

Proposed by:
 V. Boonyawat and J.J. Scholten, 1971
 Revised by:
 1. N. Chorphaka, 1988
 2. A. Potichan, 2004

NAN SERIES

Field Symbol: Na

Distribution: Occupies small extent in the North and Central Highland.

Setting: Nan soils are formed from alluvium and occur on semi-recent terraces and the transition zone of lower part of levee to flood plain. Relief is level or nearly level with scattered termite mounds. Slopes are less than 2 percent. The climate is Tropical Savanna (Koppen 'Aw'). The average annual precipitation ranges from 1,100 to 1,800 mm.

Drainage, Permeability and Runoff: Somewhat poorly drained. Permeability and surface runoff are slow. The soils are normally flooded by impounded rain water about 30 cm deep or lesser for 4 to 5 months during the rainy season.

Vegetation and Land Use: Nan soils are mainly used for transplanting rice cultivation. Some tobacco and garden crops are grown in the dry season if irrigation water is available.

Characteristic Profile Features: Nan series is a member of the fine, mixed, semiactive, isohyperthermic Aeric Endoaqualfs. They are very deep soils and characterized by a pinkish or reddish gray silt loam, silty clay loam A horizon overlying a reddish gray clay loam, silty clay loam grading to silty clay or clay argillic B horizon. Common to many distinct strong brown and yellowish brown mottles occur throughout the profile. Reaction is moderately acid to moderately alkaline, increasing with depth.

Typifying Pedon: Profile code no. is N-41/39(moist color unless otherwise stated).

Location: About 1 km east Bang Wang Mn, Ampoe Muang Changwat Uttaradit.

Sheet Name: Changwat Uttaradit

Sheet No.: 5044 III

Coordinate: -

Elevation: 60 m (MSL)

Relief: level to nearly level

Slope: 0-1 %

Physiography: semi-recent terraces

Parent material: alluvium

Drainage: somewhat poorly drained

Permeability: slow

Runoff: slow

Ground water depth: >2 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,432.6 mm

Mean temp.: 27.1 °C

Climate type: Tropical Savannah (Aw)

Natural vegetation or land use: paddy field

Described by: P. Chondumrongkun

Date: 22 February, 1973

Revised by: Aniruth Potichan

Date: 25 May, 2004

Horizon	Depth (cm)	Description
Apg	0-16	Very pale brown (10YR7/3) dry, brown (7.5YR5/2) moist, silty clay; many fine distinct strong brown (7.5YR5/6) mottles along roots; very weak coarse angular and subangular blocky structure; very hard, very firm, very sticky and plastic; common fine roots; very strongly acid (field pH 5.0) clear and smooth boundary.
Btg1	16-37	Pinkish gray (7.5YR6/2) dry, reddish gray (5YR5/2) moist, silty clay; many fine distinct dark brown (7.5YR4/4) mottles; weak fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; continuous moderately thick cutans in pores and broken moderately thick on ped faces; few very fine roots; moderately acid (field pH 6.0) gradual and smooth boundary.

Btg2	37-63	Brown (7.5YR5/2) dry, pinkish gray (5YR6/2) moist, silty clay; many fine distinct reddish brown (5YR4/4) mottles; moderately weak coarse angular and subangular breaking to moderate fine and medium angular and subangular blocky structure; very hard, very firm, very sticky and plastic; continuous thick cutans in pores and silt coating on ped faces; few small rounded slightly hard Mn-nodules; very few very fine roots; slightly acid (field pH 6.5) gradual and smooth boundary.
Btg3	63-110+	Reddish gray (5YR5/2) moist, silty clay; many medium distinct dark brown (7.5YR4/4) mottles; moderately weak coarse and medium subangular blocky structure; firm, very sticky and very plastic; continuous thick cutans in pores and on ped faces; few small slightly hard Mn-nodules; very few very fine roots; neutral (field pH 7.0).

Type Location:

Amphoe Sa, Changwat Nan. The site was on a flat surface of semi-recent terrace, about 1 km north of Saphan Nam Sa along Thanon Yantarakit Koson (Sheet No 5166 IV, Coord. 840553).

Range of Profile Features:

The A horizon is from 10 to 20 cm thick and has 7.5YR to 5YR hues, values of 5 or 6 and chroma of 2 with silty clay loam, clay loam or silt loam textures. The structure is weak coarse subangular blocky to massive, probably due to long cultivation. Field pH values range from 5.0 to 7.0.

The B horizon has hues of 5YR, values of 5 to 6 and chroma of 2. The B horizon is argillic showing evidence of illuviation in the form of cutans, mainly on ped faces and in pores. The structure is weak to moderate medium and fine blocky. Few to common small soft and hard iron-manganese nodules of concentric structure may be present in the subsoil. Field pH values range from 6.0 to 8.0.

Similar Soil Series:

Hang Dong series (Hd): has matrix colour of 10YR hue or grayer and heavier texture.

Mae Sai series (Ms): browner matrix colour and somewhat poorly drained.

Mae Tha series (Mta): has a similar profile but higher chroma (3 to 4) in the argillic B horizon and is in the fine-silty particle size class family.

Principal Associated Soils:

These include Mae Tha, Uttaradit series.

ANALYSIS RESULTS
(oven dry basis)

Profile code no.: N 41/39
Soil series: Nan (Na)

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 ⁿ	water				KCl
Pd - 466	0-16	Apg	5.5	49.0	45.5						sic	sic	5.6	4.5	2.0	12.9	70
Pd - 467	16-37	Btg1	8.0	41.5	50.5						sic	sic	6.2	5.1	0.0	2.2	90
Pd - 468	37-63	Btg2	7.5	44.0	48.5						sic	sic	6.2	5.0	0.0	1.3	85
Pd - 469	63-110+	Btg3	25.5	28.5	46.0						c	sic	6.6	5.5	1.7	1.7	76

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			
0-16	2.3	1.73		4.30	3.30	0.10	0.60	8.30	16.40	24.70	15.1	33.2	55	34		0.09
16-37	1.9	1.01		9.20	6.90	0.20	0.60	16.90	11.60	28.50	19.3	38.2	88	59		0.13
37-63	2.2	0.72		9.20	7.30	0.20	0.80	17.50	8.60	26.10	18.6	38.4	94	67		0.15
63-110+	2.3	0.64		9.40	7.30	0.10	0.90	17.70	7.60	25.30	17.0	37.0	100	70		0.16

Surveyor P. Chandumrongkul

Date: 22 February, 1973