

Proposed by: C. Changprai - 1971  
 Revised by: 1. B. Boonsompopphan,  
 P. Hemsrichart, 1988  
 2. S. Sukchan,  
 A. Suchinai, 2004

**SUNG NOEN SERIES**

**Field Symbol: Sn**

**Distribution:** Small extent in the southern part of Northeast Plateau.

**Setting:** Sung Noen soils are formed from washed deposit over siltstone and/or shale and occur on the erosion surface. Relief is nearly level to undulating which range of slope is 1 to 4 percent. Elevation varies from 200 to 240 m above sea level. The climate is Tropical savanna (Köppen 'Aw'). Average annual precipitation is from 1,100 to 1,300 mm. Mean annual air temperature varies from 26 to 28°C.

**Drainage, Permeability and Runoff:** Well drained soils. Permeability is moderate. Runoff is medium.

**Vegetation and Land Use:** Mixed deciduous and dipterocarp forest. Parts are cleared for upland crops such as corn, water, melon, castor bean, cassava and kenaf,

**Characteristic Profile Features:** The Sung Noen series is a member of fine, mixed, semiactive, isohyperthermic Typic Paleustults. They are deep soils and are characterized by a dark grayish brown or grayish brown silt loam or loam A horizon overlying a reddish brown or yellowish red silty clay loam or clay loam over silty clay or clay argillic B horizon. Reaction is strongly acid to slightly acid over very strongly acid.

**Typifying Pedon:** Profile code no. is NE-S-20/44 (moist colors unless otherwise, stated).

**Location:** 3 km east of Ban Klang Yai, Amphoe Sung Noen Changwat Nakhon Ratchasima.

**Sheet Name:** Amphoe Sung Noen

**Sheet No.:** 5338-I

**Coordinate:** 816/1643-4

**Elevation:** 200-240 m

**Relief:** gently undulating

**Slope:** 4%

**Physiography:** erosion surface

**Parent material:** washed deposit over siltstone and/or shale

**Drainage:** well drained

**Permeability:** moderate

**Runoff:** medium

**Ground water depth:**

**Flooding depth:** -

**Duration:** -

**Frequency:** -

**Annual rainfall:** 1,181.2 mm

**Mean temp:** 26.7 °C

**Climate type:** Tropical Savannah

**Natural vegetation and/or land use:** vegetation or land use: mixed deciduous and dipterocarp forests; parts are cleared for upland crops such as corn, cassava and kenaf

**Other:**

**Described by:** C. Changprai et. al.

**Date:** 28 June 1971

**Revised by:**

Horizon	Depth(cm)	Description
Ap	0-3/4	Dark grayish brown (10 YR 4/2) silt loam to silty clay loam; moderate medium sub angular blocky structure; slightly firm, slightly sticky, plastic; common fine and very fine interstitial pores and few fine tubular pores; common fine animal holes; some of them filled with earth worm casts; many fine and very fine roots; slightly acid (field pH 6.5); clear, smooth boundary.
AB	3/4-11	Brown (7.5YR 5/2-3) silty clay loam,; moderate fine and medium subangular blocky structure; slightly firm slightly sticky, plastic; many very fine and fine interstitial pores and few fine tubular pores; common fine animal holes; many very fine and fine, common medium and few large roots; strongly acid (field pH 5.5); gradual, smooth boundary.

Bt1	11-23	Yellowish red (5YR 4/6) silty clay loam to clay loam; strong medium subangular blocky breaking to strong fine subangular blocky structure; friable, sticky, plastic; patchy moderately thick clay coating on large ped faces and broken moderately thick on small ped faces; many very fine and fine interstitial pores, common fine tubular pores and few fine vesicular pores; common fine animal holes; common fine, medium and large roots; very strongly acid; (field pH 5.0); gradual, smooth boundary.
Bt2	23-42	Yellowish red (5YR 4/8) silty clay to clay; strong medium subangular blocky breaking to strong fine subangular blocky structure; firm, sticky, plastic; broken moderately thick clay coating on ped faces and some continuous clay coating on ped faces in places; few fine hard rounded iron concretions; common very fine and few medium interstitial pores, few medium tubular pores; few fine and medium animal holes; common fine, few medium and large roots, very strongly acid (field pH 5.0); gradual, smooth boundary.
Bt3	42-85	Yellowish red (5YR 4/8) and red (2.5YR 4/6) clay; moderate medium subangular blocky breaking to strong fine angular blocky structure; friable, sticky, plastic; few fine gray spots; broken moderately thick clay coating on ped faces and in places continuous clay coating on ped faces; few fine hard, rounded concretions; common fine and few fine roots; many very fine interstitial pores and common fine tubular pores; very strongly acid; (field pH 4.5); gradual, smooth boundary.
Bt4	85-150+	Yellowish red (5YR 4/8) clay loam to clay with many fine light gray (10YR 7/2) spots; weak coarse subangular blocky breaking to moderate medium subangular blocky structure; firm, slightly sticky, plastic; patchy moderately thick clay coating on ped faces; many very fine and common fine interstitial pores, common fine tubular pores; few fine hard subrounded iron-manganese nodules; few fine roots; very strongly acid; (field pH 4.5).
Cr	150-200	Weathering silt stone

**Type Location:** Sung Noen soils named for Amphoe Sung Noen Changwat Nakhon Ratchasima which a profile were first described.

**Range of Profile Features:**

The thickness of an A horizon varies from 10 to 25 and has 10YR or 7.5YR hues, values of 3 to 5 and chromas of 2 to 4. Texture of sandy loam or silty clay loam may occur. Structure is weak moderate fine and medium blocky. The pH values vary from 5.5 to 7.0.

The argillic B horizon has 5YR or 2.5YR hues, values of 4 to 6 and chromas of 4 to 8. Structure is moderate and/or strong medium and coarse blocky. The pH values vary from 4.5 to 5.0. Few to common gray spots usually occur in the deeper subsoils.

The C horizon normally occur at some depth below 1.5 m.

**Similar Soil Series:**

Sikhio series (Si): pH values increase with depth up to 7.0 or 8.0 and particle size class is fine-loamy.

Warin series (Wn): has higher sand fraction and is fine-loamy particle size class.

**Principal Associated Soils:** These include Warin, Sikhio, Khorat and Chatturat series.

**ANALYSIS RESULTS**

**Profile code no.:NE-S-20/44**

**(oven dry basis)**

**Soil series : Sung Noen (Sn)**

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				
	0-3/4	Ap	22.5	57.0	20.5							sil	sil	5.4	4.7	0.0	31.4	228
	3/4-11	AB	20.5	54.0	25.5							sil	sicl	5.3	4.2	0.0	22.1	190
	11-23	B11	20.0	48.5	31.5							sicl	sicl	4.4	3.8	0.0	4.5	216
	23-42	B12	14.0	39.0	47.0							c	sic-c	4.4	3.8	-	5.6	239
	42-85	B13	14.5	33.0	52.2							c	c	4.4	3.7	-	8.3	242
	85-150	B14	12.5	30.5	57.0							c	c	4.8	4.0	0.2	6.1	231
	150-200	Cr	15.0	41.5	43.3							sicl	-	4.5	3.7	-	3.9	158

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol <sub>(+)</sub> kg <sup>-1</sup> )										Base satur <sup>1</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>2</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)				
				0-3/4	2.3	1.48		3.90	2.50	0.80	0.30	7.50	7.60	15.10	11.30			
3/4-11	2.3	1.04		2.10	1.80	0.50	0.20	4.60	9.30	13.90	10.70	42.0	43	33			0.02	
11-23	4.1	0.64		0.90	2.10	0.55	0.20	3.75	10.50	14.25	11.90	37.8	32	26			0.01	
23-42	0.7	0.36		0.60	1.90	0.60	0.30	3.40	14.20	17.60	15.80	33.6	22	19			0.01	
42-85	7.7	0.34		0.70	1.50	0.70	0.30	3.20	16.20	19.40	17.40	33.1	18	16			0.01	
85-150	7.7	0.20		0.70	1.00	0.65	0.30	2.65	18.40	21.05	18.90	33.2	14	13			0.01	
150-200	0.7	0.20		1.50	0.80	0.40	0.40	3.10	14.20	17.30	14.20	32.6	22	18			0.01	