

Proposed by F.J. Dent , 1966
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

KHLONG THOM SERIES

Field Symbol: Km

Distribution: Occupies moderate extent in Peninsular Thailand and some areas in Southeast Coast of Thailand.

Setting: Khlong Thom soils derived from sandstone or coarse grain clastic rocks and occurred on denudation surface. Relief is gently undulating to rolling with slope range from 2 to 20 percent. Elevation ranges from 20 to 40 m above mean sea level. The climate is Tropical Monsoon (Koppen 'Am'). Average annual air temperature is 26 °C to 28°C. Average annual precipitation is from 1,800 to 3,000 mm.

Drainage, Permeability and Surface Runoff: Drainage is well drained, permeability is estimated to be moderate and surface runoff is rapid. Ground water level is below 1.5 m throughout the year.

Vegetation and Land Use: Originally under Tropical Evergreen Forest. Most of the areas are cleared for para rubber, oil palm and upland crops.

Characteristic Profile Features: Khlong Thom series is a member of the fine-loamy, kaolinitic, isohyperthermic Typic Kandiodults (soil taxonomy, 2003). They are very deep soils and are characterized by a very dark grayish brown or dark brown sandy loam surface or A or Ap horizon overlying a strong brown, yellowish red or reddish yellow sandy loam AB or BA horizon. Below these horizons is a yellowish red or red sandy clay loam kandic B horizon. There is a gradual increase in clay down the profile and hues become redder with depth. The solum is very strongly to moderately acid, reaction values range from 4.5 to 6.0.

Typifying Pedon: Khlong Thom sandy loam – para rubber and pineapple, Ban Huai Na Chao, Tambon Khian Sa, Amphoe Khian Sa Changwat Surat Thani, 40 m above mean sea level, 3 to 5 percent slopes (sheet number 4837 III, coordinate 205740).

Profile Code Number: S-61/28, described by P. Vijarnsorn and staffs, 11 August 1975 (moist colors unless otherwise stated).

| Horizon | Depth (cm) | Description |
|---------|------------|---|
| Ap | 0-12 | Dark brown to brown (7.5YR4/4) sandy loam; weak fine subangular blocky structure; very friable, nonsticky and nonplastic; abundant fine roots; strongly acid (field pH 5.5); clear smooth boundary. |
| Bw | 12-28 | Yellowish red (5YR4/6) sandy loam; weak to moderate fine subangular blocky structure; friable, slightly sticky and slightly plastic; plentiful medium and few coarse roots; very strongly acid (field pH 5.0); gradual smooth boundary. |
| Bt1 | 28-48 | Yellowish red (5YR5/6) heavy sandy loam; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; common thin cutan on ped faces; few medium and coarse roots; very strongly acid (field pH 5.0); gradual smooth boundary. |
| Bt2 | 48-100 | Yellowish red (5YR5/6) fine sandy clay loam; moderate coarse subangular blocky structure; firm, slightly sticky and plastic; many moderately thick cutan on ped faces; very few medium roots; very strongly acid (field pH 5.0); clear smooth boundary. |
| Bt3 | 100-150 | Red (2.5YR5/8) heavy fine sandy clay loam; moderate coarse subangular blocky structure; firm, sticky and plastic; common thin cutan on ped faces; very strongly acid (field pH 5.0). |

Type Location:

Name of district, Amphoe Khlong Thom, Changwat Krabi.

Range of Profile Features:

The surface or A or Ap horizon (A or Ap) sandy loam, ranges from 10 to 20 cm in thickness and has 10YR or 7.5YR hues, values 3 or 4 and chromas 2 to 4. The structure is weak and moderate fine and medium blocky. Sandy clay loam may occur. Strongly acid to slightly acid, reaction values range from 5.5 to 6.5.

The lower boundary of the B and BA sandy loam, is approximately 40 cm from the soil surface, 5YR and 5YR hues, values 4 or 5 and chromas 4 to 6. Sandy clay loam may occur.

The kandic B horizon sandy clay loam with an average of clay content in the control section ranging from 18 to 35 percent. 5YR and 2.5YR hues, values 4 to 6 and chromas 6 to 8. The structure varies in size from moderate medium and coarse blocky. Mottles and gravels may occur in the C horizon below 1 meter from the soil surface. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Similar Soil Series:

Kho Hong series (Kh): coarse-loamy, kaolinitic, isohyperthermic Typic Kandiudults, 10YR and 7.5YR hues, values 5 to 6 and chromas 6 to 8.

Na Thawi series (Nat): coarse-loamy, kaolinitic, isohyperthermic Typic Kandiudults, 5YR hues, values 4 to 6 and chroma 3 to 8.

Sadao series (Sd): coarse-loamy, kaolinitic, isohyperthermic Typic Kandiudults, 2.5YR and 10R hues, values 3 to 5 and chromas 2 to 4.

Tha Sae series (Te): fine-loamy, kaolinitic, isohyperthermic Typic Kandiudults, brown colors, 10YR and 7.5YR hues, values 5 to 6 and chromas 6 to 8.

Fang Daeng series (Fd): fine-loamy, kaolinitic, isohyperthermic Rhodic Kandiudults, dark red colors, 10R and 2.5YR hues values ≤ 3 .

Principal Associated Soils:

These include Kho Hong, Na Thawi, Fang Daeng, Sadao and Tha Sae series.

ANALYSIS RESULTS

Profile code No.: S-61/28

(oven dry basis)

Soil series: Khlong Thom series (Km)

| 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 water | 1:1 KCl | | | |
| | | | sand | silt | clay | vc | c | m | f | vf | result | estim ⁿ | | | | |
| Pf-991 | 0-12 | Ap | 72.0 | 19.5 | 8.5 | | | | | sl | sl | 4.8 | 3.8 | 0.3 | 1.2 | 24 |
| Pf-992 | 12-28 | Bw | 70.0 | 14.5 | 15.5 | | | | | sl | sl | 4.6 | 3.6 | 0.0 | 1.0 | 10 |
| Pf-993 | 28-48 | Bt1 | 61.0 | 14.5 | 24.5 | | | | | scl | sl | 4.6 | 3.5 | 0.3 | 1.0 | 4 |
| Pf-994 | 48-100 | Bt2 | 58.0 | 15.0 | 27.0 | | | | | scl | f.scl | 4.6 | 3.6 | 0.6 | 1.0 | 4 |
| Pf-995 | 100-150 | Bt3 | 54.0 | 15.0 | 31.0 | | | | | scl | f.scl | 4.6 | 3.6 | 0.9 | 1.2 | 6 |

| 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) |
| | | | | | | | | | | | | | | | | | | | | | | | |
| 0-12 | 0.7 | 1.14 | 0.05 | 0.40 | 0.30 | 0.10 | 0.20 | 1.00 | 7.80 | 8.80 | 3.1 | 36.5 | 32 | 11 | | | 0.12 | | | | | | |
| 12-28 | 2.6 | 0.43 | 0.02 | 0.30 | 0.20 | 0.04 | 0.30 | 0.84 | 7.10 | 7.94 | 1.0 | 6.5 | 84 | 11 | | | 0.03 | | | | | | |
| 28-48 | 0.9 | 0.41 | 0.02 | 0.30 | 0.10 | 0.04 | 0.30 | 0.74 | 8.60 | 9.34 | 1.7 | 6.9 | 44 | 8 | | | 0.02 | | | | | | |
| 48-100 | 1.6 | 0.23 | 0.02 | 0.30 | 0.10 | 0.04 | 0.30 | 0.74 | 7.60 | 8.34 | 2.7 | 10.0 | 27 | 9 | | | 0.02 | | | | | | |
| 100-150 | 1.0 | 0.21 | 0.02 | 0.30 | 0.10 | 0.04 | 0.20 | 0.64 | 5.10 | 5.74 | 2.9 | 9.4 | 22 | 11 | | | 0.03 | | | | | | |

Surveyor: P. Vijarnsorn & staff

Reported by: W. Sirichuaychoo

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