

Proposed by: S. Kittiyarak - 1969  
Revised by: 1. B. Boonsompopphan,  
P. Hemsrichart, 1988  
2. K. Malairotsiri, 2004

## SURIN SERIES

Fields Symbol: Su

**Distribution:** Occupies small extent in southern part of Northeast Plateau.

**Setting:** Surin soils are formed in residuum and local colluvium from basalt and occur on dissected lava flow or erosion surface. Relief is undulating to rolling which slopes range from 2 to 8 percent. Elevation is from 140 to 300 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Average annual rainfall is from 1,100 to 1,500 mm. Mean annual air temperature varies from 26 to 28°C.

**Drainage, Permeability and Runoff:** Well drained soils. Permeability is moderate. Surface runoff is medium to rapid.

**Vegetation and Land Use:** Mixed deciduous and dipterocarp forests. Parts are cleared for upland crops such as corn, kenaf, papaya, castor bean, chili, banana and used for road-building material (burrow pits).

**Profile Characteristic Features:** The Surin series is a member of the clayey-skeletal, kaolinitic, isohyperthermic Typic Rhodustalfs. These soils are gravelly and moderately deep soils. They are characterized by a dark brown or dark reddish brown loam or clay loam (gravelly) A horizon overlying a dark reddish brown or dark red very gravelly clay loam or very gravelly clay argillic B horizon which in turn overlies weathering zone and grades to bedrock at some depth between 60 to 120 cm. Reaction is neutral to medium acid over strongly acid.

**Typifying Pedon:** Profile code no. is NE-S-20/79 (color are for moist soil unless otherwise stated).

**Location:** 3 km south east of Ban Khok Chaliang, Amphoe Khon Buri Changwat Nakhon Ratchasima.

**Sheet Name:** Ban Sa Takhian

**Sheet No.:** 5454 II

**Coordinate:** 209160

**Elevation:** 250 m

**Relief:** gently undulating to undulating

**Slope:** 4-6%

**Physiography:** residual mounds dissected lava flow upper part of basaltic terrain

**Parent material:** residuum and colluvium from basalt

**Drainage:** well drained

**Permeability:** moderate

**Runoff:** medium to rapid

**Ground water depth:**

**Flooding depth:** -

**Duration:** -

**Frequency:** -

**Annual rainfall:** 1,070.5 mm

**Mean temp:** 26.7 °C

**Climate type:** Tropical Savannah

**Natural vegetation and/or land use:** dipterocarp and mixed deciduous forests

**Other:**

**Described by:** Adul & Chingchai

**Date:** 6 Jan. 1972

**Revised by:**

Horizon	Depth (cm)	Description
A	0-7	Dark reddish brown (5YR3/2-3) gravelly loam; slightly sticky, slightly plastic; many very fine and fine tubular and interstitial, few medium interstitial pores; many small hard subrounded Fe/Mn concretion (about 30% by volume); many very fine and fine roots, few medium roots; neutral (field pH 7.0); clear, slightly wavy boundary.
Bt1	7-24	Dark reddish brown (2.5YR3/4); very gravelly clay loam to clay; sticky, plastic; many very fine and fine tubular and interstitial, few medium interstitial pores; many small hard subrounded and irregular weathered basalt (about 70%) one large decayed root many very fine, fine and few large roots; medium acid (field pH 6.0); clear, slightly wavy boundary.

Bt2	24-74	Dark reddish brown (2.5YR3/4); very gravelly clay; sticky, plastic; many very fine, fine tubular and interstitial, few medium interstitial pores; few fine (1.0-2.0 cm) animal holes; many small and large hard subrounded and irregular weathered basalt (about 80%) common pressure faces, many very fine and fine roots, few medium roots, few medium decayed roots; very strongly acid (field pH 4.5-5.0); gradual, wavy boundary.
Bt3	74-121	Dark reddish brown (2.5YR3/4); gravelly clay; sticky and plastic; many very fine, few fine tubular and few medium interstitial pores; few pressure faces; many small hard subrounded and irregular weathered basalt (about 80% by volume); few very fine and roots, few fine decayed roots; very strongly acid (field pH 5.0).

**Type Location:** The Surin series was named for Changwat Surin, in which soils of this series were first described in Amphoe Mueang, Changwat Surin.

**Range of Profile Feature:**

The thickness of the A horizon is from 10 to 30 cm and has 7.5YR or 5YR (or probably 10YR) hues, values of 3 or 4 and chromas of 2 to 4. Texture of sandy loam or sandy clay loam may occur. Structure is moderate fine to medium blocky and granular on the upper most. Field pH value is from 6.0 to 7.0.

The B horizon has 2.5YR hues or redder; values of 4 or less; and chromas of 3 to 6. Structure is moderate fine blocky. Field pH value is from 5.0 to 6.0.

The Surin Soils contain basalt fragments have weathered and coated with iron oxide (pseudolaterite). Mottling usually occur in weathering zone.

**Similar Soil Series:**

Chiang Khan series (Ch): are derived from shale.

**Principal Associated Soils:** These include Chok Chai and Buri Ram soils. The Buri Ram soils occupy on the lower position.

**ANALYSIS RESULTS**      **Profile code no.:NE-S 20/79**  
**(oven dry basis)**                      **Soil series : Surin (Su)**

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>1</sup>	water	KCl			
Pc 829	0-7	A	53.5	29.0	17.5						sl	gl	6.6	5.7	2.1		
Pc 830	7-24	Bt1	43.0	19.0	38.0						cl	gcl	5.7	4.7	0.9		
Pc 831	24-74	Bt2	18.5	8.5	73.0						c	gc	5.5	4.5	1.2		
Pc 832	74-121	Bt3	17.0	10.5	72.5						c	gc	5.7	4.7	0.9		

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)	Al 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)				
0-7	3.7	6.43		13.70	7.60	1.00	2.00	24.30	11.10	35.40	32.20	184.0	75	69			0.16	
7-24	3.3	0.88		3.40	4.25	0.60	0.10	8.35	11.80	20.15	18.20	47.9	46	41			0.10	
24-74	3.4	1.70		1.40	8.00	0.50	0.30	10.20	10.70	20.90	19.40	26.6	53	49			0.08	
74-121	4.9	1.52		0.20	8.10	0.50	0.40	9.20	9.60	18.80	16.80	23.2	55	49			0.08	