

Proposed by: F. R. Moormann, 1963
Revised by:
1. N. Chorphaka, 1983
2. A. Potichan, 2004

NAKHON SAWAN SERIES

Field Symbol: Ns

Distribution: Occupies small extent in the northern part of the Central Plains and the northern part of Peninsular Thailand, mainly in Nakhon Sawan and Prachuap Khiri Khan.

Setting: Nakhon Sawan soils are formed from residuum and local colluvium from micaceous gneiss and mica schist which often occur in association with limestone, shale and quartzite. They occur on hills and footslopes. Relief is gently rolling to hilly. Slopes range from 6 to 35%. The Climate is Tropical savanna (Koppen 'Aw'). Mean annual precipitation ranges from 900 to 1,200 mm. Mean annual temperature is 27 °C.

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

Vegetation and Land Use: Originally mixed deciduous forest which has been cleared for shifting cultivation and later abandoned to thick secondary cover of grasses, shrubs and bamboo. Parts are used as a source of road building material.

Characteristic Profile Features: Nakhon Sawan series is a member of the loamy-skeletal, mixed, superactive, isohyperthermic Ultic Haplustalfs. They are moderately deep, gravelly to stony soils, weathered bedrock being encountered at some depth below 50 cm and within 125 cm of the soil surface. They are characterized by a dark reddish brown or dark brown, slightly gravelly sandy loam or sandy clay loam A horizon, overlying a dark reddish brown or reddish brown gravelly to stony sandy clay loam or clay loam argillic B horizon which grades down to weathering bedrock. Reaction is medium to slightly acid. The coarse fractions are composed of gravel and stone sized bedrock. Mica flakes occur throughout the profile.

Typifying Pedon: Profile code no. is SW-57/8 (moist colors unless otherwise stated).

Location: Right of Phetchakasem road at km 244, Ban Khao Tao, Amphoe Hua Hin Changwat Prachuap Khiri Khan.

Sheet Name:

Sheet No.: 4933 I

Coordinate: 606778

Elevation: 30 m (MSL)

Relief: hilly

Slope: 23 %

Physiography: erosion surface

Parent material: colluvium and residuum from mica schist and gneiss

Drainage: well drained

Permeability: moderate

Runoff: rapid

Ground water depth: >2 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,153 mm

Mean temp.: 27 °C

Climate type: Tropical Savannah (Aw)

Natural vegetation or land use: secondary grass, shrubs and bamboo

Described by: Kevie, Banchong and Maitri

Date: 11 May, 1970

Revised by: Aniruth Potichan

Date: 26 May, 2004

Horizon	Depth (cm)	Description
Ap	0-12	Dark reddish brown (5YR3/3); gravelly sandy loam; strong fine crumb structure; friable; gravels are weathered mica schist and mica flakes are scattered in the horizon; many fine and medium roots; slightly acid (field pH 6.5); clear and wavy boundary.
Bt1	12-44	Dark reddish brown (5YR3/4); cobbly sandy clay loam; strong subangular blocky structure; firm; distinct clay coatings on ped faces and stones; cobbles are angular mica schist up to 20 cm diameter, micas scattered through the horizon; slightly acid (field pH 6.5); clear and broken boundary.

Bt2	44-70	Dark reddish brown (2.5YR3/4); stony and cobbly sandy clay loam; alternating bands of B material with distinct clay coatings and weathering rock; neutral (field pH 7.0); abrupt and broken boundary.
R	70+	Bed rock.

Type location:

Approximately 2 km north of Nakhon Sawan town on the Nakhon Sawan - Tak highway. However this was a very small occurrence which has since been largely removed for road building.

Range of Profile Features:

The A horizon is from 10 to 15 cm thick, has 5YR or 7.5YR hues, value of 3 and chromas of 2 or 3. Structure is strong crumb and field pH values range from 5.5 to 6.5.

The B horizon has 5YR or 2.5YR hues, values of 3 and chromas of 2 to 4. Structure is moderate to strong subangular blocky and field pH values range from 6.0 to 7.0.

Similar Soil Series:

Tha Li series (TI): derived from andesite, has browner colours (7.5YR and 5YR hues), is a member of the clayey-skeletal family.

Principal Associated Soils:

These include Doi Pui series and other shallow soils derived from the same parent rocks.

ANALYSIS RESULTS
(oven dry basis)

Profile code no.: SW-57/8

Soil series: Nakhon Sawan (Ns)

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 result	Field estim ⁿ	1:1 water	1:1 KCl			
			sand	silt	clay	vc	c	m	f	vf						
SS-523	0-12	Ap	64.9	29.6	5.5					sl	gsl	6.2	5.6	0.3	1.2	262
SS-524	12-44	Bt	60.8	15.7	23.5					scl	scl	6.5	5.3	0.4	1.3	170
SS-525	44-70	Bt2	54.8	20.0	25.2					scl	scl	6.6	5.3	0.5	0.7	190

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol _(c) kg ⁻¹)								Base satur ⁿ (%)		ECEC cmol _(c) kg ⁻¹ (B+D)	Al KCl extr. cmol _(c) 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			
0-12	0.6	0.63		2.68	1.51	0.42	0.66	5.27	3.70	8.97	11.6	210.9	45	59		0.04
12-44	0.5	0.49		3.10	1.96	0.21	0.70	5.97	7.70	13.67	16.6	70.6	36	44		0.02
44-70	0.2	0.21		2.40	1.96	0.40	0.73	5.49	8.00	13.49	16.6	65.9	33	41		0.02

Surveyor: Kevie, Banchong and Maitri

Date: 11 May, 1970