

Proposed by:  
P. Hemsicharti and N. Chorphaka, 1979  
Revised by:  
1. N. Chorphaka, 1988  
2. P. Wiwatwongwana, 2004

**SAI NGAM SERIES**

**Field Symbol: Sg**

**Distribution:** Occupies small extent in the northern part of the Central plain.

**Setting:** Sai Ngam soils are formed from medium grain transported parent material and occur on levees and alluvial fan. Relief is nearly level to slightly 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 range from 980 to 1,295 mm. Mean annual air temperature is 25 to 27 °C.

**Drainage, Permeability and Runoff:** Well drained. Permeability is estimated to be rapid. Surface runoff is slow. Ground water level is below 1.25 m throughout the year. Flooding commonly occurs as a flash flood from the stream.

**Vegetation and Land Use:** The original is mixed deciduous forest and the present mostly used for upland crops such as, beans, sorghum, corn, chili, sugar cane. etc.

**Characteristic Profile Features:** Sai Ngam series is a member of coarse-loamy, mixed, semiactive, isohyperthermic Ultic Haplustalfs. They are very deep soils characterized by a dark grayish brown or dark brown sandy loam or loam A horizon, overlying a brown, dark brown or dark yellowish brown sandy loam or light sandy clay loam argillic B horizon. These inturn overly a loam sand to sand horizon which commonly occurs below 90 cm but within 1.5 m of the soil surface. reaction is slightly acid to medium acid in the surface horizon and strongly acid to medium acid in the subsoil.

**Typifying Pedon:** Profile code no. is NC-45/8.

**Location:** About 1.5 km south-west of Ban Bung Phi Krai, Ban Bung Phi Krai, Amphoe Phran Kratai Changwat Kamphaeng Phet.

**Sheet Name:** Amphoe Phran Kratai

**Sheet No.:** 4942 III

**Coordinate:** -

**Elevation:** 60 m (MSL)

**Relief:** gently undulating

**Slope:** 2-3%

**Physiography:** Alluvium plain

**Parent material:** alluvium

**Drainage:** well drained

**Permeability:** rapid

**Runoff:** slow

**Ground water depth:** 1.55 m

**Flooding depth:** -

**Duration:** -

**Frequency:** -

**Annual rainfall:** 1,301.5 mm

**Mean temp.:** 27.3 °C

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

**Natural vegetation or land use:**

**Described by:** P. Hemsrichart and N. Chorphaka

**Date:** 27 January, 1977

**Revised by:** Phusit Wiwatwongwana

**Date:** 25 May, 2004

Horizon	Depth (cm)	Description
Ap	0-16	Dark grayish brown (10YR4/2) sandy loam; weak fine and medium subangular blocky breaking to fine and medium granular structure; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots; slightly acid (field pH 6.5); clear, smooth boundary.
Bt1	16-42	Brown to dark brown (7.5YR4/4) sandy loam; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; broken thin cutans on ped faces and in pores; many very fine and very few coarse roots; very strongly acid (field pH 5.0); gradual, smooth boundary.

Bt2	42-95	Brown to dark brown (7.5YR4/4) silt loam; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; broken moderately thick cutans on ped faces and in pores; many very fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.
Bt3	95-125	Brown to dark brown (7.5YR4/4) fine sandy loam; common fine distinct yellowish brown (10YR5/4) mottles; weak fine and medium subangular blocky structure; very friable, slightly sticky, slightly plastic; patchy thin cutans on ped faces and in pores; common very fine and fine roots; strongly acid (field pH 5.5); clear, smooth boundary.
Bt4	125-160	Brown to dark brown (7.5YR4/4) and pale brown (10YR6/3) silty loam; weak medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin cutans on ped faces; very few very fine roots; common soft iron manganese concretions; strongly acid (field pH 5.5); clear, smooth boundary.
C	160+	Sandy.

**Remark:** many fine mica flakes throughout profiles.

**Range of Profile Features:**

The A horizon is from 10 to 20 cm thick and has 10YR or 7.5YR hues, value of 3 to 4 and chromas of 2 to 4. Texture of loamy sand may occur. Structure is weak fine and medium subangular blocky. Field pH is from 6 to 6.5.

The argillic B horizon has 10YR or 7.5YR hues, value of 3 or 4 and chromas of 3 to 4. Texture of loam may be found. Structure is weak to moderate medium and coarse subangular blocky. Field pH is from 5.0 to 6.0.

At some depth between 90 to 150 cm of the soil surface. Texture become much lighter; may be loamy sand or sand. It may be BC or C horizon and the soil color is varying from dark yellowish brown to brown. Structure is weak subangular blocky to structureless. Field pH varies from 6.5 to 5.5.

**Similar Soil Series:**

Kamphaeng Phet series (Kp): has a similar profile, but particle size class is fine-silty.

Lam Kaen series (Lam): has an Udic moisture regime and particle size class is fine-silty the color of argillic B horizon has high chromas (more than 4).

**Principal Associated Soils:**

These include Kamphaeng Phet series and Kamphaeng Saen on same position and Phetchaburi on lower position adjacent to semi-recent terrace.

**General chemical features:**

Sai Ngam Soils have moderately low to moderately fertility in the surface soil and moderately low fertility in the subsoil.

**Remark:**

Color of argillic B horizon chroma may be more than 4 may occurs but not often.

## ANALYSIS RESULTS

Profile code no.: NC-45/8

(oven dry basis)

Soil series: Sai Sgam (Sg)

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
DN-2868	0-16	Ap	60.3	29.2	10.5						sl	sl	6.3	5.5		36.2	29
DN-2869	16-42	Bt1	57.7	29.5	12.8						sl	sl	5.5	4.1		16.6	360
DN-2870	42-95	Bt2	56.7	27.3	16.0						sl	sil	5.4	4.2		18.1	404
DN-2871	95-125	Bt3	81.3	12.4	6.3						ls	fsl	6.0	4.2		6.3	89
DN-2872	125-160	Bt4	49.9	35.3	14.8						l	sil	5.5	3.8		4.0	65

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol <sub>(+)</sub> kg <sup>-1</sup> )									Base satur <sup>n</sup> (%)		ECEC cmol <sub>(+)</sub> kg <sup>-1</sup> (B+D)	AI KCl extr. cmol <sub>(+)</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	(Bx100)/(B+A)			
0-16	1.3	1.08		5.30	1.90	0.40	0.60	8.20	4.20	12.40	8.1	77.1	100	66			0.09
16-42	4.9	0.33		2.00	1.70	0.20	0.20	4.10	5.10	9.20	6.4	50.0	64	45			0.04
42-95	1.7	0.32		2.60	1.90	0.20	0.30	5.00	5.10	10.10	6.3	39.4	79	50			0.05
95-125	0.8	0.20		1.70	1.10	0.10	0.20	3.10	1.90	5.00	3.6	57.1	86	62			0.01
125-160	1.9	0.28		3.10	2.50	0.10	0.40	6.10	6.90	13.00	9.3	62.8	66	47			0.07

Surveyor: P. Hemsrichart and N. Chorphaka,

Date: 27 January, 1977