

Proposed by F.R. Moormann, 1963
Revised by:
1. C. Changprai, 1987
2. S. Udomsri, 2004

RANGSIT SERIES

Field Symbol: Rs

Distribution: Occupies moderate extent in the southeastern part of the Central Plain.

Setting: Rangsit soils are formed from marine sediments mixed with riverine alluvium under brackish water influence. They occur in former tidal flats or alluvium plain which grade down to marine deposits and now free of tidal flooding which have been in cultivation for some time. Relief is flat. Slope is about 0-1%. Elevation ranges from 1-3 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Mean annual precipitation is about 1,400 mm. Mean annual temperature is 27 °C.

Drainage, Permeability and Surface Runoff: Poorly drained. Runoff and permeability are slow. Deep surface flooding to depths of 1 m or more from river water or rain occurs for about four to five months during the rainy season. Sometimes this area flooded by irrigation. The groundwater level falls to about 100 cm during the peak of the dry season and the soil cracks.

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

Characteristic Profile Features: Rangsit series is a member of the Very-fine, mixed, semiactive, acid, isohyperthermic Sulfic Endoaquepts. They are deep, extremely acid soils are characterized by a black or very dark gray clay A horizon overlying a brown, grayish brown or dark grayish brown clay B horizon, which in turn overlies a dark gray reduced clay C horizon with an upper boundary approximately 150 cm from the soil surface. These soils are mottled throughout with yellowish brown mottles as coatings along root channels in the A horizon and red, yellowish red mottles in the B horizon. The yellow jarosite mottles occur approximately between 50-100 cm of the soil surface and are diagnostic for the series. Slickensides and pressure faces occur in the B horizon and the soil cracks at the surface when dry.

Typifying Pedon: Profile code number is C-8/7

Location: Ban Klong 10, near Nong Sua Phitthayakhom school, Amphoe Nong Sua Changwat Pathum Thani.

Sheet Name: Amphoe Nong Sua

SheetNo.: 5137 II

Coordinate: 950614

Elevation: 2 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

Permeability: slow

Runoff: slow

Ground water depth: >1.75 m

Flooding depth: 20-30 cm

Duration: - month

Frequency: every year

Annual rainfall: 1,244.2 mm

Mean temp: 27.9 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: paddy field

Other:

Described by: Van der Kevie & Phichai

Date: 28 May, 1970

Revised by: S. Udomsri

Horizon	Depth (cm)	Description
Apg	0-15	Very dark gray to very dark grayish brown (10YR3/1-2) clay; common fine distinct yellowish brown (10YR5/8) mottles mainly along root channels; weak medium and coarse breaking to medium and fine subangular blocky structure; firm, sticky, plastic; many very fine roots; very strongly acid (field pH 5.0); gradual, slightly wavy boundary.

Bg1	15-30/35	Black (10YR2/1) clay; many fine, medium distinct yellowish brown (10YR5/8) and few fine prominent red (2.5YR4/8) mottles; weak to moderate breaking to fine angular blocky structure; firm, sticky, plastic; few slickensides; few very fine roots; very strongly acid (field pH 4.5); gradual, wavy boundary.
Bg2	30/35-49	Mixed very dark grayish brown (10YR3/2) and grayish brown (10YR5/2) clay; many medium and coarse prominent red (10R4/8, 7.5R3/8), fine and medium distinct yellowish brown (10YR5/8) mottles; moderate medium and fine angular blocky structure, firm, sticky, plastic; few very fine roots; common pressure faces and slickensides; very strongly acid (field pH 4.5); gradual, smooth boundary.
Bjg1	49-59/65	Brown (7.5YR5/2) clay; few small inclusion of dark A materials; many medium and coarse prominent red (2.5YR4/8) and dark red (7.5R3/8) and many fine pale yellow (2.5YR7/4) (jarosite mottles) and few fine yellowish brown (10YR5/8) mottles; moderate medium and fine angular blocky structure; firm, sticky, plastic; few very fine roots; common pressure faces and slickensides; very strongly acid(field pH 4.5); clear, wavy boundary.
Bjg2	59/65-110	Brown (7.5YR5/2) clay; many medium and coarse pale yellow (2.5Y8/6) (jarosite) and few fine distinct yellowish brown (10YR5/8) mottles as vertical streaks; moderate prismatic breaking to angular blocky structure; firm, sticky, plastic; few slickensides; very strongly acid (field pH 4.5).
Cjg	110-160	Brown (7.5YR5/2) half ripe clay; common medium and coarse distinct yellowish brown (10YR5/8) and few medium pale yellow (2.5Y8/6) mottles; very strongly acid (field pH 4.5).
Cg	160-190 ⁺	Dark greenish gray (5GY4/1) and dark gray (5Y4/1) half ripe clay; moderately acid (field pH 6.0).

Type Location: Name of Khlong (Canal), Khlong Rangsit, Changwat Pathum Thani.

Range of Profile Features:

The A horizon is from 20 to 30 cm thick, has 10YR hue, values of 2 or 3 and chroma of 1. Structure is weak coarse blocky to massive and field pH values range from 4.0 to 5.0. A thin broken E horizon may be present but is not diagnostic for the series.

The B horizon has 10YR or 7.5YR hues, values of 4 or 5 and chromas of 2 or less. Structure is moderate, medium prismatic breaking to blocky and pH values are 4.5 or less.

The C horizon is usually dark gray (10YR 4/1 or 5Y 4/1) and may contain few brown mottles in the upper part; nearly unripe and has pH values of 4.5 rising to 6.0 below 2 m

Similar Soil Series:

Sena series (Se): has a similar profile, but contains gypsum in the B horizon.

Ongkharak series (Ok): contains jarosite mottles within 50 cm of the soil surface.

Thanyaburi series (Tan): has a similar profile, but without red mottles in the B horizon.

Ayutthaya series (Ay): the acid soils with jarosite mottles occurs below 1 m from the soil surface and gypsum occur in lower A or B horizon.

Maha Phot series (Ma): has a similar profile, but contains yellow jarosite mottles more than 100 cm of the soil surface.

Principal Associated Soils: these include Ongkharak, Thanyaburi and Maha Phot series which occupy similar positions on the former tidal flats.

ANALYSIS RESULTS

Profile code No. : C-8/7

(oven dry basis)

Soil series : Rangsit (Rs)

Acid sulphate soils (Vertic thionie Tropaquepts)

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 ^f					
Pa 689	0 - 15	Apg	11.0	48.0	41.0						sic	c	4.4	3.3	0.9	5.0	143
Pa 690	15-30-/-35	Bg1	11.0	43.0	46.0						sic	c	4.2	3.4	0.6	4.8	113
Pa 691	30/25-49	Bg2	7.0	34.0	59.0						c	c	4.0	3.1	0.5	3.2	149
Pa 692	49-59/65	Bjg1	5.0	33.0	62.0						c	c	4.2	3.0	0.5	3.2	160
Pa 693	59/65-110	Bjg2	1.0	36.0	63.0						c	c	4.0	3.1	0.6	2.6	172
Pa 694	110-160	Cjg	19.0	26.0	55.0						c	c	4.2	3.1	0.6	5.8	190
Pa 695	160-190+	Cg	8.0	43.0	49.0						sic	c	3.5	2.9	0.2	24.3	280

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 - 15	3.1	1.21		4.40	4.80	0.30	1.50	11.00	21.90	32.90	20.00			
15-30-/-35	3.6	0.91		4.00	4.40	0.20	1.10	9.70	23.90	33.60	20.30	44.1	48	29		0.20		
30/25-49	2.6	0.26		4.70	6.00	0.30	2.10	13.10	20.40	33.50	22.80	38.6	57	39		0.25		
49-59/65	3.0	0.21		5.30	6.70	0.30	2.40	14.70	19.40	34.10	24.60	39.7	60	43		0.30		
59/65-110	3.2	0.19		5.30	7.70	0.40	2.30	15.70	16.60	32.30	24.90	39.5	63	49		0.34		
110-160	2.9	0.33		4.60	7.10	0.50	2.40	14.60	17.20	31.80	23.20	42.2	63	46		0.45		
160-190+	3.3	2.04		5.00	10.70	0.70	3.00	19.40	27.60	47.00	30.70	62.7	63	41		1.30		