

Proposed by W. Van der Kevie, 1971
Revised by:
1. C. Changprai, 1987
2. S. Udomsri, 2004

KHAO YOI SERIES

Field Symbol: Kyo

Distribution: Occupies moderate extent in the southwest Central Plain.

Setting: Khao Yoi soils are formed from alluvium and occur on low terrace or alluvial fan. Relief is flat to nearly flat with a micro-relief caused by the presence of abundant termite mounds. Slopes are about 1%. Elevation ranges from 8-20 m above sea level. Mean annual precipitation ranges from 900 to 1,400 mm. The climate is Tropical Savannah (Köppen 'Aw'). Mean annual temperature is 27°C.

Drainage and Permeability and Surface Runoff: Somewhat poorly drained to poorly drained. Permeability and runoff are slow. These soils are flooded by impounded rainwater or river for approximately four months to depths of up to 30 cm during the rainy season. Sometimes this area flooded by irrigation. Groundwater level falls below 2 m from the soil surface during the peak of the dry season.

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

Characteristic Profile Features: Khao Yoi series is a member of the Fine-loamy, mixed, semiactive, isohyperthermic Aeric Endoaqualfs. They are deep, medium to slightly acid soils. They are characterized by a light brownish gray, light brown or light reddish brown loam or sandy loam A horizon, overlying a light brownish gray, pinkish gray or light reddish brown sandy clay loam or clay loam with discernable sand argillic B horizon. These soils are mottled throughout with strong brown and yellowish red coatings in pores in the A horizon, and brown, strong brown and yellowish red mottles in the B horizon. Frequent, soft and hard iron/manganese nodules occur in the deeper subsoil.

Typifying Pedon: Profile code number is Code SW-52/92

Location: 1.1 km west of Wat Nang Kaeo, Ban Nang Kaeo, Amphoe Photaram Changwat Ratchaburi.

Sheet Name: Changwat Ratchaburi

Sheet No.: 4936 II

Coordinate: 818125

Elevation: 10m (MSL)

Relief: nearly level

Slope: 1%

Physiography: low terrace

Parent material: alluvium

Drainage: somewhat poorly drained to poorly drained

Permeability: moderate

Runoff: slow

Ground water depth: >2 m

Flooding depth: 20-30 cm

Duration: 3-4 month

Frequency: every year

Annual rainfall: 1,051.8 mm

Mean temp: 27.9 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: paddy field

Other:

Described by: Suthat Sinchai

Date: 10 June, 1981

Revised by: S. Udomsri

Horizon	Depth (cm)	Description
Apg	0-13	Pinkish gray (7.5YR6/2) sandy loam; many fine distinct strong brown mottles; weak medium and coarse subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many very fine and fine roots; moderately acid (field pH 6.0); clear, smooth boundary.
Bg	13-27/39	Pinkish gray (7.5YR6/2) sandy clay loam; common fine distinct brown mottles; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; very few small soft Fe&Mn nodules; few earthworms; common very fine roots; slightly acid (field pH 6.5); clear, wavy boundary.

Btg1	27/39-58	Pinkish gray (7.5YR6/2) sandy clay loam; common fine and medium distinct strong brown mottles; moderate medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coatings on ped faces; very few small hard iron concretions; thin layer (8 cm thick) of small hard iron concretions at lower part of this horizon; few earthworms; few very fine roots; slightly acid (field pH 6.5); clear, smooth boundary.
Btg2	58-83	Light brown (7.5YR6/4) sandy clay loam; many fine distinct strong brown and few fine prominent red (2.5YR4/8) mottles; moderate medium and coarse subangular blocky structure; friable, sticky, plastic; patchy thin clay coatings on ped faces; very few small hard Fe&Mn concretions; very few very fine roots; slightly acid (field pH 6.5); clear, smooth boundary.
Btg3	83-118	Light brown (7.5YR6/4) sandy clay loam; many fine distinct strong brown mottles; moderate medium and coarse subangular blocky structure; firm, sticky, plastic; patchy clay coatings on ped faces; very few small hard Fe&Mn concretions; slightly acid (field pH 6.5); clear, smooth boundary.
Bcg	118-130/140	Light brown (7.5YR6/4) very gravelly sandy clay loam; many fine distinct strong brown mottles; moderate medium subangular blocky structure; firm, sticky, plastic; many large of irregular Fe&Mn concretions (about 40% by volume) slightly acid (field pH 6.5); clear, wavy boundary.
BCg	130/140-180	Pinkish gray (7.5YR6/2) sandy clay loam; many medium distinct strong brown mottles; moderate medium subangular blocky structure; firm, sticky, plastic; neutral (field pH 7.0).
Cg1	180-280	Pinkish gray (7.5YR6/2) sandy clay; many medium distinct strong brown mottles; few small of soft black Mn nodules (about 10% by volume); neutral (field pH 7.0).
Cg2	280-300	Light gray (10YR7/2) clay with discernable sand fractions; many medium distinct strong brown mottles; neutral (field pH 7.0).

Remark: Below 180 cm depth described by auger hole.

Type Location: Name of Amphoe, Amphoe Khao Yoi Changwat Phetchaburi.

Range of Profile Features:

The A horizon is from 10 to 30 cm thick, has hues of 10YR or 7.5YR , values of 5 or 6 and chroma of 3. Structure is weak coarse blocky or massive and field pH values range from 6.0 to 7.0.

The B horizon has 10YR or 7.5YR hues, value of 6 and chromas of 2 or 3. Structure is moderate or weak, coarse and medium blocky and field pH values range from 5.5 to 6.5.

Similar Soil Series:

Pak Tho series (Pth): has finer textures, lower pH in the subsoil and contains dominant red mottles.

Doem Bang series (Db): has finer textures, grayer hues, red mottles and plinthite and commonly contains secondary lime nodules in the deeper subsoil.

Nakhon Pathom series (Np): is member of fine family.

Principal Associated Soils: These include Pak Tho series occupying similar positions on the low terrace.

ANALYSIS RESULTS

Profile code No.: SW-52/92

(oven dry basis)

Soil series : Khao Yoi (Kyo)

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			
4/19195	0.13	Apg	21.8	45.9	32.3	0.2	0.7	3.0	10.9	70.0	Cl	sl	5.0	3.8		2.0	59
4/19196	13-27/39	Bg	28.8	47.5	23.7	0.2	1.4	4.3	12.8	10.1	l	scl	6.1	4.1		1.5	43
4/19197	27/39-58	Btg1	30.4	48.4	21.2	1.0	1.5	5.1	13.2	9.6	l	scl	6.0	4.0		1.3	45
4/19198	58-83	Btg2	26.3	42.8	30.9	0.3	1.4	4.3	12.0	8.3	Cl	scl	5.7	3.5		0.8	48
4/19199	83-118	Btg3	34.7	39.8	25.5	0.3	1.7	6.7	16.0	10.0	l	scl	5.8	3.8		0.6	43
4/19200	18-139/170	Bcg	37.7	42.2	20.1	3.7	3.9	6.6	13.9	9.6	l	vg scl	6.2	4.8		0.1	43
4/19201	39/140-180	BCg	33.9	40.9	25.2	2.3	2.2	5.0	12.5	11.9	l	scl	6.3	4.5		0.7	48

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol _(c) kg ⁻¹)										Base satur ¹ (%)		ECEC cmol _(c) kg ⁻¹ (B+D)	Al KCl extr. cmol _(c) kg ⁻¹ (D)	Electrical conduct ² (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	1.4	0.56	0.05	4.00	1.00	0.10	0.50	5.60	4.80	10.40	6.70			
13-27/39	1.7	0.28	0.02	5.20	1.30	0.10	1.00	7.60	4.30	11.90	9.40	39.7	81	64			0.20	
27/39-58	1.5	0.23	0.02	4.10	1.10	0.10	1.40	6.70	4.70	11.40	8.70	41.0	77	59			0.22	
58-83	2.4	0.34	0.03	3.50	1.40	0.10	3.10	8.10	6.40	14.50	11.90	38.5	68	56			0.35	
83-118	1.9	0.16	0.01	3.10	1.50	0.10	5.00	9.70	4.00	13.70	10.30	40.4	94	71			0.50	
18-139/170	1.9	0.08	0.01	2.10	1.50	0.10	7.10	10.80	3.50	14.30	11.00	54.7	98	76			0.35	
39/140-180	2.4	0.10	0.01	2.10	1.90	0.10	9.30	13.40	2.70	16.10	13.20	52.4	100	83			1.20	