

Proposed by P. Rimchala, 1973
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

SATUN SERIES

Field Symbol: **Stu**

Distribution: Occupies a small extent in Peninsular Thailand.

Setting: Satun soils are formed from alluvium over shale on alluvial fan. Relief is level to nearly level with slope less than 2 percent. Elevation ranges from 2 to 10 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 °C to 28°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 for 9 to 10 months a year. According to land use, they are flooded during the rainy season.

Vegetation and Land Use: Used exclusively for paddy rice during rainy season. In dry season parts are used for vegetable growing. *Melaleuca Leucadendron* and low grasses scatter in some places where abandoned.

Characteristic Profile Features: The Satun series is a member of the coarse-loamy over clayey, kaolinitic, isohyperthermic Kandic Plinthaquults (soil taxonomy, 2003). They are very deep soils and are characterized by a black or very dark grayish brown sandy loam surface or A horizon overlying a brown or light yellowish brown medium or coarse sandy loam or sandy clay loam upper B horizon. These inturn overly a light gray or gray medium or coarse sandy clay kandic B horizon accompany with yellowish or brownish mottles. Plinthite that forms a continuous phase or constitutes more than half of matrix commonly occurs below 50 cm but within 1.5 m from the soil surface. Reaction is very strongly acid to strongly acid, reaction values range from 4.5 to 5.5 throughout the profile.

Typifying Pedon: Satun sandy loam - paddy field, near Satun military air port, Amphoe Muang, Changwat Satun, 10 m above mean sea level, less than 2 percent slopes (sheet number 5022 III NW, coordinate: 623737).

Profile Code Number: S-67/59, described by Prasart Rimchala, 11 April 1973 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
Ap	0-18	Black (10YR2/1) sandy loam; weak fine subangular blocky structure; friable, nonsticky and nonplastic; many fine roots; moderately acid (field pH 6.0); clear smooth boundary.
AB	18-39	Brown (10YR5/3) sandy loam; common fine faint dark yellowish brown (10YR4/4) mottles; weak fine subangular blocky structure; friable, nonsticky and nonplastic; many fine roots; moderately acid (field pH 6.0); gradual smooth boundary.
BAg	39-56	Light brownish gray (10YR6/2) coarse sandy loam; few fine distinct yellowish brown (10YR5/8) mottles; moderate medium subangular blocky structure; friable, slightly sticky and nonplastic; common fine roots; strongly acid (field pH 5.5); gradual smooth boundary.
Btgv1	56-75	Light gray (10YR7/2) coarse sandy clay; many coarse prominent dark red (10R3/6) and strong brown (7.5YR5/8) mottles; moderate coarse subangular blocky structure; firm, sticky and slightly plastic; continuous thick clay coating on ped faces; plinthite of dark red (10YR3/6) form as a continuous phase; strongly acid (field pH 5.5); gradual smooth boundary.
Btgv2	75-115	Light gray (10YR7/1) coarse sandy clay; many coarse prominent red (10R4/6) and many medium prominent strong brown (7.5YR5/6) mottles; moderate coarse subangular blocky structure; firm, sticky and slightly plastic; continuous

thick clay coating on ped faces; plinthite of red (10YR4/6) form as a continuous phase; strongly acid (field pH 5.5).

Type Location:

Name of province, Changwat Satun.

Range of Profile Features:

The surface or A horizon sandy loam is 15 to 25 cm in thickness and has 10YR hues, values 2 or 3 and chromas 1 or 2. Structure is weak and moderate fine subangular blocky. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

The upper kandic B horizon sandy loam has 10YR or 7.5YR hues, values 5 to 7 and chromas 1 or 2. Texture of medium or coarse sandy clay loam may occur. Structure is moderate fine and medium subangular blocky structure.

The lower kandic B horizon sandy clay has 10YR or 2.5Y hues, values 5 to 7 and chromas 0 to 2. Structure is moderate to strong coarse prismatic breaking to subangular blocky or moderate coarse subangular blocky. Mottles of brownish, yellowish and reddish are commonly present in subsoil. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Similar Soil Series:

Khok Khain series (Ko): fine-loamy, kaolinitic, isohyperthermic Typic Kandiaquults, no plinthite.

Songkhla series (Sng): fine-loamy, siliceous, subactive, isohyperthermic Aquic Paleudults, no plinthite.

Principal Associated Soils:

These include Klaeng, Khlong Kut and Khok Khain soils which commonly occur in low land area.

Klaeng series (Kl): very-fine, kaolinitic, isohyperthermic Typic Plinthaquults.

Khlong Kut series (Kut): fine, kaolinitic, isohyperthermic Kandic Plinthaquults.

ANALYSIS RESULTS

Profile code No.: S-67/59

(oven dry basis)

Soil series: Satun series (Stu)

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					
Pd-1554	0-18	Ap	71.0	27.5	1.5						sl	sl	4.5	4.1	0.6		
Pd-1555	18-39	AB	71.0	18.5	10.5						sl	sl	5.1	4.4	0.9		
Pd-1556	39-56	B _{Ag}	70.5	13.0	16.5						sl	cosl	5.4	4.2	0.0		
Pd-1557	56-75	B _{tg} 1	46.0	16.5	37.5						sc	cosc	5.3	4.1	0.6		
Pd-1558	75-115	B _{tg} 2	46.5	12.0	41.5						sc	cosc	5.4	4.0	0.3		

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)				
0-18	1.1	4.19		0.40	0.06	0.07	0.20	0.73	16.00	16.73	6.0	400.0	12	4			0.07	
18-39	0.6	1.39		0.20	0.04	0.07	0.20	0.51	5.40	5.91	2.8	26.7	18	9			0.01	
39-56	0.7	1.57		0.10	0.04	0.04	0.10	0.28	3.20	3.48	1.7	10.3	16	8			0.01	
56-75	1.2	1.36		0.30	0.10	0.06	0.20	0.66	5.70	6.36	6.4	17.1	10	10			0.02	
75-115	1.0	0.42		0.20	0.10	0.08	0.20	0.58	7.10	7.68	6.8	16.4	9	8			0.03	

Surveyor: P. Rimchala

Reported by: W. Sirichuaychoo

Date: April 11, 1973

Date: Nov. 8, 1998