

Proposed by R. L. Pendleton, 1953
 Revised by:
 1. C. Changprai, 1987
 2. S. Udomsri, 2004

KAMPHAENG SAEN SERIES

Field Symbol: Ks

Distribution: Occupies large extent in the southwestern part of the Central Plain.

Setting: Kamphaeng Saen soils are formed from alluvium and occur on coalescing fan or old levees and breach deposits of the terrace. Relief is flat to undulating. Slopes are 1-5 %. Elevation ranges from 6 to 20 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Mean annual precipitation ranges from 800 to 1,600 mm. Mean annual temperature is 27° C.

Drainage and Permeability and Surface Runoff: Well drained. Permeability is moderate and runoff is slow to moderate. Groundwater level is below 1.5 m from the soil surface throughout the year.

Vegetation and Land Use: Mainly used for settlement sites, gardens and orchards, or are put to upland crops such as maize, cotton and sugar cane.

Characteristic Profile Features: Kamphaeng Saen series is a member of the Fine-silty, mixed, semiactive, isohyperthermic Typic Haplustalfs. They are deep, friable, slightly acid over neutral to mildly alkaline soils. They are characterized by a brown or dark brown silt loam or loam A horizon, overlying a brown or strong brown silt loam, silty clay loam or loam argillic B horizon and sandy loam or loamy sand texture may occur in the lower part of the B horizon, but within 150 cm. Very Fine mica flakes occur in all horizons.

Typifying Pedon: Profile code number is Code SW-53/31

Location: Kamphaeng Saen Campus, Kasetsart University, Tambon SaSi Mum, Amphoe Kamphaeng Saen Changwat Nakhon Pathom

Sheet Name: Ban Thung Khok

Sheet No.: 4937 II

Coordinate: -

Elevation: 6 m (MSL)

Relief: nearly level

Slope: 1-2 %

Physiography: coalescing fan

Parent material: alluvium

Drainage: well drained

Permeability: moderate

Runoff: slow

Ground water depth: >2 m

Flooding depth: - cm

Duration: - month

Frequency: -

Annual rainfall: 1,112.8 mm

Mean temp: 28.2 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: sorghum and mango trees.

Other:

Described by: Preedee Donsakul

Date: 24 Febraury, 1978

Revised by: S. Udomsri

Horizon	Depth (cm)	Description
Ap1	0-10/14	Dark brown (10YR 3/3); silt loam; moderate fine and some medium subangular blocky structure; slightly hard, friable, non sticky and non plastic; many fine and medium roots; common fine mica flakes; few soft lime concretions; moderately alkaline (field pH 8.0); clear, wavy boundary.
Ap2	10/14-34	Dark brown (10YR 3/3); silt loam; moderate fine and medium subangular blocky structure; slightly hard, friable, non sticky and non plastic; many fine and common medium roots; many fine mica flake; few ant holes; few soft lime concretions; few pieces of charcoals; few pieces of deacy bulbs of grasses; moderately alkaline (field pH 8.0); clear, smooth boundary.

Bt1	34-49	Dark brown (10YR 3-4/3); silt loam; moderate medium subangular blocky structure; hard, friable, slightly sticky and non plastic; patchy thin clay coating in pores; common fine roots; many fine mica flakes; few ant holes; few pieces of charcoals; few brown spots of B material may be brought up by biological activities; neutral (field pH 7.0); gradual, smooth boundary.
Bt2	49-64	Dark brown to brown (10YR 4/3); silt loam to silty clay loam; moderate medium subangular blocky structure; hard, friable, sticky and slightly plastic; moderately thick clay coating in pores and patchy thin clay coatings on ped faces; many fine roots; common fine mica flakes; few ant holes; slightly acid (field pH 6.5); clear, smooth boundary.
Bt3	64-97/102	Dark brown to brown (7.5YR 4/4); silty clay loam; moderate fine and medium subangular blocky structure; hard, friable, sticky and slightly plastic; moderately thick clay coating in pore and patchy thin clay coatings on ped faces; common fine roots; many fine mica flakes; few dark brown spots of A material may be brought down by biological activity; few ant holes; slightly acid (field pH 6.5); gradual, wavy boundary.
Bt4	97/102-136	Brown (7.5YR 4-5/4); loam; weak fine and medium subangular blocky structure; friable, slightly sticky and slightly plastic; patchy thin clay coatings in pore and on ped faces; common fine roots; many fine mica flakes; common dark brown spots of A material may be brought down by biological activity; few ant holes; neutral (field pH 7.0); gradual , smooth boundary.
Bt5	136-165+	Strong brown (7.5YR 5/6); silty clay loam; weak fine and medium subangular blocky structure; friable, sticky and plastic; patchy thin clay coatings in pore and on ped faces; few fine roots; many fine mica flakes; few dark brown spots of A material may be brought down by biological activity; common medium and coarse secondary lime concretions; few ant holes; neutral (field pH 7.0)

Type Location: Name of Amphoe, Amphoe Kamphaeng Saen Changwat Nakhon Pathom.

Range of Profile Features:

The A horizon is from 15 to 30 cm thick, has 10YR or 7.5YR hues, values of 3 through 5 and chromas of 2 and 4 in 7.5YR hue, and 2 or 3 in 10YR hue. Structure is weak to moderate blocky. Field pH values range from 6.0 to 8.5.

The B horizon has 10YR or 7.5YR hues, values of 4 and 5 and chromas of 4 through 8. Reddish brown (5YR 5/4 or 4/4) colours may also occur in the deeper subsoil. Textures may be loam, silt loam, clay loam or silty clay loam and structure is weak to moderate, medium blocky. Field pH values range from 7.0 to 8.0. This horizons commonly contain some white, soft, powdery lime and react with HCl.

Similar Soil Series:

Pran Buri series (Pr) : has a fine-loamy, without micas or soft, powdery lime and has somewhat lower pH values.

Ruso series (Ro) : has a similar profile, but has an udic moisture regime with lower pH values throughout, no soft, powdery lime.

Kamphaeng Phet series (Kp); has a similar profile, but lower pH values about 5.5-6.5 in B horizon and without secondary lime.

Principal Associated Soils: These include Nakhon Pathom series on the alluvial plain or terrace, and Saraburi series on the transition between the terrace and flood plain.

ANALYSIS RESULTS

Profile code No.: SW-53/31

(oven dry basis)

Soil series : Kamphaeng Saen (Ks)

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				
RA 5005	0-10/14	Ap1	25.8	59.2	15.0	0.1	0.2	0.6	7.0	17.9	sil	sil	7.6	6.9		73.5	370	
RA 5006	10/14-34	Ap2	29.5	56.5	14.0	0.1	0.0	0.5	7.3	21.6	sil	sil	7.5	6.8		96.5	284	
RA 5007	34-49	B11	25.4	54.6	20.0	0.2	0.3	0.8	6.4	17.7	sil	sil	5.6	4.8		46.2	317	
RA 5008	49-64	B12	28.1	48.7	23.2	0.0	0.2	0.3	6.6	21.0	l	sil-sicl	5.2	4.6		32.8	311	
RA 5009	64-97/102	B13	23.9	53.2	22.9	0.0	0.0	0.3	6.2	17.4	sil	sicl	5.5	4.9		13.3	266	
RA 5010	97/102-136	B14	29.1	52.0	18.9	0.1	0.1	0.2	8.2	20.5	sil	l	6.4	5.8		9.0	130	
RA 5011	136-165+	B15	22.5	63.6	13.9	0.1	0.2	0.2	6.4	15.6	sil	sicl	8.0	7.3		17.9	101	

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)				
				0-10/14	0.9	2.39		9.40	1.50	0.80	0.20	11.90	1.60	13.50	10.10			
10/14-34	0.7	1.95		9.40	1.40	0.60	0.20	11.60	2.40	14.00	9.50	67.9	100	83			0.32	
34-49	1.0	1.04		6.10	1.10	0.70	0.30	8.20	6.10	14.30	8.90	44.5	92	57			0.49	
49-64	0.6	0.57		6.50	1.20	0.70	0.40	8.80	6.40	15.20	8.80	37.9	100	58			0.32	
64-97/102	1.1	0.39		7.00	1.60	0.60	0.60	9.80	4.80	14.60	8.60	37.6	100	67			0.54	
97/102-136	2.0	0.20		6.90	1.60	0.30	1.30	10.10	3.40	13.50	8.60	45.5	100	75			0.88	
136-165+	0.8	0.25		24.00	1.80	0.20	2.30	28.30	1.00	29.30	9.40	67.6	100	97			2.01	