

Proposed by: F.R. Moormann et.al-1961  
Revised by: 1. P. Hemsrichart, 1988  
B. Boonsompophan,  
2. A. Suchinai, 2004

## UBON SERIES

**Field Symbol: Ub**

**Distribution:** Occupies moderate extent in Northeast Thailand.

**Setting:** Ubon soils are formed from wash deposit and occur on the lower parts of peneplain. Relief is level to nearly level which slopes are 2 percent or less. Elevation is from 150 to 180 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Average annual precipitation is from 1,100 to 1,500 mm. Average annual air temperature varies from 26 to 28°C.

**Drainage, Permeability and Runoff:** Naturally somewhat excessively drained or well drained but their drainage class are altered to moderately well drained or somewhat poorly drained at the present condition due to soils be used for submerged paddy rice cultivation. They, therefore, are flooded by impounded rainwater up to 20 cm deep for 2 to 3 months, but out badly in the dry season when the ground water level drops to 3 meters or more below the surface. Permeability is rapid. Surface runoff is slow.

**Vegetation and Land Use:** Mainly used for transplanted rice. Small shrubs occupy abandoned areas.

**Characteristic Profile Features:** The Ubon series is a member of loamy, siliceous, semiactive, isohyperthermic, Aquic Grossarenic Halpustalfs. They are very deep sandy soils and are characterized by a dark brown, brown or grayish brown loamy sand A horizon overlying a pinkish, light brown or light reddish brown loamy sand horizon, at least more than 100 cm deep and then in turn overlies a light gray or gray sandy loam or sandy clay loam Bt horizon. Mottles of strong brown or reddish yellow and/or yellowish brown color normally occur throughout the profile. Reaction is medium to slightly acid.

**Typifying Pedon:** A profile taken from Amphoe Mueang, Changwat Ubon Ratchathani. Topographic map No. 6039-IV, Coordinate 018074: Profile code no. is NE-N-33/34 (moist color unless otherwise stated).

**Typifying Pedon:** Profile code no.: NE-N-33/34

**Location:** Ban Sa Hong, Tambon Kham Phang, Amphoe Kaset Wisai Changwat Roi Et.

**Sheet Name:** Amphoe Kaset Wisai

**Sheet No.:** 5740 III

**Coordinate:** 399166

**Elevation:** 130 cm

**Relief:** level

**Slope:** <1%

**Physiography:** lower part of peneplain

**Parent material:** washed deposits

**Drainage:** moderately well drained

**Permeability:** rapid

**Runoff:** slow

**Ground water depth:** >180 cm

**Flooding depth:** 20 cm

**Duration:** 2-3 month

**Frequency:** -

**Annual rainfall:** 1,415 mm

**Mean temp:** 26.7 °C

**Climate type:** Tropical Savannah

**Natural vegetation and/or land use:** paddy field

**Other:**

**Described by:** Udom Thongdee

**Date:** 14 April, 1981

**Revised by:**

Horizon	Depth (cm)	Description
Ap	0-18	Dark brown to brown (7.5YR4/2) loamy sandy; weak medium subangular blocky structure breaking to single grain; very friable, nonsticky, nonplastic; common very fine interstitial pores; many very fine and fine roots; slightly acid (field pH 6.5); clear, smooth boundary.

BA1	18-56	Light reddish brown (5YR6/4) loamy sand; few fine distinct strong brown (7.5YR5/6) mottles; very weak coarse subangular blocky structure breaking to single grain; very friable, nonsticky, nonplastic; very fine interstitial pores; few very fine and fine roots; slightly acid (field pH 6.5); gradual, slightly wavy boundary.
BA2	56-94	Light reddish brown (5YR6/4) loamy sand; common medium distinct strong brown (7.5YR5/6) and common fine distinct pinkish gray (7.5YR6/2) mottle; very weak coarse subangular blocky structure breaking to single grain; very friable; nonsticky, nonplastic; few very fine interstitial pores; slightly acid (field pH 6.5); abrupt, smooth boundary.
Bt1	94-120	Pink (5YR7/3) loamy sand; common fine distinct pinkish gray (7.5YR6/2) mottles; moderate medium and coarse subangular blocky structure; friable; nonsticky, nonplastic; few very fine interstitial pores; slightly acid (field pH 6.5); gradual, wavy boundary.
Bt2	120-164	Pinkish gray (5YR7/2) sandy loam; common medium distinct strong brown (7.5YR5/6) mottles; moderate medium and coarse subangular blocky structure; nonsticky, nonplastic; few very fine interstitial pores; slightly acid (field pH 6.5); gradual, wavy boundary.
Bt3	164-200	Light gray (5YR7/1) and pinkish gray (5YR7/2) sandy loam; many coarse distinct strong brown (7.5YR5/8) and many coarse prominent red (10R4/8) mottles; strong medium and coarse subangular blocky structure; firm, slightly sticky, slightly plastic; few fine interstitial pores; slightly acid (field pH 6.5).

**Type Location:** The Ubon series was named for Changwat Ubon Ratchathani, in which soils of this series were first described.

**Range of Profile Feature:**

The thickness of the A horizon is variable, but of the Ap horizon is from 10 to 30 cm. The colors of the A horizon is 10YR or 7.5YR hues; values of 4 to 7 and chromas of 2 to 4. Structure is single grain and/or weak blocky. Field pH value is from 5.5 to 6.5.

The subsurface horizon has 5YR or 7.5YR hues; values of 5 to 7 and chromas of 2 to 4. Structure is weak medium and coarse blocky breaking to single grain. Field pH values is from 5.5 to 6.5.

The upper B horizon has 5YR or 7.5YR hues, values of 6 to 8 and chromas of 3 to 4. The lower B horizon has similar hues and values as above, chromas of 1 to 3. Structure of the B horizon is moderate and/or strong medium and coarse blocky. Field pH values vary from 5.5 to 6.5.

**Similar Soil Series:**

Roi Et series (Re): has finer texture and argillic B horizon.

Nam Phong series (Ng): has a similar textural profile but is a Grossarenic Haplustalfs. Its drainage class is somewhat excessively drained to well drained

**Principal Associated Soils:** These include Roi Et, Nam Phong and Khorat and Dan Khun Thot.

**Remark:** Some of Ubon Soils may be classified as Aquic Grossarenic Paleustalfs or Aquic Arenic Paleustalfs.

**ANALYSIS RESULTS      Profile code no.:NE-N-33/34**  
**(oven dry basis)              Soil series : Ubon (Ub)**

Lab No.	Depth (cm)	Horizon	Particle size distribution analysis (% by weight)								Texture		pH		CaCO <sub>3</sub> %	P, mg kg <sup>-1</sup> Bray 2	K, mg kg <sup>-1</sup> NH <sub>4</sub> OAc
			USDA grading			Sand-fraction grading					Lab	Field	1:1	1:1			
			sand	silt	clay	vc	c	m	f	vf	result	estim <sup>1</sup>	water	KCl			
	0-18	Ap	81.0	18.0	1.0						ls	ls	4.1	3.8		1.6	11
	18-56	BA1	86.6	10.4	3.0						ls	ls	4.8	4.1		1.1	11
	56-94	BA2	81.9	17.6	0.5						ls	ls	6.1	5.4		0.6	12
	94-120	Bt1	79.9	16.1	4.0						ls	sl	5.6	4.0		1.2	10
	120-164	Bt2	76.8	16.6	6.6						sl-ls	sl	5.3	3.9		1.8	7
	164-200	Bt3	65.4	18.9	15.7						sl	scl	5.6	4.1		1.0	14

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol <sub>(+)</sub> kg <sup>-1</sup> )										Base satur <sup>n</sup> (%)		ECEC cmol <sub>(+)</sub> kg <sup>-1</sup> (B+D)	Al KCl extr. cmol <sub>(+)</sub> kg <sup>-1</sup> (D)	Electrical conduct <sup>y</sup> (ECx10 <sup>6</sup> ) dS m <sup>-1</sup>
				Ca		Mg	K	Na	SUM cations (B)	Extr. acidity (A)	SUM (B+A)	CEC NH <sub>4</sub> OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/(B+A)			
0-18	0.8	0.34		0.40	0.10	0.02	0.30	0.82	1.70	2.52	1.40	140.0	59	33			0.25	
18-56	0.9	0.06		0.30	0.04	0.02	0.20	0.56	0.20	0.76	0.30	10.0	100	74			0.09	
56-94	1.9	0.02		0.30	0.10	0.01	0.20	0.61	0.40	1.01	0.30	60.0	100	60			0.07	
94-120	1.4	0.04		0.50	0.10	0.02	0.50	1.12	0.40	1.52	1.00	25.0	100	74			0.06	
120-164	2.3	0.06		0.60	0.10	0.03	0.40	1.13	0.60	1.73	1.00	15.2	100	65			0.08	
164-200	2.9	0.14		0.80	0.20	0.02	0.50	1.52	1.70	3.22	1.70	10.8	89	47			0.06	