

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

THA RUEA SERIES

Field Symbol: Tr

Distribution: Occupies small extent in the Central Plain, mainly in Changwat Phra Nakhon Si Ayutthaya and Saraburi.

Setting: Tha Ruela soils are formed from alluvium and occur on alluvial plain. Relief is flat to nearly flat. Slopes are 1% or less. Elevation is approximately 10 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Mean annual precipitation ranges from 1,000 to 1,400 mm. Mean annual temperature is 27 °C.

Drainage, Permeability and Surface Runoff: Somewhat poorly drained to poorly drained. Permeability and runoff are slow. These soils are flooded by impounded rainwater or river to depths of approximately 50 cm for about four months during the rainy season. Groundwater level falls below 1.5 m from the soil surface during the dry season and the soil cracks deeply.

Vegetation and Land Use: Mainly used for broadcast rice cultivation

Characteristic Profile Features: Tha Ruela series is a member of the Very-fine, mixed, active, nonacid, isohyperthermic Vertic (Aeric) Endoaquepts. They are deep, medium to slightly acid soils. They are characterized by a grayish brown or dark grayish brown clay A horizon which is mottled in the lower part, overlying a clay B horizon. Matrix colour of the B horizon is difficult to describe due to the large number of mottles, but mixed colours are mainly dark yellowish brown, yellowish brown, brown and dark brown. There contains scattered iron/manganese nodules. Cracks open during the dry season.

Typifying Pedon: Profile code number is C 6/7

Location: Ban Sala Loi, Tambon Sala Loi, Amphoe Tha Ruela Changwat Phra Nakhon Si Ayutthaya.

Sheet Name: Amphoe Tha Ruela

SheetNo.: 5138 III

Coordinate: 85607

Elevation: 7 m MSL.

Relief: level to nearly level

Slope: 0-1%

Physiography: former tidal flats or alluvium plain

Parent material: marine sediments mixed with riverine alluvium under brackish water influence

Drainage: poorly drained to somewhat poorly drained

Permeability: slow

Runoff: slow

Ground water depth: > 1.5 m

Flooding depth: 50 cm

Duration: 4 month

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:

Described by: Chamlong and Van der Kevie

Date: 24 February, 1967

Revised by: S. Udomsri

| Horizon | Depth (cm) | Description |
|---------|------------|---|
| Apg1 | 0-1 | Dark gray to dark grayish brown (10YR4/1-2) clay; massive crust breaking to "potsherds" of 5 to 10 cm; many micro-pores; very hard. |
| Apg2 | 1-4 | Dark grayish brown (10YR4/2) clay with few coarse sand grains; many fine distinct yellowish red mottles, mainly in pores; massive; hard; strongly acid (field pH 5.5); abrupt, smooth boundary. |
| Apg3 | 4-19 | Dark grayish brown (10YR4/2) clay with few coarse sand grains; few fine and many medium distinct yellowish red mottles in pores, root channels and ped faces; very weak coarse and very coarse angular blocky structure; very hard; slightly acid (field pH 6.5); clear, smooth boundary. |

| | | |
|------|---------------------|--|
| Bg | 19-60 | Mixed dark grayish brown (10YR4/2), dark yellowish brown (10YR4/4) and brown (7.5YR4/4) clay with few coarse sand grains; moderate very fine and fine angular blocky structure; firm to friable, very sticky; many pressure cutan; few iron/manganese nodules; slightly acid (field pH 6.5); gradual, smooth boundary. |
| Bssg | 60-100 ⁺ | Dark yellowish brown (10YR4/4) clay with few coarse sand grains; common fine faint gray mottles; moderate very fine and fine angular blocky structure; firm to friable, very sticky; many pressure cutan and common slickensides; few fine and medium iron/manganese nodules; slightly acid (field pH 6.5) |

Type Location: Name of Amphoe, Amphoe Tha Ruea Changwat Phra Nakhon Si Ayutthaya

Range of Profile Features:

The A horizon is from 10 to 30 cm thick, has 10YR hue, values of 4 or 5 and chroma of 2. Structure is massive breaking to weak coarse blocky in the lower layers. Field pH values range from 5.0 to 6.5.

The subsoil B horizon, has 10YR and 7.5YR hues, values of 4 or 5, and chromas of 2 to 4. Red mottles sometimes occur in this horizon. Structure is moderate, fine blocky and field pH values range from 6.0 to 7.0.

Similar Soil Series:

Ban Mi series (Bm): is a member of Endoauearts and found near limestone hill. There has grayer colours, higher pH values and distinct cracks and slickensides at the dry seasons

Chong Khae series (Ck): is a member of Endoauearts and found near limestone hill. There has grayer colours, distinct red mottles, slightly lower pH values and contains cracks and slickensides at the dry seasons

Ratchaburi series (Rb): founded at flood plain and flooding for long time.

Manorom series (Mn): has an argillic B horizon with red mottles and plinthite

Principal Associated Soils: These include Manorom series occupying similar positions on the low terrace; and lower Ratchaburi series soils on the flood plain.

ANALYSIS RESULTS
(oven dry basis)

Profile code No. C-6/7
Soil series : Tha Ruea (Tr)

| 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 | | | |
| P446 | 0-4 | Apg1-2 | 10.2 | 24.7 | 65.1 | | | | | | c | c+cos | 5.0 | 3.7 | 0.9 | 6.5 | 96 |
| P447 | 4-19 | Apg3 | 11.2 | 23.7 | 65.1 | | | | | | c | c+cos | 5.1 | 4.1 | 1.1 | 7.1 | 132 |
| P448 | 19-60 | Bg | 10.2 | 18.7 | 71.1 | | | | | | c | c+cos | 5.6 | 4.5 | 1.3 | 5.8 | 102 |
| P449 | 60-100 | Bssg | 10.2 | 17.7 | 72.1 | | | | | | c | c+cos | 5.5 | 4.5 | 1.0 | 7.1 | 105 |

| 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) |
| | | | | Ca | Mg | K | Na | cations (B) | acid (A) | (B+A) | (B+A) | (C) | Clay | | | | | | | |
| 0-4 | | 0.70 | 0.10 | 11.70 | 8.20 | 0.30 | 0.80 | 21.00 | 11.80 | 32.80 | 25.40 | 39.0 | 83 | 64 | | | 0.03 | | | |
| 4-19 | | 0.60 | <0.1 | 13.80 | 8.40 | 0.40 | 1.10 | 23.70 | 10.20 | 33.90 | 26.10 | 40.1 | 91 | 70 | | | 0.03 | | | |
| 19-60 | | 0.20 | <0.1 | 13.00 | 10.20 | 0.30 | 1.50 | 25.00 | 8.20 | 33.20 | 29.20 | 41.1 | 86 | 75 | | | 0.03 | | | |
| 60-100 | | 0.20 | <0.1 | 15.80 | 8.50 | 0.30 | 2.20 | 26.80 | 7.90 | 34.70 | 28.60 | 39.7 | 94 | 77 | | | 0.03 | | | |