

Proposed by: P. Snitwong, 1968
 Revised by: 1. P. Hemsrichart, 1988
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KHAMBONG SERIES

Field symbol: Kg

Distribution: Occupies small extent in the Northeast Thailand.

Setting: Khambong soils are formed from washed deposit of sandstone and occur on the middle part of peneplain. Relief is undulating. Range of slope is from 2 to 6 percent. Elevation above sea level is from 160 to 200 m. The climate is Tropical Savanna (Köppen 'Aw'). Average annual precipitation varies from 1,100 to 1,500 mm. Mean annual air temperature is 27°C.

Drainage, Permeability and Runoff: Moderately well drained. Permeability is moderate, surface runoff is medium. Ground water table falls below 3 m during the peak of the dry season.

Vegetation and Land Use: Mainly covered by dipterocarp and mixed deciduous forests. Parts are cleared for upland crops such as kenaf, corn, cotton, tobacco and soy beans.

Characteristic Profile Features: The Khambong series is a member of the sandy, siliceous, isohyperthermic Typic Haplustalfs. They are very deep soils and are characterized by very dark brown or dark brown sandy loam A horizon overlying a brown loamy sand leaching horizon and then overlying a brown sandy loam grading to sandy clay loam argillic B horizon. Reaction is neutral to alkaline through out the profile. Faint mottles may occur in very deep subsoils.

Typifying Pedon: Profile code no. is SE--15/76 (Colors are for moist soils unless otherwise noted).

Location: Chon Buri Land Development Station, Tambon Bang Phra, Amphoe Mueang Changwat Chon Buri

Sheet Name:

Sheet No.:

Coordinate:

Elevation:

Relief: gently undulating

Slope: 2-3%

Physiography: middle part of peneplain

Parent material: washed deposit from sandstone

Drainage: moderately well drained

Permeability: moderate

Runoff: medium

Ground water depth: >2.0 m

Flooding depth:

Duration: -

Frequency: -

Annual rainfall: 1,263.15 mm

Mean temp: 28.1 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: cassava

Described by: C.Nawanukoh, et. al.

Date: 26 May 1981

Revised by:

Horizon	Depth (cm)	Description
Ap	0-25	Brown (10YR5/3) loamy fine sand; few fine faint light brownish gray (10YR6/2) mottles; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; common very fine roots; slightly acid (field pH 6.5); abrupt, smooth boundary.
AE	25-44	Pink (5YR7/3) fine sandy loam; few fine distinct strong brown (7.5YR5/6) mottles; weak fine crumb and weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine roots; few iron-manganese concretions; neutral (field pH 7.0) abrupt, smooth boundary.
E1	44-71	Pink (5YR7/4) loamy fine sand; few fine distinct strong brown (7.5YR5/6) mottles; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; one medium roots; few soft ironstone nodules; moderately alkaline (field pH 8.0); abrupt, smooth boundary.
E2	71-91	Pink (5YR7/4) loamy fine sand; few coarse distinct yellowish brown

		(10YR5/4) and few fine distinct strong brown (7.5YR5/6) mottles; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; few soft ironstone nodules; moderately alkaline (field pH 8.0) abrupt, smooth boundary.
E3	91-129	Pink (5YR7/3) loamy fine sand; few fine distinct yellowish brown (10YR5/8) mottles; moderate fine and medium subangular blocky structure; friable, nonsticky, nonplastic; many soft ironstone nodules; moderately alkaline (field pH 8.0); abrupt, smooth boundary.
Bt1	129-151	Pink (5YR7/4) and brown (7.5YR5/4) fine sandy loam; common fine distinct strong brown (7.5YR5/8) and yellowish brown (10YR5/8) mottles; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces and in pores; few soft ironstone nodules; moderately alkaline (field pH 8.0); abrupt, smooth boundary.
Bt2	151-167	Pink (5YR7/3) fine sandy loam; common medium distinct yellowish brown (10YR5/8) mottles; weak to moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces; common soft and hard ironstone nodules; neutral (field pH 7.0); abrupt, smooth boundary.
Bt3	167-186	Pink (5YR8/3) and light reddish brown to reddish brown (5YR5/3-6/3) sandy clay loam; common fine and medium distinct reddish yellow (7.5YR6/8) mottled; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces; common soft and hard ironstone nodules; neutral (field pH 7.0); abrupt, smooth boundary.
C	186-190	Pink (5YR8/3) sandy loam; few medium distinct yellowish red (5YR5/8) mottled; weak fine subangular blocky structure; friable, nonsticky, nonplastic; neutral (field pH 7.0).

Remark : the last two horizons are not sampled.

Type Location: The Khambong series was named for the Tambon Khambong Amphoe Kuchinarai Changwat Kalasin which soils of this series were first described

Range of Profile Features:

The thickness of an A or Ap horizon varies from 10 to 45 cm and has 10YR or 7.5YR hues, values and chromas of 2 to 4. Structure is granular and weak to moderate medium to coarse blocky. Field pH values vary from 6.0 to 7.0.

The subsurface and subsoil have 10YR or 7.5YR hues, values of 4 to 6 and chromas of 2 to 4. Structure is weak to moderate medium and/or coarse blocky. Field pH values vary from 6.5 to 8.0.

The Khambong soils usually have a thick leaching horizon on with loamy sand textures in the upper part. The argillic B horizon occur at some depth below 100 cm.

Similar Soil Series:

Dan Khun Thot series (Dk): is Ustic Quartzipsamments and has no argillic horizon.

Principal Associated Soils: These include Ban Phai, Maha sarakham and Nam Phong soils.

ANALYSIS RESULTS **Profile code no.:NE-S-15/76**
(oven dry basis) **Soil series : Khambong (Kg)**

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				
	0-25	Ap	76.0	19.5	4.5	1.4	0.9	3.2	15.6	54.9	ls	lfs	5.3	4.5		10.5	14	
	25-44	AE	75.3	18.7	6.0	1.0	3.6	8.3	10.7	51.7	sl	fsl	6.6	5.8		1.1	10	
	44-71	E1	77.2	19.8	3.0	1.3	3.2	8.4	30.6	31.7	ls	lfs	6.6	5.8		1.2	12	
	71-91	E2	75.1	21.9	3.0	2.4	4.9	9.8	24.0	31.0	ls	lfs	6.7	5.4		1.2	13	
	91-129	E3	75.4	20.7	3.9	1.5	4.3	8.6	12.1	48.9	ls	lfs	6.6	5.6		3.1	13	
	129-151	Bt1	68.6	21.4	10.0	0.8	2.9	7.4	23.6	33.9	sl	fsl	6.5	5.1		3.3	27	
	151-167	Bt2	66.8	20.2	13.0	1.6	3.8	11.3	22.2	27.9	sl	fsl	6.4	4.8		1.2	24	

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)				
				0-25	0.2	0.13		0.80	0.10	0.03	0.10	1.03	0.90	1.93	1.30			
25-44	0.1	0.03		0.30	0.10	0.02	0.10	0.52	0.50	1.02	0.30	5.0	100	51		0.02		
44-71	1.5	0.01		0.50	0.10	0.02	0.20	0.83	0.30	1.12	0.40	13.3	100	73		0.04		
71-91	0.1	0.01		0.60	0.10	0.03	0.20	0.93	0.00	0.93	0.40	13.3	100	100		0.05		
91-129	0.2	0.02		0.50	0.10	0.02	0.20	0.82	0.20	1.02	0.40	10.3	100	80		0.04		
129-151	0.1	0.04		1.60	0.40	0.10	0.20	2.30	0.70	3.00	2.10	21.0	100	77		0.06		
151-167	0.5	0.06		1.80	0.50	0.10	0.30	2.70	1.00	3.70	2.50	19.2	100	73		0.06		