Proposed by: C. Changprai, 1973
Revised by:
1. N. Chorphaka, 1988
2. P. Wiwatwongwana, 2004

WANG SAPHUNG SERIES **Field Symbol: Ws**

Distribution: Occupies moderate extent in the areas of Central Highlands and Northeast Thailand, especially in Loei and the Western part of Changwat Udon.

Setting: Wang Saphung soils are developed from residuum and/or colluvium of shale (sandy shale) and phyllite and occur on (dissected) erosion surface. Relief is undulating to rolling with slope ranging from 2 to 8 percent. Elevations from 280 to 380 m above sea level. The climate is Tropical Savanna (Koppen 'Aw'). Average annual precipitation is 1,100 to 1,400 mm. Mean annual air temperature is 27 ^{o}C.

Drainage, Permeability and Runoff: Well drained. Runoff is medium and permeability is estimated to be moderate.

Vegetation and Land Use: Mainly covered by Mixed Deciduous Forest. Parts have been cleared to upland crop cultivation.

Characteristic Profile Features: Wang Saphung series is a member of the fine, mixed, active, isohyperthermic Typic Haplustalfs. They are moderately deep soil and characterized by a dark brown or very dark grayish brown loam or clay loam A horizon overlying a brown, reddish brown or yellowish red clay loam or clay (gravelly) argillic B horizon which in turn overlies a paler gravelly clay or clay loam C horizon. Mottles due to the saprolite of parent rock occur in the lower B and C horizon with colors of yellowish brown. red, brownish yellow. Reaction is medium acid to slightly acid at the surface and very strongly acid to strongly acid in the subsoil. Lithic or paralithic contacts occur within 1 m.

Typifying Pedon: Profile code no. is NE-N-26/31 (moist colors unless otherwise stated).

Location: About 2 km south-east of Ban Nam Om, on right side of Loei-Khon Kaen road, Amphoe Wang Saphung Changwat Loei.

Sheet Name: Amphoe Wang Saphung **Sheet No.:** 5343 I
Coordinate: - **Elevation:** -
Relief: gently undulating **Slope:** 2-3 %
Physiography: erosion surfaces
Parent material: residuum and/or colluvium derived from shale and phyllite
Drainage: well drained **Permeability:** moderate
Runoff: moderate **Ground water depth:** >1 m
Flooding depth: - **Duration:** - **Frequency:** -
Annual rainfall: 1,124.4 mm **Mean temp.:** 27.3 ^{o}C **Climate type:** Tropical Savannah (Aw)
Natural vegetation or land use: upland crops; corn
Described by: Chaleao Changprai **Date:** 18 July, 1973
Revised by: Phusit Wiwatwongwana **Date:** 28 May, 2004

Horizon	Depth (cm)	Description
Ap	0-12	Dark brown (7.5YR3/2) loam; moderate medium and coarse subangular blocky structure; firm, sticky, plastic; few fine and medium interstitial pores, few fine tubular pores; common fine and medium charcoal pieces; slightly acid (field pH 6.5); clear, smooth boundary.
Bt1	12-33	Brown to reddish brown (7.5YR-5YR4/4) loam; moderate medium and coarse subangular blocky structure; firm, sticky, plastic; common fine and few medium interstitial pores, common fine tubular pores; thin broken clay coatings on ped faces and moderately thick continuous clay coatings in

		pores; few large termite holes; few fine and medium roots; common fine and few medium subrounded iron nodules; strongly acid (field pH 5.5); gradual, smooth boundary.
Bt2	33-55	Dark yellowish brown (10YR3/4) clay with many fine faint strong brown mottles; mottles; moderate medium and coarse subangular blocky structure; firm, sticky, plastic; common fine interstitial pores, few fine tubular pores; thin broken clay coatings on ped faces, moderately thick continuous clay coatings in pores; few fine, medium and coarse roots; few fine and medium subrounded iron nodules; strongly acid (field pH 5.5); clear, smooth boundary.
BC	55-80	Dark brown to brown (10YR4/3) very gravelly clay with many medium distinct strong brown and red mottles; weak coarse subangular blocky and massive; firm, sticky, plastic; many fine and medium interstitial pores; coarse fraction consists of pseudo-laterite; derived from shale and phyllite and subrounded phyllite, shale and quartz fragments; slightly acid (field pH 6.5).

Type Location:

The Wang Saphung series was named for Amphoe Wang Saphung in which soils of this series were first described at road cut near the pit of typifying pedon mentioned as above.

Range of Profile Feature:

The A horizon is 10 to 20 cm thick and has 7.5YR or 10YR hues, values and chromas of 2 to 4. Texture of silt loam or silty clay loam may occur in places. Structure is moderate medium to coarse blocky and fine to medium granular. Field pH values range from 6.0 to 7.0.

The B horizon has 7.5YR or 5YR hues, values of 4 or 3 and chromas of 3 to 6. Texture of gravelly clay or gravelly clay loam may occur. Structure is moderate medium to coarse blocky. Field pH values range from 5.0 to 6.0.

The C horizon is mottled and has 5YR, 7.5YR, or 10YR hues, values of 3 or 4 and chromas of 3 to 8 and contains gravels derived from parent rock. Structure is weak blocky to massive. Field pH values range from 4.5 to 6.5.

Similar Soil Series:

Chiang Khan series (Ch): has redder color in the B horizon and contains laterite gravels or pseudo-laterite derived from shale.

Muak Lek series (Ml): contains fresh shale fragments within 50 cm.

Principal Associated Soils:

These include Muak Lek, Wang Hai, Chiang Khan and Phon Ngam series.

ANALYSIS RESULTS

(oven dry basis)

Profile code no.: NE-N-26/31

Soil series: Wang Saphung (Ws)

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			
Pd-1605	0-12	Ap	39.5	36.0	24.5						l	l	5.9	5.1	1.5	7.0	149
Pd-1606	12-33	Bt1	32.0	31.0	37.0						cl	l	4.9	3.7	1.5	2.8	99
Pd-1607	33-55	Bt2	28.0	24.5	47.5						c	c	5.3	4.3	2.1	3.4	123
Pd-1608	55-80	BC	29.5	18.0	52.5						c	vgc	6.3	5.4	2.1	4.4	129

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)			
0-12	1.7	3.49		11.60	4.10	0.40	0.20	16.30	6.40	22.70	19.3	78.8	84	72			0.51
12-33	2.3	1.57		11.00	3.10	0.30	0.30	14.70	11.40	26.10	22.6	61.1	65	56			0.22
33-55	3.2	2.40		18.30	3.10	0.30	0.30	22.00	6.20	28.20	28.2	59.4	78	78			0.27
55-80	4.0	2.36		19.00	2.70	0.30	0.30	22.30	4.50	26.80	26.9	51.2	83	83			0.22

Surveyor: Chaleao Changprai

Date: 18 July, 1973