

Proposed by S. Charoenpong, 1972  
Revised by :  
P. Vijarnsorn and staffs, 1988  
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**KHLONG NOK KRATHUNG SERIES** field Symbol: **Knk**

**Distribution:** Occupies a small extent in Peninsular Thailand and some areas in Southeast Coast of Thailand.

**Setting:** Khlong Nok Krathung soils derived from granite or equivalent rocks and occurred on granitic terrain. Relief is gently undulating to undulating with slopes range from 2 to 12 percent. Elevation is approximately from 20 to 40 m above mean sea level. The climate is Tropical Monsoon (Koppen 'Am') or Tropical Rain Forest (Koppen 'Af'). Average annual precipitation is above 2,000 mm. Average annual air temperature is from 26 °C to 28°C.

**Drainage, Permeability and Surface Runoff:** Drainage is well drained, permeability is estimated to be rapid and surface runoff is generally medium to rapid. Ground water level falls below 2 m throughout the year.

**Vegetation and Land Use:** Mainly used for para rubber, oil palm and fruit trees growing. Parts after clearance of climax forest reverted to low secondary shrubs and grasses.

**Characteristic Profile Features:** The Khlong Nok Krathung series is a member of the fine-loamy, kaolinitic, isohyperthermic Typic Kandiuults (soil taxonomy, 2003). They are very deep soils and are characterized by a dark brown, very dark grayish brown or brown coarse sandy loam surface or A horizon overlying a brown light brown or very pale brown medium and coarse sandy loam or sandy clay loam kandic B horizon. Sand grains usually increase in size with depth. Very strongly acid to strongly acid, reaction values ranges from 4.5 to 5.5 in surface soil and very strongly acid, reaction values ranges from 4.5 to 5.0 in subsoil.

**Typifying Pedon:** Khlong Nok Krathung sandy loam - para rubber plantation, from Ban Ljoro Khirikan, Amphoe Lan Saka Changwat Nakhon Si Thammarat, 3 to 4 percent slopes (sheet name Changwat Nakhon Si Thammarat, sheet number 4925 I, coordinate 838242).

**Profile Code Number:** S-62/127, described by Anan Pitayarak, 23 Jun 1977 (moist colors unless otherwise stated).

| Horizon | Depth (cm)          | Description   |
|---------|---------------------|---|
| A       | 0-9                 | Dark grayish brown (10YR4/2) sandy loam; weak fine and medium subangular blocky structure breaking to fine granular structure; friable, nonsticky and slightly plastic; common fine interstitial, few fine and very fine tubular pores; plentiful fine and medium roots; strongly acid (field pH 5.5); gradual smooth boundary. |
| BA      | 9-23                | Brown to dark brown (10YR4/3) sandy loam; weak fine and medium subangular blocky structure; friable, nonsticky and nonplastic; common fine interstitial, common fine and very fine tubular pores; plentiful fine roots; strongly acid (field pH 5.5); gradual smooth boundary.  |
| Bt1     | 23-39               | Dark yellowish brown (10YR4/4) sandy loam; weak to moderate fine and medium subangular blocky structure; friable, slightly sticky and nonplastic; patchy thin cutan on ped faces; common fine interstitial and tubular pores; few fine and medium roots; strongly acid (field pH 5.5); gradual smooth boundary.                 |
| Bt2     | 39-58               | Yellowish brown (10YR5/4-6) coarse sandy clay loam; weak to moderate fine and medium subangular blocky structure; friable, slightly sticky, and slightly plastic; patchy thin cutan on ped faces; common fine interstitial and tubular pores; few fine and medium roots; strongly acid (field pH 5.5); clear smooth boundary.   |
| Bt3     | 58-100 <sup>+</sup> | Brown to dark brown (7.5YR4/4) slightly gravelly sandy clay loam; weak to moderate medium subangular blocky structure; friable, sticky and slightly plastic; broken thin cutan on ped faces; common fine interstitial pores; common   |

fine and few medium tubular pores; gravels are quartz about 10-15%; strongly acid (field pH 5.5).

**Type Location:**

Name of village, Ban Khlong Nok Krathung, Amphoe Rattaphum, Changwat Songkhla.

**Range of Profile Features:**

The surface or A horizon sandy loam, is 10 to 15 cm in thickness and has 10YR or 7.5YR hues, values 3 or 4 and chromas 2 to 4. Structure is weak fine subangular blocky. Very strongly acid to moderately acid, reaction values range from 5.0 to 6.0.

The kandic B horizon sandy clay loam, has 10YR or 7.5YR hues, values 5 to 7 and chromas 3 or 4. Structure is weak fine and medium subangular blocky. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

**Similar Soil Series:**

Lahan series (Lh): fine-loamy, siliceous, subactive, isohyperthermic Typic Paleudults, has grayer color in subsoil.

Khuan Kalong series (Kkl): fine-loamy, kaolinitic, isohyperthermic Typic Kandiuults, weathered granite bed rock within 150 cm from the soil surface.

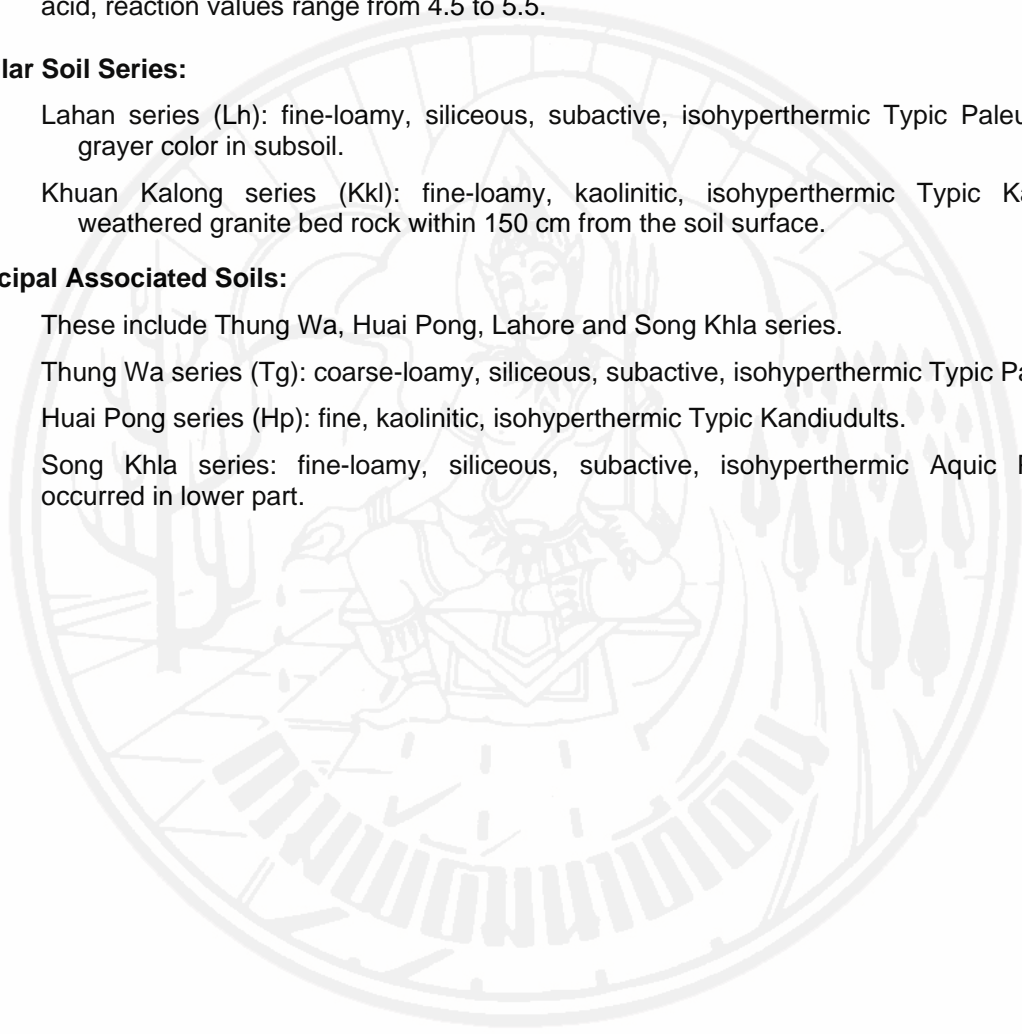
**Principal Associated Soils:**

These include Thung Wa, Huai Pong, Lahore and Song Khla series.

Thung Wa series (Tg): coarse-loamy, siliceous, subactive, isohyperthermic Typic Paleudults.

Huai Pong series (Hp): fine, kaolinitic, isohyperthermic Typic Kandiuults.

Song Khla series: fine-loamy, siliceous, subactive, isohyperthermic Aquic Paleudults, occurred in lower part.



ANALYSIS RESULTS

Profile code No.: S-62/127

(oven dry basis)

Soil series: Khlong Nok Krathung series (Knk)

| Lab No. | Depth (cm) | Horizon | Particle size distribution analysis (% by weight) |      |      |                       |      |      |      |      |        | Texture            |       | pH        |         | CaCO <sub>3</sub> % | P, mg kg <sup>-1</sup> Bray 2 | K, mg kg <sup>-1</sup> NH <sub>4</sub> OAc |
|---------|------------|---------|---|------|------|-----------------------|------|------|------|------|--------|--------------------|-------|-----------|---------|---------------------|-------------------------------|--|
|         |            |         | USDA grading                                      |      |      | Sand-fraction grading |      |      |      |      |        | Lab                | Field | 1:1 water | 1:1 KCl |                     |                               |  |
|         |            |         | sand  | silt | clay | vc                    | c    | m    | f    | vf   | result | estim <sup>n</sup> |       |           |         |                     |                               |  |
| DN-9461 | 0-9        | A       | 64.2  | 21.2 | 14.6 | 7.8                   | 16.1 | 18.1 | 10.0 | 12.2 | sl     | sl                 | 4.3   | 3.8       |         | 4.9                 | 85                            |  |
| DN-9462 | 9-23       | BA      | 62.0  | 25.9 | 12.1 | 3.2                   | 11.7 | 13.1 | 14.8 | 19.2 | sl     | sl                 | 4.2   | 3.8       |         | 3.0                 | 44                            |  |
| DN-9463 | 23-39      | Bt1     | 65.5  | 20.9 | 13.6 | 15.2                  | 17.2 | 15.4 | 7.9  | 9.8  | sl     | sl                 | 4.4   | 3.8       |         | 3.0                 | 80                            |  |
| DN-9464 | 39-58      | Bt2     | 58.7  | 20.2 | 21.1 | 11.2                  | 15.6 | 13.5 | 13.4 | 5.0  | scl    | coscl              | 4.9   | 4.2       |         | 4.2                 | 49                            |  |
| DN-9465 | 58-100+    | Bt3     | 50.1  | 18.3 | 31.6 | 18.4                  | 12.1 | 9.1  | 4.6  | 5.9  | scl    | sli.gscl           | 4.6   | 3.8       |         | 6.5                 | 62                            |  |

| Depth (cm) | Air dried to oven dried | C %  | N % | Exchange capacity and cations (cmol <sub>(+)</sub> kg <sup>-1</sup> ) |      |      |      |                 |                   |           |                             |               |         | Base satur <sup>n</sup> (%) |     | ECEC cmol <sub>(+)</sub> kg <sup>-1</sup> (B+D) | Al KCl extr. cmol <sub>(+)</sub> kg <sup>-1</sup> (D) | Electrical conduct <sup>y</sup> (ECx10 <sup>6</sup> ) dS m <sup>-1</sup> |
|------------|-------------------------|------|-----|---|------|------|------|-----------------|-------------------|-----------|-----------------------------|---------------|---------|-----------------------------|-----|---|---|--|
|            |                         |      |     | Ca  | Mg   | K    | Na   | SUM cations (B) | Extr. acidity (A) | SUM (B+A) | CEC NH <sub>4</sub> OAc (C) | CEC 100g Clay | B/Cx100 | (Bx100)/(B+A)               |     |   |   |  |
|            |                         |      |     | 0-9   | 0.4  | 1.32 |      | 0.50            | 0.30              | 0.20      | 0.30                        | 1.30          | 7.10    | 8.40                        | 4.1 |   |   |  |
| 9-23       | 0.3                     | 1.16 |     | 0.40  | 0.10 | 0.20 | 0.30 | 1.00            | 6.90              | 7.90      | 3.8                         | 31.4          | 26      | 13                          |     | 0.02  |   |  |
| 23-39      | 0.2                     | 0.54 |     | 0.30  | 0.10 | 0.20 | 0.30 | 0.90            | 4.30              | 5.20      | 2.9                         | 21.3          | 31      | 17                          |     | 0.12  |   |  |
| 39-58      | 0.3                     | 0.48 |     | 0.20  | 0.10 | 0.10 | 0.20 | 0.60            | 5.20              | 5.80      | 3.3                         | 15.6          | 18      | 10                          |     | 0.03  |   |  |
| 58-100+    | 0.6                     | 0.51 |     | 0.30  | 0.10 | 0.10 | 0.40 | 0.90            | 7.60              | 8.50      | 5.2                         | 16.5          | 17      | 11                          |     | 0.02  |   |  |

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Reported by: W. Sirichuaychoo

Date: June 23, 1977

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