

Proposed by: C. Changprai - 1967
Revised by: 1. B. Boonsompopphan,
P. Hemsrichart, 1988
2. S. Sukchan, 2004

SI SONGKHRAM SERIES

Field Symbol: Ss

Distribution: Occupies small extent in Northeast Thailand, particularly in the northern part.

Setting: Si Songkhram soils are formed from alluvium (recent) and occur on river basin. Relief is level to nearly level which slopes are 1 percent or less. Elevation ranges from 100 to 130 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Average annual precipitation varies from 1,300 to 2,200 mm. Mean annual air temperature is from 26 to 28°C.

Drainage, Permeability and Runoff: Poorly drained soils. Permeability and runoff are slow. They are flooded by river water up to 1 to 2 m deep for 2 to 3 months. Ground water table is below 2 meters during the peak of the dry period.

Vegetation and Land Use: Natural grass land and some scattered shrub and bamboo; Parts are cleared for broadcasted rice.

Characteristic of Profile Features: The Si Songkhram series is a member of the fine, mixed, subactive, isohyperthermic, Ustic Endoaquerts. They are deep soils and are characterized by a dark grayish brown or very dark grayish brown silty clay loam or clay loam grading to silty clay or clay A horizon overlying a grayish brown or brown silty clay or clay cambic B horizon. Mottles are strong brown or yellowish brown at the surface layer and yellowish red and red (plinthite) in the subsoil. Distinct slickensides and pressure faces occur in the cambic B horizon. Reaction is medium acid to strongly acid over strongly acid.

Typifying Pedon: Profile code no is NE-N-29/18 (moist colors unless otherwise stated).

Location: southwest of Ban Tha Bo, Amphoe Si Songkhram Changwat Nakhon Phanom.

Sheet Name: Ban Kha

Sheet No.: 5844 III

Coordinate: 171522

Elevation: 100-130 m

Relief: level to nearly level

Slope: 0-1%

Physiography: flood plain (back swamp)

Parent material: recent alluvium

Drainage: poorly drained

Permeability: slow

Runoff: slow

Ground water depth: >2 m

Flooding depth: -

Duration: 2-3 month

Frequency: every year

Annual rainfall: 2,163 mm

Mean temp: 25.9 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: natural grass land and some scattered shrubs and bamboo. Parts are cleared for broadcasting rice

Other:

Described by: C. Changprai et. al.

Date: 22 Feb. 1969

Revised by:

Horizon	Depth (cm)	Description
A1	0-4	Very dark grayish brown (10YR 3/2) silty clay loam; common fine prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; very hard, firm, slightly sticky, slightly plastic; many fine and common medium roots; strongly acid (field pH 5.5); clear, smooth boundary.
A2	4-13	Dark gray (5YR 4/1) silty clay; common fine prominent strong brown (7.5YR 5/8) mottles; moderate coarse subangular blocky structure; extremely hard, very firm, sticky, plastic; common fine interstitial pores; common fine roots; strongly acid (field pH 5.5); gradual, smooth boundary.

Bw1	13-50	Grayish brown (10YR 5/2) silty clay; many fine prominent yellowish red (5YR 4/8) mottles; strong medium subangular blocky structure; extremely hard, very firm, sticky, plastic; common fine roots; common shifting silt coating on cracking faces; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bw2	50-80	Grayish brown (10YR 5/2) clay; common fine and medium prominent red (2.5YR 4/8) and common prominent yellowish red (5YR 4/8) mottles; strong fine and medium subangular blocky structure; hard, firm, sticky, plastic; few fine roots; few spots of shifting silt coating on crack faces; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bw3	80-140	Grayish brown (10YR 5/2) clay; many medium prominent red (10YR 4/8) and common fine distinct yellowish brown (10YR 5/8) mottles; strong medium and coarse subangular blocky structure; hard, firm, sticky, plastic; few soft and hard iron concretions; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bw4	140-180	Brown (10YR 5/3) silty clay; many medium prominent red (2.5YR 4/8) and common fine yellowish brown (10YR 5/8) mottles; hard, firm, sticky, plastic; few soft and hard iron concretions; very strongly acid (field pH 5.0).

Type Location: The Si Songkhram series was named for Amphoe Si Songkhram, Changwat Nakhon Phanom, in which soils of this series were first described at approximately 2.5 km southwest of the Amphoe Office; 104° 13' 30" E longitude and 17° 33' 20" N latitude.

Range of Profile Features:

The thickness of the A horizon varies from 10 to 30 cm and has 10YR or 7.5YR hues, values of 2 to 5 and chromas of 1 to 3. Texture of sandy clay or silty clay may occur. Structure is weak to moderate medium and/or coarse blocky. Field pH value is from 4.5 to 6.0.

The cambic B horizon has 10YR or 7.5YR hue, values of 4 to 5 and chromas of 2 or less. Structure is moderate to strong medium and/or coarse blocky. This horizon cracks widely and contains slickenside. Field pH value is from 4.5 to 5.5.

Similar Soil Series:

Ratchaburi series (Rb): pH value of the subsoil is from 6.5 to 7.5.

Phimai series (Pm): has grayer color in the subsoil and very fine family.

Principal Associated Soils: These include Chunsang, Ratchaburi and Saraburi.

ANALYSIS RESULTS

Profile code no.:NE-N-29/18

(oven dry basis)

Soil series : Si Songkhram (Ss)

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			
	0-4	A	2.6	40.6	56.8						sic	sic	5.1	3.9	0.5	10.8	140
	4-13	E	2.6	40.6	56.8						sic	sic	5.1	3.9	0.5	10.8	140
	13-50	Bw1	4.3	43.5	52.2						sic	sic	5.5	3.7	0.5	4.8	61
	50-80	Bw2	4.6	39.3	56.1						c	c	5.4	3.7	0.6	5.9	58
	80-140	Bw3	3.9	33.5	62.2						c	c	5.4	3.7	0.2	5.6	43
	140-180	Bw4	6.1	46.8	47.1						sic	sic	5.3	3.6	0.5	8.0	46

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)				
				0-4	2.4	2.18		4.70	1.90	0.40	0.40	7.40	17.20	24.60	20.40			
4-13	2.4	2.18		4.70	1.90	0.40	0.40	7.40	17.20	24.60	20.40	35.9	36	30			0.02	
13-50	2.2	1.01		3.60	1.50	0.20	0.40	5.70	12.30	18.00	12.40	23.8	46	32			0.01	
50-80	5.3	0.42		2.10	0.90	0.10	0.40	3.50	13.90	17.40	12.50	22.3	28	20			0.01	
80-140	4.0	0.42		1.80	0.70	0.10	0.30	2.90	14.20	17.10	12.80	20.4	23	17			0.01	
140-180	4.0	0.13		2.10	0.80	0.10	0.30	3.30	14.10	17.40	14.30	30.4	23	19			0.01	