

Proposed by: W. Van der Kevie, 1966
Revised by:
1. S. Kunaporn, 1987
2. S. Udomsri, 2004

CHONG KHAE SERIES

Field Symbol: Ck

Distribution: Occupies small along the borders of the Central Plain with limestone nearby

Setting: Chong Khae soils are formed from alluvium which high in montmorillonitic clays. They occur on alluvial plain or along the boundary between terraces and the recent alluvial plain which have limestone nearby. Relief is flat; but 'gilgai' microrelief occurs where the soils are not cultivated. Slope is about 0-2 %. Elevation is from 10-20 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Mean annual precipitation is about 1,200 mm. Mean annual temperature is 27° C.

Drainage and Permeability and Surface Runoff: Poorly drained. Runoff and permeability are slow. These soils are flooded by impounded rainwater or river to depths of 30-40 cm for three to four months during the wet season. Sometimes this area flooded by irrigation. However, these soils also dry out deeply with groundwater level falling below 2 m during the peak of the dry season when deep wide cracks usually occur.

Vegetation and Land Use: Mainly used for broadcast rice cultivation.

Characteristic Profile Features: Chong Khae series is a member of the Very-fine, smectitic, isohyperthermic (Aeric Chromic) Ustic Endoaquerts. They are very deep, strongly to medium acid soils and are characterized by a dark gray or dark grayish brown clay A horizon, overlying a grayish brown, light brownish gray or gray clay B horizon. Distinct, very fine reddish mottles occur throughout the profile. Many pressure faces and slickensides occur in the B horizon and cracks at least 1 cm or more wide at 50 cm depth from the soil surface occur during the dry season.

Typifying Pedon: Profile code number is Code C-3/8

Location: 2 km east of Khao Ti Hin, Ban Sa Kra Buang, Tambon Chong Khae, Amphoe Mueang Changwat Lop Buri.

Sheet Name: Changwat Lop Buri

Sheet No.: 5138 IV

Coordinate: 648532

Elevation: 13 m (MSL)

Relief: level to nearly level

Slope: %

Physiography: alluvium plain

Parent material: riverine alluvium

Drainage: poorly drained

Permeability: slow

Runoff: slow

Ground water depth: >2 m

Flooding depth: - cm

Duration: rainy season

Frequency: every year

Annual rainfall: 1,211.9 mm

Mean temp: 28.1 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: paddy field

Other: wide cracks and gilgai relief on soils

Described by: Van der Kevie

Date: 14 April, 1966

Revised by: S. Udomsri

Horizon	Depth (cm)	Description
Apg	0-21	Dark gray (10YR4/1) clay (with some reddish coarse sand grains); many fine and medium distinct strong brown (7.5YR5/8) mottles; strong fine and medium granular in upper 2 cm, weak medium blocky and granular below; very hard, many roots; strongly acid (field pH 5.5) clear, smooth boundary.
Bg	21-46	Grayish brown (10YR5/2) clay (with a few sand grains); many fine prominent red (10R4/6), few fine prominent yellowish red (5YR5/8) mottles; moderate fine and very fine angular blocky structure; very

sticky, very plastic; common pressure faces on ped faces; few roots; strongly acid (field pH 5.5) gradual, smooth boundary.

Bssg 46-100⁺ Grayish brown (10YR5/2) clay (with few sand grains); many fine and medium prominent red (10R4/6) mottles; moderate very fine and fine angular blocky structure; very sticky, very plastic; many pressure faces on peds and large slickensides increasing with depth; few roots; moderately acid (field pH 6.0).

Type Location: Name of Tambon, Tambon Chong Khae, Amphoe Mueang Changwat Lop Buri.

Range of Profile Features:

The A horizon is from 10 to 30 cm thick, has 10YR hue, values of 4 and chromas of 1 or 2. Structure is weak medium blocky and strong fine and medium granular on the upper part of the horizons. Field pH values range from 5.0 to 6.0.

The subsoil B horizon, has 10YR hue, values of 5 or 6 and chromas of 2 or 1. Distinct red mottles appear along this horizons. Structure is moderate fine and medium blocky and field pH values range from 5.0 to 6.0.

Similar Soil Series:

Ban Mi series (Bm): has higher pH values and without reddish mottles.

Watthana series (Wa): has basalt derived, higher pH values, a very dark gray or black surface and without red mottles.

Khok Krathiam series (Kk): has lower values and chromas and without red mottles.

Lop Buri series (Lb): well drained soils and without red mottles.

Principal Associated Soils: These include Ban Mi, Khok Krathiam and Lop Buri series. Ban Mi and Lop Buri occupy similar or slightly higher positions on terrace, while Khok Krathiam series occur on the lower plain.

ANALYSIS RESULTS

Profile code No. C-3/8

(oven dry basis)

Soil series : Chong Khae (Ck)

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			
AO5931	0-21	Apg	8.2	24.5	67.3						c	c	5.6	4.1		30.0	
AO5932	21-46	Bg	5.7	19.2	75.1						c	c	5.6	4.1		tr	
AO5933	46-100	Bssg	6.2	22.0	71.8						c	c	5.6	4.2		10.0	

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 ₄ OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/(B+A)				
0-21		0.77	0.10	17.50	3.80	0.10	0.00	21.40			34.60	51.4	62					
21-46		0.41	0.06	19.70	3.50	0.10	0.00	23.30			36.90	49.1	63					
46-100		0.34	0.03	21.60	3.80	0.20	0.10	25.70			38.00	52.9	68					