

Proposed by: R.L. Pendleton, 1929
Revised by: 1. P. Hemsrichart, 1988
 B. Boonsompopphan,
 2. A. suchinai, 2004

KHORAT SERIES

Field Symbol: Kt

Distribution: Occupies moderate extent in Northeast Plateau.

Setting: The Khorat soils are formed from washed deposit of sandstone and occur on middle part of Peneplain. Relief is gently undulating which slopes range from 2 to 6 percent. Elevation ranges from 150 to 240 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Average annual precipitation varies from 1,100 to 1,400 mm. Mean air temperature varies from 26 to 28°C.

Drainage, Permeability and Runoff: Moderately well drained soils. Permeability is moderate. Runoff is rapid.

Vegetation and Land Use: Originally dry dipterocarp forest and mixed deciduous forest. Parts are cleared for upland crops such as kenaf, water melon, corn, cotton, beans, castor bean, cassava, etc. and settlement areas.

Characteristic Profile Features: The Khorat series is a member of the fine-loamy, siliceous, isohyperthermic Typic (Oxyaquic) Kandiuults. They are deep soils and are characterized by a dark brown or brown sandy loam or loamy sand A horizon overlying a brown, yellowish brown or light yellowish brown sandy clay loam kandic B horizon. Colors of pinkish gray, light gray or light brownish gray also occur in the lower B horizon. Common strong brown and/or reddish yellow mottles occur in the lower B horizon usually below 50 cm of the soil surface. Reaction is very strongly acid to strongly acid throughout the profile.

Typifying Pedon: Profile code no. is NE-S-23/44. (moist colors unless otherwise stated).

Location: at the right side of the road from Ban Rung to Ban Don Ao, Tambon Rung, Amphoe Kantharalak Changwat Si Sa Ket.

Sheet Name:

Sheet No.: 5938 III

Coordinate: 596066

Elevation: 150-240 m

Relief: gently undulating to undulating

Slope: 2-6%

Physiography: middle part of peneplain

Parent material: washed deposit from sandstone

Drainage: moderately well drained

Permeability: moderate

Runoff: rapid

Ground water depth: >2.0 m

Flooding depth:

Duration: -

Frequency: -

Annual rainfall: 1,100-1,400 mm

Mean temp: 26-28 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: upland crops

Described by: R.L. Pendleton

Date: 1929

Horizon	Depth (cm)	Description
Ap	0-19	Dark brown (10YR 3/3) sandy loam; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky, slightly plastic; many pieces of charcoal; few termite holes; many coarse few medium and fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.
Bt1	19-61	Brown (10YR 5/3) sandy clay loam; moderate medium and coarse subangular blocky structure; hard, friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces; few termite holes; few very fine and fine roots; very strongly acid (field pH 5.0); gradual, smooth boundary.

Bt2	61-87	Yellowish brown (10YR 5/4) sandy clay loam; moderate medium and coarse subangular blocky structure; friable, slightly sticky, plastic; patchy thin clay coating on pedfaces; some termite holes; few very fine roots; strongly acid (field pH 5.5); gradual boundary.
Bt3	87-120	Yellowish brown (10YR 5/4) sandy clay loam; common fine distinct strong brown (7.5YR 5/6) and few fine light brownish gray (10YR 6/2) mottles; weak fine to medium subangular blocky structure; friable, slightly sticky, plastic; broken moderately thick clay coating on ped faces and in pores; few medium and very fine roots; strongly acid (field pH 5.5); diffuse, smooth boundary.
Btg	120-150	Pinkish gray (7.5YR 6/2) sandy clay loam; common fine and medium distinct strong brown (7.5YR 5/6) and common fine prominent red (2.5YR 4/6) mottles; weak fine and medium subangular blocky structure; friable, slightly sticky, plastic; broken moderately thick clay coating on ped faces; few rotten roots and few coarse roots; strongly acid (field pH 5.5).

Type Location: The Khorat series was named for Khorat Province, the former name of Changwat Nakhon Ratchasima at the present time, in which soils of this series were first described.

Range of Profile Features:

The thickness of an A or Ap horizon varies from 10 to 30 cm and has 10YR or 7.5YR hues, values of 3 to 5 and chromas of 2 to 4. Structure is weak to moderate fine and medium blocky. The pH values vary from 5.5 to 6.5.

The B horizon has 7.5YR or 10YR hues, values of 4 to 6 and chromas of 3 to 4. Structure is weak to moderate medium and/or coarse blocky. Few to common iron-manganese concretions may occur in the subsoil. The pH values range from 4.5 to 5.5. But usually must be less than 5.5.

Similar Soil Series:

Satuek series (Suk): similar in profile, but has yellower color with chroma more than 4 in the same hues.

Huai Thalaeng series (Ht): similar in profile but well drained soils and is coarse-loamy family.

Principal Associated Soils: These include Warin, Satuek, Huai Thalaeng, Chakkarat and Roi Et series. These soils occur on the higher position whereas Roi Et soils occupy on the lower ones.

Remark: Some of Khorat soils do not show evidence of clay translocation. In that case, they are classified as Ustoxic Dystropepts.

ANALYSIS RESULTS Profile code no.:NE-S-23/44
(oven dry basis) Soil series : Khorat (Kt)

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 ₄ OAc
			USDA grading			Sand-fraction grading						Lab	Field	1:1	1:1			
			sand	silt	clay	vc	c	m	f	vf	result	estim ¹	water	KCl				
	0-19	Ap	64.6	18.4	17.0	0.1	1.1	10.4	11.0	42.0	sl	sl	5.0	3.9		4.7	22	
	19-61	Bt1	57.0	15.1	27.9	0.0	0.8	12.6	30.5	13.1	scl	scl	4.5	3.6		5.9	7	
	61-87	Bt2	53.6	18.0	28.4	0.0	0.5	7.7	3.6	41.8	scl	scl	4.8	3.7		3.3	10	
	87-120	Bt3	54.0	16.6	29.4	0.2	1.0	10.3	25.5	17.0	scl	scl	5.0	3.7		3.0	10	
	120-150	Btg	53.2	16.9	29.9	0.1	1.0	8.5	7.0	36.6	scl	scl	4.8	3.6		5.2	13	

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol _(c) kg ⁻¹)										Base satur ⁿ (%)		ECEC cmol _(c) kg ⁻¹ (B+D)	Al KCl extr. cmol _(c) 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 ₄ OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/(B+A)			
0-19	0.3	0.53		1.30	0.50	0.03	0.20	2.03	4.40	6.43	3.30	19.4	62	32			0.08	
19-61	0.5	0.19		0.80	0.50	0.04	0.20	1.54	5.30	6.84	3.40	12.2	45	23			0.05	
61-87	0.6	0.17		1.10	0.40	0.03	0.20	1.73	4.80	6.53	3.60	12.7	48	26			0.03	
87-120	0.7	0.12		0.70	0.30	0.04	0.20	1.24	5.30	6.54	3.50	11.9	35	19			0.02	
120-150	0.5	0.12		0.50	0.40	0.03	0.20	1.13	5.50	6.63	3.50	11.7	32	17			0.02	