticky and nonplastic; few very fine and fine interstitial pores; few fine and medium roots; strongly acid (field pH 5.5); gradual smooth boundary.
Bt	58-100 ⁺	Reddish yellow (7.5YR5/6) with pale brown spot (10YR6/3) sandy clay loam; weak fine to medium subangular blocky structure; friable, slightly sticky and slightly plastic; few thin cutan along roots channels and ped faces; common fine discontinuous tubular pores, common very fine and fine interstitial pores; few fine and coarse roots; animal activities; very strongly acid (field pH 5.0); gradual smooth boundary.

Type Location:

Name of Village and Para rubber Research Center, Ban Kho Hong, Amphoe Hat Yai, Changwat Songkhla.

Range of Profile Features:

The surface or A horizon sandy loam is 5 to 20 cm in thickness and has 10YR or 7.5YR hues, values 3 or 4 and chromas 2 to 4. Structure is weak fine and medium subangular blocky. The soil texture is loamy sand may occur. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

The subsurface of kandic B horizon sandy loam and has 10YR or 7.5YR hues, values 5 or 6 and chromas 6 or 8. The soil texture is sandy clay loam may occur at below 80 cm from the soil surface. Structure is weak fine and medium subangular blocky. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Similar Soil Series:

Na Thawi series (Nat): coarse-loamy, kaolinitic, isohyperthermic Typic Kandiodults, yellowish red color (5 YR hues).

Principal Associated Soils:

These include Lan Suan, Na Thawi, Tha Sae, Sawi and Nam Krachai series.

Lang Suan series (Lan): isohyperthermic, coated Typic Quartzipsamments.

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

Satuk series (Suk): fine-loamy, kaolinitic, isohyperthermic Typic Kandiodults, ustic soil moisture regime.

Sawi series: loamy-skeletal, mixed, semiactive, isohyperthermic Typic Paleodults, usually found ironstones between 50 to 100 cm from the soil surface.

Nam Krachai series: coarse-loamy, mixed, semiactive, isohyperthermic Typic Plinthaquults, occupy at lower position adjacent from Kho Hong soils on higher position.

ANALYSIS RESULTS

(oven dry basis)

Profile code No.: S-68/114

Soil series: Kho Hong series (Kh)

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				
Pe-529	0-11	A	73.5	20.0	6.5					sl	sl	5.1	4.1	0.0	2.2	27
Pe-530	11-26	AB	70.5	22.0	7.5					sl	sl	4.7	4.2	0.3	1.4	9
Pe-531	26-58	Bw	73.0	21.0	6.0					sl	sl	4.9	4.2	0.3	0.9	9
Pe-532	58-100+	Bt	67.5	19.5	13.0					sl	scl	4.9	4.1	0.3	3.1	9

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
								SUM	Extr.	SUM	CEC	CEC	B/Cx100	(Bx100)				
				Ca	Mg	K	Na	cations (B)	acidity (A)	(B+A)	NH ₄ OAc (C)	100g Clay		(B+A)				
0-11	0.3	1.33		0.10	0.10	0.30	0.40	0.90	6.00	6.90	5.0	76.9	18	13			0.02	
11-26	0.2	0.59		0.10	0.05	0.04	0.05	0.24	3.30	3.54	2.1	28.0	11	7			0.02	
26-58	0.6	0.24		0.10	0.05	0.04	0.05	0.24	2.40	2.64	1.2	20.0	20	9				
58-100+	0.3	0.20		0.10	0.05	0.04	0.05	0.24	2.60	2.84	1.9	14.6	13	8				

Surveyor: S. Luangsirotat & staff

Date: March 10, 1972

Reported by: W. Sirichuaychoo

Date: Nov. 29, 1998