Proposed by: V. Thunduan, 1970
Revised by:
1. N. Chorphaka, 1988
2. P. Wiwatwongwana, 2004

WICHIAN BURI SERIES **Field Symbol: Wb**

Distribution: Occupies small extent in the Central Highlands.

Setting: Wichian Buri soils are formed from alluvium lying unconformable over calcareous sandstone, clay, siltstone or conglomerates. They occupy level to gently undulating terrains on the middle terraces with slopes ranging from 1 to 4 percent. They have developed under a Tropical Savanna climate (Koppen 'Aw'). Annual precipitation ranges from 1,100 to 1,600 mm. Elevation ranges from 100 to 200 m above sea level.

Drainage, Permeability and Runoff: Somewhat poorly drained. Permeability is rapid over slow and surface runoff is medium. Ground water level falls below 1 m during the dry season; but rises to shallow depth during the wet season although surface pounding seldom occurs.

Vegetation and Land Use: Mainly secondary, open Dipterocarp forest with a small proportion cleared for paddy (wetland) rice.

Characteristic Profile Features: Wichian Buri series is a member of the fine-loamy, mixed, active isohyperthermic Aquic Haplustalfs. They are deep soils and are characterized by a sandy brownish A1 horizon and a reddish brown to yellowish red sandy A2 horizon. This overlies a sandy clay loam or sandy clay 2B horizon which is reddish brown to yellowish red in the upper part grading to light brownish gray or pinkish gray with strong brown, yellowish brown and yellowish red mottles. This lies unconformable over a 2C horizon composed of weathering calcareous sandstone, calcareous clay, siltstone or conglomerate and occurs below 50 and within 125 cm from the soil surface. Boundaries between the A, 2B and 2C horizons are characteristically abrupt. Limestone and ironstone nodules may occur in the 2B horizon. Reaction is strongly to slightly acid at the surface and neutral to moderately alkaline in the subsoil, increasing with depth.

Typifying Pedon: Profile code no. is NC-47/93 (Type location) (moist colours unless otherwise stated).

Location: Ban Phu Kham, Amphoe Wichian Buri Changwat Petchabun.

Sheet Name: Amphoe Wichian Buri **Sheet No.:** 5240 III
Coordinate: 198188 **Elevation:** 71 m (MSL)
Relief: level **Slope:** 1 %
Physiography: unconformable over calcareous sandstone, clay, siltstone or conglomerates
Parent material: alluvium
Drainage: somewhat poorly drained **Permeability:** rapid over slow
Runoff: moderate **Ground water depth:** >1 m
Flooding depth: - **Duration:** - **Frequency:** -
Annual rainfall: 1,208.9 mm **Mean temp.:** 27.8 ^{o}C **Climate type:** Tropical Savannah (Aw)
Natural vegetation or land use: dipterocarp forest and brushes
Described by: V. Thunduan and D. Muklai **Date:** 21 May, 197
Revised by: Phusit Wiwatwongwana **Date:** 27 May, 2004

Horizon	Depth (cm)	Description
A1	0-8	Dark yellowish brown (10YR3/4) loamy sand; weak fine and medium subangular blocky structure; very friable, nonsticky, nonplastic; many very fine roots; neutral (field pH 7.0) clear, smooth boundary.
A2	8-15	Yellowish red (5YR4/6) loamy sand; weak to moderate fine and medium subangular blocky structure; very friable, nonsticky, nonplastic; many very fine roots; moderately acid (field pH 6.0); clear, smooth boundary.

A3	15-25	Yellowish red (5YR4/6-8) loamy sand; weak to moderate medium subangular blocky structure; friable, nonsticky, nonplastic; many very fine roots; strongly acid (field pH 5.5); clear, smooth boundary.
A4	25-37	Yellowish red (5YR4/6) loamy sand; many fine to medium faint yellowish red mottles; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common fine roots; very strongly acid (field pH 5.0); abrupt, smooth boundary.
2Bt1	37-57	Reddish brown (5YR5/3) sandy clay loam; many medium distinct yellowish red and red mottles; moderate coarse and medium subangular blocky structure; firm, sticky, plastic; clay coatings along root channels, few fine roots; very strongly acid (field pH 5.0) clear, smooth boundary.
2Bt2	57-90	Light brownish gray (10YR6/2) sandy clay; many many medium distinct strong brown mottles; moderate coarse subangular blocky structure; extremely firm, sticky, plastic; clay coatings on ped faces; few rock fragments of quartz and chert; some limestone nodules; very few fine roots; medium acid (field pH 5.0); clear, smooth boundary.
2BC	90-113	Light brownish gray (10YR6/2) sandy clay loam; many medium distinct strong brown mottles; moderate coarse subangular blocky structure; very firm, sticky, plastic; clay coatings along pores; increase in rock fragments; many fine limestone nodules; moderately alkaline (field pH 8.0); abrupt, smooth boundary.
2C	113+	Weathering calcareous sandstone with manganese nodules.

Range of Profile Features:

The thickness of the A horizon ranges from 20 to 40 cm and the Al horizon may be very dark grayish brown. Colours in the A2 and A3 horizon (if present) are in 5YR hue with values of 4 or 5 chromas of 4 through 8. Structure is predominantly weak blocky; but may be single grain. Field pH values range from 5.0 to 7.0. Scattered ironstone nodules may occur on the lower A horizon immediately above the 2B.

Colours in the 2B horizon are 5YR hue in the upper part with values of 4 or 5 and chromas of 3 through 6. In the lower part of the 2B horizon matrix colours are 10YR, 7.5YR with values of 6 or 7 and chromas of 2. Textures vary between sandy clay and sandy clay loam; but weighted average of the control section places the soil in the fine loamy particle size class and clay content decreases in the lower 2B horizon.

The 2C horizon is largely composed of weathering calcareous sandstone; but may be interbedded with calcareous siltstone and conglomerates.

Similar Soil Series:

Na Chaleang series: does not have a reddish sandy A horizon, contains many gravel sized rock fragments in the argillic horizon which overlies a calcareous clay 2C horizon.

Principal Associated Soils:

These include Lom Kao and Na Chaleang series occupying slightly lower positions on the low terrace.

ANALYSIS RESULTS

(oven dry basis)

Profile code no.: NC-47/93

Soil series: Wichian Buri (Wb)

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			
Pa-761	0-8	A1	88.0	8.0	4.0						s	ls	6.0	5.2	0.3	1.8	30
Pa-762	8-15	A2	87.0	9.0	4.0						ls	ls	5.7	4.3	0.0	1.2	16
Pa-763	15-25	A3	87.0	9.0	4.0						ls	ls	5.7	4.3	0.0	1.2	16
Pa-764	25-37	A4	86.0	5.0	9.0						ls	ls	6.2	4.1	0.0	1.2	16
Pa-765	37-57	2Bt1	68.0	5.0	27.0						scl	scl	5.8	3.8	0.3	1.2	51
Pa-766	57-90	2Bt2	56.0	5.0	39.0						sc	sc	5.5	3.9	1.0	1.3	94
Pa-767	90-113	2BC	53.0	15.0	32.0						scl	scl	7.1	6.1	1.0	2.0	91
Pa-768	113+	2C	68.0	21.0	11.0						scl	scl	8.6	6.5	3.4	21.3	57

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)			
0-8	0.9	0.50		2.30	0.20	0.10	0.20	2.80	1.60	4.40	3.9	97.5	72	64			0.04
8-15	1.4	0.22		0.40	0.10	0.10	0.20	0.80	1.90	2.70	2.7	67.5	30	30			0.02
15-25	1.4	0.22		0.40	0.10	0.10	0.20	0.80	1.90	2.70	2.7	67.5	30	30			0.02
25-37	1.4	0.22		0.40	0.10	0.04	0.30	0.84	2.50	3.34	3.6	40.0	23	25			0.02
37-57	3.2	0.13		1.80	2.20	0.10	3.70	7.80	8.30	16.10	14.2	52.6	55	48			0.02
57-90	4.0	0.31		6.60	1.70	0.30	8.90	17.50	6.60	24.10	21.9	56.2	80	73			0.02
90-113	4.3	0.10		12.00	3.40	0.20	11.80	27.40	2.70	30.10	29.0	90.6	94	91			0.05
113+	4.1	0.12		24.60	3.00	0.10	12.10	39.80	2.00	41.80	25.3	230.0	100	95			0.17

Surveyor: V. Thunduan and D. Muklai

Date: 21 May, 1970