

CHAKKARAT SERIES

Field Symbol :Ckr

Distribution: Occupy on moderate extent of Northeast Plateau

Setting: The Chakkarat 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 medium.

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 Chakkarat series is a member of the coarse-loamy, mixed subactive isohyperthermic Typic (Oxyaquic) Paleustults. They are deep soils and are characterized by a brown or dark brown sandy loam or loamy sand. A horizon overlying a brown or yellowish brown or light yellowish brown sandy loam argillic B horizon. Common medium strong brown or medium to coarse reddish yellow mottles occur in the deeper Bt horizon usually below 50 cm depth. Reaction is very strongly acid to very strongly acid.

Tyifying pedon : Profile code no.: NE-N-29/70

Location: Huai Bang Sai project; Ban Nong Khan, Tambon Nong Khan, Amphoe Dong Luang Changwat Mukdahan.

Sheet Name: -

Sheet No.: -

Coordinate: -

Elevation: -

Relief: gently undulating

Slope: 3-5%

Physiography: middle part of peneplain

Parent material: washed deposit from sandstone

Drainage: moderately well drained

Permeability: moderate

Runoff: medium

Ground water depth: >2.0 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: -

Mean temp: -

Climate type: Tropical Savannah

Natural vegetation and/or land use: low open dipterocarp forest

Described by: M. Nualchareon

Date: February 1981

Revised by:

Horizon	Depth (cm)	Description
A	0-14	Dark grayish brown (10YR4/2) loamy sand; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; common very fine and fine roots; medium acid (field pH 6.0); clear, smooth boundary.
BA	14-24	Brown (10YR5/3) sandy loam; moderate fine and medium subangular blocky structure; friable, nonsticky, nonplastic; common very fine and fine roots; strongly acid (field pH 5.5) clear, smooth boundary.
Bt1	24-52	Yellowish brown (10YR5/4) sandy loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces; common very fine and fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.

Bt2	52-66	Light yellowish brown (10YR6/4) sandy loam; common fine distinct strong brown (7.5YR5/6) mottles; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; broken moderately thick clay coating on ped faces; few fine and medium roots; very strongly acid (field pH 5.0); clear, smooth boundary.
Bt3	66-86	Light brownish gray to light yellowish brown (10YR6/2-4) sandy clay loam; common fine distinct strong brown (7.5YR5/6) mottles; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; broken moderately thick clay coating on ped faces; few fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.
Bt4	86-150	Light yellowish brown (10YR6/4) to light gray (10YR7/2) sandy loam; common fine distinct strong brown (7.5YR5/8) mottles; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; broken moderately thick clay coating on ped faces; few fine roots; very strongly acid (field pH 5.0); clear, smooth boundary.

Type Location: Chakkarat soils were first described at Amphoe Chakkarat Changwat Nakhon Ratchasima

Range of Profile Feature:

the thickness of an A or Ap horizon varies from 10 to 30 cm. It has 10YR or 7.5 YR hues. Values of 3 to 5 and chromas of 2 to 4. Structure is weak to moderate fine to medium blocky. Field pH value is from 5.5 to 6.5

The B horizon has 10YR or 7.5YR hues, values of 4 to 6 and chromas of 3 to 4 in the upper part. The lower B horizon has similar hues. Values of 5 to 7 and chroma of 2 to 4. The chroma 2 is found below the depth of 75 cm from the soil surface. Structure of the B horizon is moderate fine to medium blocky. Few to common ironstone nodules may occur in subsoil. Field pH values range from 4.5 to 5.5.

Similar Soil Series:

Huai Thalaeng series (Ht): is similar profile. But it is a well drained soils.

Khorat series (Kt): similar profile but is fine loamy particle size class.

Principal Associated Soils: This include Khorat, Huai Thalaeng, Satuek, Warin series occur on the same physiography whereas Roi-et series occupy on the lower ones.

ANALYSIS RESULTS **Profile code no.:NE-N-29/70**
(oven dry basis) **Soil series : Chakkarat (Ckr)**

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				
	0-14	A	74.7	21.7	3.6	0.5	4.8	17.8	33.5	18.1	ls	ls	5.0	4.6		4.4	56	
	14-24	BA	67.7	20.7	11.6	0.4	4.3	15.0	29.7	18.3	sl	ls	4.7	3.9		2.9	60	
	24/52	B11	66.3	23.1	10.6	1.0	4.7	15.9	29.2	15.3	sl	sl	4.5	3.6		1.9	16	
	52-66	B12	65.0	19.8	15.2	1.0	6.7	17.3	26.1	13.9	sl	sl	4.5	3.6		1.5	12	
	66-86	B13	65.1	22.1	12.8	1.1	4.7	14.9	27.8	16.6	sl	scl	4.5	3.6		1.0	16	
	86/150	B14	66.1	21.4	12.5	0.9	4.6	16.1	27.9	16.6	sl	sl	4.7	3.6		1.1	15	

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol ₍₊₎ kg ⁻¹)										Base satur ¹ (%)		ECEC cmol ₍₊₎ kg ⁻¹ (B+D)	Al KCl extr. cmol ₍₊₎ kg ⁻¹ (D)	Electrical conduct ¹ (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)				
				0-14	0.9	1.78		2.70	0.80	0.10	0.20	3.80	4.70	8.50	4.80			
14-24	0.8	0.61		0.60	0.30	0.05	0.20	1.15	4.50	5.65	2.70	23.3	43	20			0.08	
24/52	0.7	0.36		0.30	0.20	0.03	0.20	0.73	4.00	4.73	2.50	23.6	29	15			0.04	
52-66	0.5	0.26		0.20	0.30	0.03	0.20	0.73	4.10	4.83	3.00	19.7	24	15			0.03	
66-86	2.8	0.26		0.20	0.20	0.03	0.20	0.63	3.90	4.53	2.70	21.1	23	14			0.02	
86/150	1.1	0.16		0.30	0.30	0.03	0.20	0.83	3.60	4.43	3.20	25.6	26	19			0.02	