Proposed by: -, 1980
Revised by:
1. N. Chorphaka, 1999
2. A. Potichan, 2004

BANG MUN NAK SERIES **Field Symbol: Ban**

Distribution: Occupies small extent in the lower part of northern region of Thailand along Nan river.

Setting: Bang Mun Nak soils are formed from recent alluvium and occur on flood plain. Relief is level to nearly level. Slope are less than 1 percent. Elevation is about 30 m above mean sea level. The climate is Tropical Savannah (Koppen 'Aw'). Average annual precipitation is from 1,200 to 1,500 mm. Mean annual air temperature varies from 26 to 29 ^{o}C.

Drainage, Permeability and Runoff: Somewhat poorly drained. They are flooded in the rainy season. Ground water table falls below 2 m during the peak of the dry period. Permeability and surface runoff are slow.

Vegetation and Land Use: Mainly used for transplanting and broadcasting rice in the rainy season. In the early rainy season or after rice harvesting are commonly cultivated to upland crops such as corn, beans etc. and vegetables.

Characteristic Profile Features: Bang Mun Nak series is a member of very-fine, mixed, nonacid, isohyperthermic Aeric (Fluvaquentic?) Endoaquepts. They are very deep soils and are characterized by dark brown, brown or reddish brown silty clay or clay A horizon. The upper B horizon is reddish brown clay while in the lower B horizon is grayish brown, reddish gray or gray to light brownish gray clay. Mottles of strong brown, yellowish red and red are throughout the profile. Reaction is very strongly acid to strongly acid over strongly acid to very strongly acid.

Typifying Pedon: Profile code no. is NC-46/51 (colors are for moist soil unless otherwise stated).

Location: About 500 m on the west side of Taphan Hin-Bang Mun Nak road, Ban Phai Roi Ko, Tambon Sai Rong Khon, Amphoe Taphan Hin, Changwat Phichit.

Sheet Name: Amphoe Taphan Hin **Sheet No.:** 5041 II
Coordinate: 504876 **Elevation:** 29 m (MSL)
Relief: level to nearly level **Slope:** 0-1 %
Physiography: flood plainm
Parent material: alluvium
Drainage: somewhat poorly drained **Permeability:** slow
Runoff: slow **Ground water depth:** >2 m
Flooding depth: 1-2 m **Duration:** 5 month **Frequency:** every year
Annual rainfall: 1,228.7 mm **Mean temp.:** 22.8 ^{o}C **Climate type:** Tropical Savannah (Aw)
Natural vegetation or land use: broadcasting rice
Described by: P. Hemsrichart and N. Chorphaka **Date:** 16 March, 1978
Revised by: Aniruth Potichan **Date:** 23 May, 2004

Horizon	Depth (cm)	Description
Ap	0-26	Reddish brown (5YR5/3) silty clay; common fine distinct yellowish red (5YR5/6) mottles; moderate medium and coarse subangular blocky structure; extremely hard, firm, sticky, plastic; common very fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.
Bwg1	26-53	Reddish gray (5YR5/2) clay; common medium distinct yellowish red (5YR5/6) mottles; strong medium and coarse prismatic breaking to strong medium and coarse subangular blocky structure; extremely hard, firm, sticky, very plastic; patchy thin cutans on ped faces and in pores; common very fine roots; some pressure faces; neutral (field pH 7.0); gradual, smooth boundary.

Bwg2	53-83/90	Grayish brown (10YR5/2) and reddish brown (5YR5/3) clay; many medium distinct strong brown (7.5YR5/6) mottles; moderate medium and coarse prismatic breaking to moderate medium and coarse subangular blocky structure; extremely hard, firm, sticky, very plastic; patchy thin cutans on ped faces; few very fine and fine roots; some pressure faces; slightly acid (field pH 6.5); clear, wavy boundary.
Bwg3	83/90-120	Gray to light gray (10YR5-6/1) clay; many fine and medium distinct strong brown (7.5YR5/8) and few fine distinct yellowish red (5YR5/6) mottles; weak medium and coarse subangular blocky structure; friable, sticky, very plastic; few very fine and fine roots; few pressure faces; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bwg4	120-150	Gray to light gray (10YR5-6/1) clay; few fine prominent red (2.5YR5/8), many fine distinct yellowish red (5YR5/6) and strong brown (7.5YR5/6) mottles; weak medium and coarse subangular blocky structure; friable, sticky, very plastic; no root; many pressure faces; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bwg5	150-180+	Grayish brown (10YR5/2) clay; many fine prominent red (2.5YR5/6), few fine distinct strong brown (7.5YR5/8) mottles; weak medium and coarse subangular blocky structure; friable, sticky, plastic; no root; many pressure faces; very strongly acid (field pH 4.5).

Type Location:

Bang Mun Nak series was named for Amphoe Bang Mun Nak, Changwat Phichit.

Range of Profile Features:

The thickness of the A horizon varies from 15 to 30 cm and has 5YR to 10YR hue, value of 3 to 5 and chroma of 2 to 3. Structure is weak to moderate and medium to coarse subangular blocky. Field pH value is from 4.5 to 5.5.

The upper B horizon has 5YR, value of 4 to 5 and chroma of 3 to 4. But the lower B horizon has 7.5 YR to 10YR hue, value of 5 to 6 and chroma of 2 or less. Structure is moderate to strong medium and coarse prismatic breaking to moderate medium and coarse subangular blocky. Field pH value is from 5.5 to 7.0 in the upper part but the lower is varied from 4.5 to 5.5.

Mottles are throughout the profile with strong brown and yellowish red in the upper part and strong brown, yellowish red and red in the lower part.

Similar Soil Series:

Phimai series (Pm): has grayer color with chroma of 1 or less. The pH value ranges from 6.0 to 8.0 which increases with depth.

Ratchaburi series (Rb): has browner color and hue of 10 YR or 7.5 YR.

Tha Phon series (Tn): has similar profile but it is in the fine particle size class at the family level.

Principal Associated Soils:

These include Nan, Uttaradit, Phimai, Ratchaburi series.

ANALYSIS RESULTS

(oven dry basis)

Profile code no.: NC-46/51

Soil series: Bang Mun Nak (Ban)

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_4OAc
			USDA grading			Sand-fraction grading					Lab	Field	1:1	1:1			
			sand	silt	clay	vc	c	m	f	vf	result	estim^{n}	water	KCl			
6653	0-26	Ap	0.3	54.7	45.0						sic	sic	4.5	3.6	1.4	24.1	112
6654	26-53	Bw1	0.5	38.2	61.3						c	c	6.1	4.9	1.4	4.2	68
6655	53-83/90	Bw2	1.4	35.8	62.8						c	c	5.2	3.9	1.5	3.9	68
6656	83/90-120	Bg1	1.1	28.2	70.7						c	c	4.8	3.4	1.1	5.3	46
6657	120-150	Bg2	1.5	27.6	70.9						c	c	4.6	3.4	1.2	4.4	45
6658	150-180+	BCg	1.2	26.1	72.7						c	c	4.7	3.3	1.2	5.3	38

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_4OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/ (B+A)			
0-26	3.7	1.56		7.00	2.10	0.20	0.40	9.70	16.00	25.70	18.5	41.1	52	38			0.47
26-53	4.3	0.77		14.70	4.60	0.20	0.70	20.20	6.80	27.00	22.7	37.0	89	75			0.37
53-83/90	5.7	0.68		11.60	5.20	0.20	1.00	18.00	12.00	30.00	24.7	39.3	73	60			0.34
83/90-120	6.0	0.93		9.00	3.20	0.10	1.20	13.50	17.30	30.80	23.1	32.7	58	44			0.29
120-150	5.5	0.89		8.80	1.50	0.10	1.60	12.00	19.10	31.10	23.9	33.7	50	39			0.34
150-180+	5.5	0.78		8.60	0.80	0.10	1.90	11.40	17.90	29.30	23.5	32.3	49	39			0.47

Surveyor: P. Hemsrichart and N. Chorphaka

Date: 16 March, 1978