Proposed by P. Vijarnsorn, 1973
Revised by :
P. Vijarnsorn andstaffs, 1988
W. Sirichuaychoo, 2004

KHLONG KHUT SERIES **Field Symbol: Kut**

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

Setting: Khlong Khut soils are formed from alluvium and occurred on alluvial plain and higher of coastal plains. Relief is level. Slopes is less than 1 percent. Elevation is less than 8 m above mean sea level. The climate is Tropical Monsoon (Koppen 'Am') or Tropical Rain Forest. (Koppen 'Af'). Average annual precipitation is above 2,000 mm. Average annual air temperature is from 26 ^{o}C to 28^{o}C.

Drainage, Permeability and Surface Runoff: Drainage is poorly drained, permeability is estimated to be slow and surface runoff is slow. Ground water level lies within 1 meter almost the year except during peak of dry season. Flooding commonly occurs in rainy season which is about 3 to 4 months a year.

Vegetation and Land Use: Originally, under *Malaleuca Leucadendron* mainly but now are cleared for paddy rice.

Characteristic Profile Features: The Khlong Khut series is a member of the fine, kaolinitic, isohyperthermic Kandic Plinthaquults (soil taxonomy, 2003).They are very deep soils and are characterized by a thick black or very dark grayish brown fine sandy loam umbric epipedon overlying a gray or light gray clay kandic B horizon. Mottles of yellowish, brownish and reddish colors are present almost throughout the profile except in surface horizon. Plinthite that forms a continuous phase or constitutes more than half of the soil matrix occurs in lower kandic B but within 1.5 m from the soil surface. Very strongly acid, reaction range from 4.5 to 5.0 in surface soil and very strongly acid to strongly acid, reaction range from 5.0 to 5.5 in subsurface soil.

Typifying Pedon: Khlong Khut sandy loam - paddy field, Near Satun Military Airport, Ban Khlong Kut, Amphoe Muang Changwat Satun, 6 m above mean sea level, less than 2 percent slopes, 1.30 m ground water depth (sheet number 5022 III NW).

Profile Code Number: S-67/60, described by P. Vijarnsorn, 6 March 1973 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
Ap1	0-14	Very dark gray (10YR3/1) sandy loam; moderate fine and medium granular structure; hard, slightly sticky and slightly plastic; abundant fine and very fine roots; strongly acid (field pH 5.5); diffuse smooth boundary.
Ap2	14-26	Very dark gray (10YR3/1) sandy loam; weak medium platty structure; firm, slightly sticky and slightly plastic; few fine roots; strongly acid (field pH 5.5); abrupt smooth boundary.
Btg	26-44	Light brownish gray (10YR6/2) clay; common fine distinct yellowish brown (10YR5/6) mottles; weak coarse prismatic breaking to moderate medium and coarse angular blocky structure; sticky and plastic; common thin clay coating on ped faces; many thick organic matter coating in krotovinas; very strongly acid (field pH 5.0); clear smooth boundary.
Btgv	44-140	Light gray to gray (10YR6/1) clay; many medium and coarse prominent red (10R4/6, plinthite), common fine distinct yellowish brown (10YR5/8) and strong brown (7.5YR5/8) mottles; moderate medium and coarse subangular blocky structure; very firm, sticky and plastic; continuous moderately thick clay coating on ped faces and moderately thick organic matter (10YR5/1, gray) coating in krotovinas; plinthite composed more than 50% of the soil matrix. very strongly acid (field pH 5.0); clear smooth boundary.

BCgv 140-240 Mixed white (10YR8/1) and light gray to gray (10YR6/1) clay with gritty coarse sand; common fine and medium distinct yellowish brown (10YR5/8) and weak red (10R4/3, plinthite) mottles; sticky and plastic; many mica flakes; very strongly acid (field pH 5.0).

Type Location:

Name of village, Ban Khlong Kut, Amphoe Muang, Changwat Satun.

Range of Profile Features:

The surface or A horizon or umbric epipedon sandy loam or sandy clay loam, is more than 25 cm in thickness and has 10YR or 7.5YR hues, values 2 or 3 and chromas 0 to 2. Texture of loam or clay loam may occur. Structure is moderate fine and medium granular. Very strongly acid, reaction values range from 4.5 to 5.0.

The kandic B horizon silty clay or silty clay loam over silty clay, has 10YR or 2.5Y hues, values 6 or 7 and chromas 0 to 2, mottles of high chromas and values in 10YR to 5YR found in common. Plinthite of reddish color (2.5YR, 10R 3-4/5-6) form as a continuous phase or constitutes of more than half of soil matrix in the kandic B horizon. Very strongly acid, reaction values range from 4.5 to 5.5.

Similar Soil Series:

Klaeng series (Kl): very-fine, kaolinitic, isohyperthermic Typic Plinthaquults, as an ochric epipedon.

Satun series (Stu): coarse-loamy over clayey, kaolinitic, isohyperthermic Kandic Plinthaquults, has a texture of medium or coarse sandy clay or clay with discernable coarse sand.

Principal Associated Soils:

These include Klaeng, Satun, Phatthalung and Bang Nara series.

Bang Nara series (Ba): fine, kaolinitic, isohyperthermic Typic Paleaquults.

ANALYSIS RESULTS (oven dry basis)

Profile code No.: S-67/60

Soil series: Khlong Kut series (Kut)

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_4OAc
			USDA grading			Sand-fraction grading					Lab	Field	1:1	1:1			
			sand	silt	clay	vc	c	m	f	vf	result	estim[n]	water	KCl			
Pd-1123	0-14	Ap1	52.5	44.0	3.5						sl	sl	5.1	4.0	0.6	10.5	15
Pd-1124	14-26	Ap2	52.0	42.5	5.5						sl-l	sl	4.6	3.8	0.3	2.6	18
Pd-1125	26-44	Btg	27.5	16.5	56.0						c	c	4.8	3.7	0.6	1.2	15
Pd-1126	44-140	Btgv	15.0	29.5	55.5						c	c	5.2	3.9	0.6	1.4	21

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 condut[y] ($ECx10^6$) dS m^{-1}
				Ca	Mg	K	Na	SUM cations (B)	Extr. acidity (A)	SUM (B+A)	CEC NH_4OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/ (B+A)			
0-14	0.3	2.31		0.50	0.10	0.03	0.30	0.93	7.90	8.83	4.1	117.1	23	11			0.03
14-26	0.2	2.54		0.20	0.06	0.04	0.30	0.60	7.60	8.20	2.9	52.7	21	7			0.04
26-44	0.3	0.63		0.15	0.06	0.05	0.26	0.52	7.90	8.42	7.1	12.7	7	6			0.01
44-140	2.9	0.89		0.25	0.10	0.06	0.30	0.71	9.10	9.81	8.9	16.0	8	7			0.01

Surveyor: P. Vijarnsorn

Date: March 6, 1973

Reported by: W. Sirichuaychoo

Date: Nov. 7, 1998