

Proposed by S. Charoenpong, 1972
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

SATHON SERIES

Field Symbol: **Stn**

Distribution: Occupies a small extent in Peninsular Thailand.

Setting: Sathon soils are formed from wash deposit over shale and occurred on denudation surface. Relief is mainly nearly level. Slope ranges from 1 to 2 percent. Elevation ranges from 10 to 45 m above mean sea level. The climate is Tropical Rain Forest (Koppen 'Af') or Tropical Monsoon (Koppen 'Am'). Average annual precipitation is from 1,800 to 3,000 mm Average annual air temperature is from 26 °C to 28 °C.

Drainage, Permeability and Surface Runoff: drainage is poorly drained, permeability is estimated to be rapid over slow and surface runoff is slow. Flooding usually occurs 2 to 4 months during rainy season. Ground water level is below 1.50 m, just only in the dry season.

Vegetation and Land Use: Some areas are used for paddy rice cultivation. Where not cultivated bare patches, scattered low secondary shrubs.

Characteristic Profile Features: Sathon series is a member of the fine-loamy, mixed, semiactive, isohyperthermic Typic Plinthaquults (soil taxonomy, 2003). They are moderately deep soils to ironstones. Gravels occur below 50 cm but within 1 meter from the soil surface and composed of loose ironstones. They are characterized by a very dark grayish brown or brown sandy loam surface or A horizon overlying a light brownish gray or light gray sandy loam Ag horizon accompanying with brownish mottles. The upper argillic B horizon sandy loam (>18 percent clay) is pinkish gray or light gray accompanying with brownish mottles. The lower argillic B horizon is very gravelly clay loam of grayish color accompanying with brownish or yellowish mottles and plinthite that forms a continuous phase or constitutes more than half of the matrix within 1.5 m of the soil surface. This gravelly layer will occur below 50 cm but within 1 meter of the soil surface.

Typifying Pedon: Sathon sandy loam, from Ban Ko Yang, Tambon Sathon, Amphoe Na Thawi, Changwat Songkhla, 1 to 2 percent slopes.

Profile Code Number: S-68/105, described by S. Charoenpong, 23 February 1972 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
Ag1	0-7	Dark grayish brown (10YR4/2) sandy loam; few fine distinct strong brown (7.5YR5/6) mottles along root channels; moderate medium granular structure; friable, slightly sticky and slightly plastic; abundant very fine and few fine roots; moderately acid (field pH 6.0); clear smooth boundary.
Ag2	7-11	Light brownish gray (10YR6/2) sandy loam; few fine distinct strong brown (7.5YR5/6) mottles; weak to moderate fine and medium subangular blocky structure breaking to granular structure; slightly sticky and slightly plastic; plentiful very fine and common fine roots; moderately acid (field pH 6.0); clear smooth boundary.
Bg	11-22	Light gray (10YR7/2) sandy loam; common medium distinct yellowish brown (10YR5/8) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; plentiful very fine, few fine and coarse roots; some animal activities; moderately acid (field pH 6.0); clear smooth boundary.
Btg1	22-30	Pinkish gray (7.5YR7/2) sandy loam; common fine and medium distinct yellowish brown (10YR5/8) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few thin cutan on ped faces; plentiful very fine, few fine and medium roots; strongly acid (field pH 5.5); clear smooth boundary.
Btg2	30-46	Pinkish gray (7.5YR7/2) sandy loam; many medium distinct strong brown (7.5YR5/8) mottles; moderate medium subangular blocky structure; friable,

Btcgv 46-100 slightly sticky and slightly plastic; common thin cutan on ped faces; few very fine and fine roots; strongly acid (field pH 5.5); abrupt wavy boundary.
Light gray (10YR7/1) very gravelly clay loam; common medium distinct brownish yellow (10YR6/8) mottles, accompanying with plinthite of red (10R4/8) color that forms as constitutes about 60% of the soil matrix; mottles; friable, slightly sticky and slightly plastic; common thin cutan along vertical ped faces; few very fine and fine roots; gravels composed of loose iron stones; very strongly acid (field pH 4.5); abrupt wavy boundary.

Remarks: very gravelly normal occurred below 50 cm from the soil surface.

Type Location:

Name of subdistrict, Tambon Sathon, Amphoe Na Thawi, Changwat Songkhla.

Range of Profile Features:

The surface or A horizon sandy loam has 7 to 15 cm in thickness and has 10YR or 7.5YR hues, values 3 or 4 and chromas 2 or 3. The soil structure is weak to moderate fine blocky or granular. Below A or Ag horizon sandy loam has 10YR or 7.5YR hues, values 6 or 7 and chromas 1 or 4, yellowish, brownish and/or reddish mottles. The structure is moderate fine and medium subangular blocky. Very strongly acid to strongly acid values is from 4.5 to 5.5.

The upper argillic B horizon sandy clay loam over very gravelly clay loam or loam with average of clay content ranging from 18 to 35 percents between 50 to 100 cm from the soil surface. Gravels composed of ironstones of more than 35 percent of the soil matrix, this gravelly layer may be 10 to 50 cm in thickness, which underlain by a loamy or clayey lower argillic B horizon. The soil also has plinthite that forms a continuous phase or constitutes more than 50 percent the soil matrix within 1.5 m of the soil surface. Very strongly acid to strongly acid values is from 4.5 to 5.5 but gradually decrease with depth.

Similar Soil Series:

Visai series (Vi): fine-loamy, mixed, semiactive, isohyperthermic Typic Plinthaquults, no ironstones in argillic B, otherwise almost the same.

Nam Krachai series (Ni): coarse-loamy, mixed, semiactive, isohyperthermic Typic Plinthaquults.

Kantang series (Kat): clayey-skeletal, kaolinitic, isohyperthermic Typic (Aeric) Plinthaquults, gravelly layer occurs within 50 cm of the soil surface.

Principal Associated Soils:

These include Visai, Nam Krachai and Kantang series. Visai and Kantang soils occur almost the same physiographic pattern as Sathon soils. But Visai soils has no gravelly layer and Kantang soils is shallower soil which gravelly layer occurs within 50 cm of the soil surface. Nam Krachai series occur on higher position adjacent to middle terrace.

ANALYSIS RESULTS

Profile code No.: S-68/105

(oven dry basis)

Soil series: Sathon series (Stn)

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					
Pc-486	0-7	Ag1	61.5	37.0	1.5						sl	sl	4.8	3.8	0.3	0.9	53
Pc-487	7-11	Ag2	64.5	33.5	2.0						sl	sl	4.7	3.7	0.6	0.6	29
Pc-488	11-22-	Bg	60.0	37.5	2.5						sl	sl	4.9	3.8	0.6	1.1	29
Pc-489	22-30	Btg1	60.0	32.5	7.5						sl	sl	4.8	3.7	0.3	1.1	21
Pc-490	30-46	Btg2	58.5	33.5	8.0						sl	sl	4.8	3.7	-	1.7	21
Pc-491	46-100	Btcgv	33.0	34.0	33.0						cl	vgcl	4.9	3.7	0.3	1.4	41

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
				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)				
				0-7	0.4	0.88		0.20	0.20	0.30	0.50	1.20	4.40	5.60	3.2			
7-11	0.2	0.63		0.20	0.30	1.50	0.40	2.40	4.30	6.70	3.2	160.0	75	36			0.02	
11-22-	0.1	0.46		0.10	0.20	1.50	0.40	2.20	2.80	5.00	2.3	92.0	96	44			0.02	
22-30	0.2	0.65		0.10	0.10	1.00	0.40	1.60	3.20	4.80	3.3	44.0	48	33			0.01	
30-46	0.7	0.71		0.30	0.10	1.00	0.40	1.80	2.70	4.50	3.5	43.8	51	40			0.01	
46-100	1.7	1.90		0.15	0.10	2.00	0.40	2.65	11.60	14.25	10.0	30.3	27	19			0.01	

Surveyor: S. Charoenpong

Reported by: W. Sirichuyachoo

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