Proposed by: F. Bos, 1969
Revised by:
1. N. Chorphaka, 1988
2. P. Wiwatwongwana, 2004

WANG CHOMPHU SERIES **Field Symbol: Wc**

Distribution: Occupies small extent in the Central Highlands, mainly in Changwat Petchabun.

Setting: Wang Chomphu soils are formed from residuum derived from calcareous clay which is thought to be a Tertiary lake deposit. They occupy undulating terrains with slopes ranging from 2 to 8 percent and have a noticeable 'gilgal' microrelief. Climate is Tropical Savanna (Koppen Aw') with annual precipitation ranging from 1,100 to 1,600 mm.

Drainage, Permeability and Runoff: Moderately well drained. Permeability is slow during the rainy season and moderate during the dry season when the soil cracks. Surface runoff is medium to rapid. Ground water level is below 1 m for most of the year, but a perched water table may develop during the rainy season rising to within 50 cm of the soil surface for brief periods.

Vegetation and Land Use: Secondary dipterocarp forest and stands of bamboo. Parts are cleared for upland crops such as corn, cotton, beans and citrus fruits.

Characteristic Profile Features: Wang Chomphu series is a member of the very fine, smectitic, isohyperthermic Chromic Haplusterts. They are deep soils with a clay texture throughout and are characterized by a very dark grayish brown A horizon overlying a yellowish brown or olive brown B horizon contained increasing amounts of CaCo3 nodules with depth. This overlies a calcareous clay C horizon which occurs at some depth below 80 cm. Interconnecting slickensides occur from the lower part of the A horizon and throughout the B horizon. These soils crack deeply with cracks at least 1 cm wide at 50 cm depth for long periods during the dry season. Reaction is moderately alkaline sized fragments of quartzite, basalt or andesite commonly occur in the A and upper B horizon.

Typifying Pedon: Profile code no. is NC-47/8 (moist colours unless otherwise stated).

Location: Ban Na Ngua, Amphoe Muang Changwat Petchabun.
Sheet Name: Ban Tha Phon **Sheet No.:** 5242 III
Coordinate: - **Elevation:** 162 m (MSL)
Relief: gently undulating **Slope:** 2-5 %
Physiography: lake deposits
Parent material: residuum derived from calcareous clay
Drainage: moderately well drained **Permeability:** slow
Runoff: moderate to rapid **Ground water depth:** >1 m
Flooding depth: - **Duration:** - **Frequency:** -
Annual rainfall: 1,124.7 mm **Mean temp.:** 27.2 ^{o}C **Climate type:** Tropical Savannah (Aw)
Natural vegetation or land use: dipterocarp forest
Described by: Thumrong, Banchong and Pompan **Date:** November, 1967
Revised by: Phusit Wiwatwongwana **Date:** 28 May, 2004

Horizon	Depth (cm)	Description
A	0-14	Very dark grayish brown (10YR3/2) clay; coarse and medium subangular blocky structure; very hard, very firm, very sticky, very plastic; some quartzite and sandstone fragments (Φ1-5 cm); many medium and common fine roots; medium acid (field pH 6.0); gradual, smooth boundary.
Bss1	14-26	Dark brown (7.5YR4/4) clay; coarse and medium subangular blocky structure; very hard, very firm, very sticky, very plastic; intersecting slickensides; common fine and medium roots; medium acid (field pH 6.0) gradual, smooth boundary.

Bss2	26-43	Yellowish brown (10YR5/6) clay; weak fine and medium subangular blocky structure; very hard, very firm, very sticky, very plastic; intersecting slickensides; few ironstone nodules; common fine and medium roots; slightly acid (field pH 6.5); clear, smooth boundary.
Bss3	43-61	Yellowish brown (10YR5/6) clay; common fine faint light brownish gray mottles; weak medium subangular blocky structure; consistence as above; intersecting slickensides; very few ironstone nodules; few fine roots; slightly acid (field pH 6.5); clear, smooth boundary.
BCk	61-89	Yellowish brown (10YR5/6) clay; subangular blocky structure; consistence as above; about 7% $CaCO_3$ nodules by volume; few fine roots; neutral (field pH 7.0); clear, smooth boundary.
Ck1	89-100	Yellowish brown (10YR5/8) clay; common medium faint light brownish gray mottles; subangular blocky structure; about 10% $CaCO_3$ nodules by volume; moderately alkaline (field pH 8.0); clear, smooth boundary.
Ck2	100+	Yellowish brown (10YR5/6) clay; common medium faint light brownish gray mottles; subangular blocky structure; about 30% $CaCO_3$ nodules by volume; moderately alkaline (field pH 8.0).

Remark: A and BA horizons and the rather low pH in the surface layers are unusual, probably as a result of intermixing with local colluvium.

Type Location:

Ban Wang Chomphu, Amphoe Muang, Changwat Petchabun. About 5 km from Wang Chomphu on the left side of the Wang Chomphu - Petchabun highway.

Range of Profile Features:

The A horizon is normally 20 to 40 cm thick, 10YR or 7.5YR hues with values of 3 or 2 and chromas of 2 or less. Angular, stone sized fragments of quartzite, sandstone, basalt or andesite may be absent from surface layers in some profiles. Structure is moderate blocky and granular. Field pH values are variable, usually between 7.0 and 8.0; but values of 5.5 to 6.5 may occur where intermixing has occurred between residual and local colluvial material.

The B horizon has 10YR or 2.5YR hues, values of 4 or 5 and chromas of 4 through 8. 7.5YR hue may occur in the upper part of the B horizon, but for the major part of the horizon colours are characteristically yellowish brown or olive brown. Few stone size fragments may occur Where they have fallen down wide cracks. CaC03 nodules increase in quantity which depth. Structure is moderate to weak blocky. Field pH values range from 7.0 to 8.0 and increase with depth.

The C horizon is composed of weathering calcareous clay which is yellowish brown to white in colour and may be laminated in deeper layers, suggesting lacustrine sedimentation.

Similar Soil Series:

Watthana series (Wa): somewhat poorly drained with a thick black A horizon and a paler grayish, mottled subsoil, classified as Ustic Endoaquerts.

Lop Buri series (Lb): has a very thick black or very dark gray A horizon, over marl and is classified as Typic Haplusterts.

Principal Associated Soils:

These include Na Chaleang and Lom Kao series on lower terraces and Tha Li series occupying higher positions on footslopes.

ANALYSIS RESULTS

(oven dry basis)

Profile code no.: NC-47/8

Soil series: Wang Chomphu (Wc)

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			
P-625	0-14	A	33.9	38.5	27.6						l	c	6.3	5.2	1.5	6.7	175
P-626	14-26	Bss1	7.9	12.5	79.6						c	c	5.8	3.8	2.0	8.0	137
P-627	26-43	Bss2	2.9	21.5	75.6						c	c	5.5	4.0	1.9	5.6	120
P-628	43-61	Bss3	10.4	20.0	69.6						c	c	6.9	6.6	1.9	3.8	90
P-629	61-89	BCk	4.9	9.5	85.6						c	c	8.1	6.9	9.2	5.1	87
P-630	89-100	Ck1	4.9	9.5	85.6						c	c	8.0	6.8	14.5	16.1	84
P-631	100+	Ck2	7.4	30.4	62.2						c	c	8.2	6.9	13.7	17.6	96

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 condut^{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)			
0-14		1.60		9.90	0.70	0.10	0.60	11.30	9.40	20.70	28.9	104.7	39	55			0.03
14-26		0.60		26.10	3.20	0.10	1.50	30.90	9.20	40.10	40.0	50.3	77	77			0.01
26-43		0.30		25.70	11.00	0.10	1.70	38.50	14.80	53.30	41.4	54.8	93	72			0.01
43-61		0.30		29.00	9.10	0.40	2.00	40.50	13.30	53.80	42.5	61.1	95	75			0.03
61-89		0.30		30.40	13.60	0.30	2.20	46.50	9.20	55.70	35.8	41.8	100	83			0.03
89-100		0.20		29.30	15.60	0.30	2.20	47.40	4.40	51.80	34.7	40.5	100	92			0.03
100+		0.20		29.30	15.30	0.40	0.40	45.40	4.00	49.40	34.6	55.6	100	92			0.03

Surveyor: Thumrong, Banchong and Pompan

Date: November, 1967