

Proposed by: D. Rattananupong, 1966  
Revised by: 1. B. Boonsompopphan,  
P. Hemsrichart, 1988  
2. K. Malairotsiri, 2004

## SIKHIO SERIES

Field Symbol: Si

**Distribution:** Moderate extent in the southern part of Northeast Plateau.

**Setting:** Sikhio soils are formed from washed deposit of calcareous sandstone and occur on middle part of peneplain. Relief is undulating which range of slope is 2 to 5 percent. Elevation varies from 230 to 280 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Average annual precipitation is from 1,100 to 1,300 mm. Mean annual air temperature is from 26 to 28°C.

**Drainage, Permeability and Runoff:** Well drained soils; Permeability is moderate. Runoff is rapid.

**Vegetation and Land Use:** Mixed deciduous forest with dominant bamboo. Parts are cleared for upland crops such as corn, cassava, castor bean and etc.

**Characteristic Profile Features:** The Sikhio series is a member of the fine-loamy, mixed, isohyperthermic Typic Rhodustalfs. They are deep soils and are characterized by a dark brown or dark reddish brown sandy loam A horizon overlying a dark reddish brown or dark red sandy clay loam argillic B horizon. The iron-manganese concretion and secondary lime concretion usually occur at some depth below 120 cm. Reaction is strongly acid to slightly acid over slightly acid to moderately alkaline.

**Typifying Pedon:** Profile code no. is NE-S-28-FN-875-021 (moist colors unless otherwise stated).

**Location:** Ban Nong Takai, 700 m west of km 5.9 on Sikhio-Chaiyaphum road, Amphoe Sikhio Changwat Nakhon Ratchasima.

**Sheet Name:** Ban Nong Bua Khok

**Sheet No.:** 5339 I

**Coordinate:** 788/1652-3

**Elevation:** 270 m

**Relief:** gently undulating

**Slope:** 2-3%

**Physiography:** middle part of peneplain

**Parent material:** washed deposit from calcareous sandstone

**Drainage:** well drained

**Permeability:** moderate

**Runoff:** rapid

**Ground water depth:**

**Flooding depth:** -

**Duration:** -

**Frequency:** -

**Annual rainfall:** 1,181.2 mm

**Mean temp:** 26.2 °C

**Climate type:** Tropical Savannah

**Natural vegetation and/or land use:** bamboo and thorny shrubs

**Other:**

**Described by:** L. Moncharoen

**Date:** October 1987

**Revised by:**

| Horizon | Depth (cm) | Description   |
|---------|------------|---|
| A       | 0-13       | Dark brown (7.5YR3-4/2) sandy loam; weak medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; many fine roots; slightly acid (field pH 6.5); gradual, smooth boundary.                                |
| Bt1     | 13-53      | Dark red (2.5YR3/6) loam; weak coarse subangular blocky structure; friable, slightly sticky, slightly plastic; patchy thin clay coating on ped faces; common fine and coarse roots; strongly acid (field pH 5.5); diffuse, smooth boundary. |
| Bt2     | 53-94      | Dark red (2.5YR3/6) loam; weak coarse subangular blocky structure; friable, sticky, plastic; patchy thin clay coating on ped faces; few medium and coarse roots; strongly acid (field pH 5.5); diffuse, smooth boundary.                    |

|      |             |  |
|------|-------------|--|
| Bt3  | 94-125      | Dark reddish brown (2.5YR3/4) loam; moderate medium and coarse subangular blocky structure; friable, sticky, plastic; continuous thin clay coating on ped faces; common medium and coarse roots; slightly acid (field pH 6.5); diffuse, smooth boundary. |
| Bt4  | 125-185/190 | Dark reddish brown (2.5YR3/4) loam; moderate coarse subangular blocky structure; friable, sticky, plastic; continuous thin clay coating on ped faces; common medium and coarse roots; many termite holes; neutral (field pH 7.0); clear, wavy boundary.  |
| BCcn | 185/190-210 | Dark reddish brown (2.5YR3/4) gravelly loam; weak fine subangular blocky structure; friable, sticky, plastic; strongly effervescent; gravels composed of ironstone and quartz; mildly alkaline (field pH 7.5).   |

Remark : Layer of calcareous sandstone bed rock occurs below 210 cm from the soil surface.  
Pedon no. S82FN-875-021 from *Benchmark Soils of Thailand*.

**Range of Profile Features:** The thickness of A horizon varies from 10 to 25 cm and has 7.5YR or 5YR hues, values of 3 or 4 and chromas of 2 to 4. Structure is weak to moderate medium and coarse blocky. The pH values vary from 5.5 to 6.5.

The Bt horizon has 2.5YR or redder hues values, of 3 or less and chromas of 3 to 6. Textures of sandy clay or clay with discernable sand fraction, occasionally, occur in the deeper B horizon. Structure is moderate medium and/or coarse blocky. The pH values vary from 6.5 to 8.0. The calcareous sandstone served as a lithological discontinuity varies in depth, from 1.5 to 2.5 m.

**Similar Soil Series:**

Warin series (Wn): has lower pH value in the subsoil.

Sung Noen series (Sn): has lower pH value in the subsoil and less sand fraction.

Chatturat series (Ct): has heavier texture and moderately deep soils and are derived from calcareous siltstone and shale.

**Principal Associated Soils:** These include Warin, Sung Noen, Chatturat and Yasothon series.

**ANALYSIS RESULTS**      Profile code no.:S-82-FN-875-021  
**(oven dry basis)**      Soil series : Sikhio (Si)

| 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   | 1:1 |                     |                               |  |
|         |            |         | sand  | silt | clay | vc                    | c | m | f | vf | result  | estim <sup>1</sup> | water | KCl |                     |                               |  |
|         | 0-13       | A       | 58.0  | 33.1 | 8.9  |                       |   |   |   |    | sl      | sl                 | 5.9   | 4.8 | 0.6                 | 2.0                           | 74   |
|         | 13-53      | Bt1     | 46.5  | 33.2 | 20.3 |                       |   |   |   |    | l       | l                  | 5.3   | 3.9 | 0.6                 | 2.0                           | 45   |
|         | 53-94      | Bt2     | 45.1  | 33.4 | 21.5 |                       |   |   |   |    | l       | l                  | 6.1   | 4.8 | 0.7                 | 2.0                           | 45   |
|         | 94-125     | Bt3     | 44.5  | 35.8 | 19.7 |                       |   |   |   |    | l       | l                  | 5.5   | 5.0 | 0.6                 | 2.0                           | 43   |
|         | 125-185/19 | Bt4     | 38.8  | 36.8 | 24.4 |                       |   |   |   |    | l       | l                  | 6.7   | 6.4 | 0.9                 | 3.0                           | 80   |
|         | 185/190-21 | BCcm    | 43.6  | 42.0 | 14.4 |                       |   |   |   |    | l       | gl                 | 7.8   | 6.8 | 0.9                 | 15.0                          | 105  |

| 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) |   |   |  |
|            |                         |      |     |   |      |      |      |       |                 |                   |           |                             |               |                             |               |   |   |  |
| 0-13       |                         | 0.60 |     | 3.75  | 0.74 | 0.21 | 0.50 | 4.75  | 3.80            | 8.55              | 5.13      | 57.6                        | 93            | 56                          |               |   | 0.20  |  |
| 13-53      |                         | 0.55 |     | 3.32  | 0.69 | 0.15 | 0.08 | 4.24  | 6.15            | 10.39             | 6.48      | 31.9                        | 56            | 41                          |               |   | 0.11  |  |
| 53-94      |                         | 0.38 |     | 5.83  | 0.83 | 0.15 | 0.06 | 6.87  | 2.31            | 9.18              | 6.44      | 30.0                        | 100           | 75                          |               |   | 0.10  |  |
| 94-125     |                         | 0.34 |     | 5.86  | 0.84 | 0.15 | 0.08 | 6.93  | 4.22            | 11.15             | 6.82      | 34.6                        | 100           | 62                          |               |   | 0.09  |  |
| 25-185/191 |                         | 0.32 |     | 8.85  | 0.97 | 0.23 | 0.08 | 10.13 | 3.70            | 13.83             | 8.01      | 32.8                        | 100           | 73                          |               |   | 0.20  |  |
| 85/190-210 |                         | 0.33 |     | 23.42   | 1.27 | 0.31 | 0.13 | 25.13 | 0.78            | 25.91             | 9.15      | 63.5                        | 100           | 97                          |               |   | 0.29  |  |