

Proposed by W. Van der Kevie, 1968
Revised by:
1. C. Changprai, 1987
2. S. Udomsri, 2004

DON MUEANG SERIES

Field Symbol: Dm

Distribution: Occupies small extent in the southern part of the Central Plain.

Setting: Don Mueang soils are formed from sandy or loamy alluvium under brackish water influence. They occur on old beach ridges of 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. Slopes are about 0-1 %. Elevation ranges from 1-3 m above sea level. The climate is Tropical Savanna (Köppen 'Aw'). Annual precipitation ranges from 1,000 mm to 1,400 mm. Mean annual temperature is 27°C.

Drainage, Permeability and Surface Runoff: Poorly drained. Runoff and permeability are slow. These soils are flooded by impounded rainwater to depths of up to 50 cm for three to four months during the rainy season. Sometimes this area flooded by irrigation. The groundwater level falls to about 150 cm during the peak of the dry season.

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

Characteristic Profile Features: Don Mueang series is a member of the Fine-loamy, mixed, semiactive, acid, isohyperthermic Sulfic Endoaquepts. They are deep, very strongly to medium acid over extremely acid to very strongly acid soils. They are characterized by a very dark gray or black sandy clay loam, loam or clay loam A horizon overlying a grayish brown or brown sandy clay loam, loam or clay loam B horizon, which in turn overlies a reduced greenish gray clay at some depth below 1.5 m from the soil surface. These soils are mottled throughout with yellowish red and strong brown coatings on root channels in the A horizon, and red, weak red, brownish yellow and yellow jarosite mottles commonly in the lower B horizon.

Typifying Pedon: Profile code number is Code 4

Location: 250 m east of highway No.14, Ban Khok Phlo, Amphoe Ban Pho Changwat Chachoengsao.

Sheet Name: Changwat Chachoengsao

Sheet No.: 5236 III

Coordinate: -

Elevation: 3 m (MSL)

Relief: level to nearly level

Slope: 0-1%

Physiography: old beach ridges of former tidal flats

Parent material: alluvium under brackish water influence.

Drainage: poorly drained

Permeability: slow

Runoff: slow

Ground water depth: >1.5 m

Flooding depth: 30-40 cm

Duration: 5-6 month

Frequency: every year

Annual rainfall: 1,244.9 mm

Mean temp: 27.9 °C

Climate type: Tropical Savannah

Natural vegetation and/or land use: paddy field

Other:

Described by: S. Panichapong and P. Vijarnsorn

Date: 21 January 1981

Revised by: S. Udomsri

Horizon	Depth (cm)	Description
Apg	0-26	Brown (7.5YR4-5/2) clay loam; common fine distinct yellowish red (5YR5/8) mottles along root channels; weak coarse subangular blocky structure; firm, sticky, plastic; many fine roots; strongly acid (field pH 5.0-5.5); abrupt, smooth boundary.
Bg	26-53	Pinkish gray (7.5YR6/2) clay loam; common to many fine prominent red (10R4/8) and few fine distinct strong brown (7.5YR5/8) mottles; weak coarse subangular blocky structure; firm, very sticky, very plastic; common fine roots; extremely acid (field pH 4.0-4.5); clear, irregular boundary.

Bjg1	53-80	Pinkish gray (7.5YR6/2) clay loam; many medium to coarse prominent red (10R5/8) and streaks of strong brown (7.5YR5/8) mottles; few to common fine jarosite (2.5Y8/6) in places; weak coarse blocky to massive; firm, very sticky, very plastic; common fine roots; patchy organic matter coatings along root channels; very strongly acid (field pH 4.5); clear, irregular boundary.
Bjg2	80-120	Pinkish gray (7.5YR6/2) clay loam; common medium to coarse prominent red (10R4/8) in places with streaks of common medium distinct strong brown (7.5YR5/8) mottles and few to common jarosite (2.5Y8/6); massive; very sticky, very plastic; very strongly acid (field pH 4.5); gradual, smooth boundary
BCg	120-170	Pinkish gray (7.5YR6/2) clay loam; common medium to coarse distinct strong brown (7.5YR7/8) and few medium prominent red (10R4/8) mottles, few medium jarosite (2.5Y8/6); massive; very sticky, very plastic; very strongly acid (field pH 4.5).
Cg	170-240	Grayish brown (10YR5/2) half ripe clay loam; strongly acid (field pH 5.5).

Remarks: From the depth 170 to 240 cm, soil was taken by auger.

Pedon No. 4 from *Characteristics of Some Acid Sulphate Soils in Thailand*. in the tour guide for 2nd Symposium on Acid Sulphate Soils in Thailand, 18-24 January, 1981, Bangkok, Thailand, Soil Survey Division, Department of Land Development, Bangkok, Thailand.

Type Location: Name of Amphoe, Amphoe Don Mueang Changwat Krung Thep Maha Nakhon (Bangkok)

Range of Profile Features:

The A horizon is from 15 to 30 cm thick, and has 10YR hue, values of 2 or 3 and chromas of 1 or 2, if textures are sandy clay, clay loam or clay. If textures are sandy loam or sandy clay loam hue is 10YR, values are 3 to 5, chromas is 2. A thin grayish brown E horizon may occur, but is not diagnostic for the series. Structure is massive to weak coarse and medium blocky and field pH values are 5.0 to 6.0.

The B horizon has a chroma of 2 and values of 4 to 6 in 10YR hue, and chroma of 2 and values of 5 or 6 in 7.5YR hue, Structure is weak to moderate blocky and field pH values range from 4.0 to 5.0, rising to 6.5 in lower layers. Gypsum crystals may occur, but are not diagnostic for the series.

The reduced C horizon has dark gray to dark greenish gray colours, 5Y 5/1, 5Y 4/1, and 5GY 4/1, and may contain few brown mottles in the upper part. The soil is half ripe and has pH values of 6.0 to 8.0.

Similar Soil Series:

Phan Thong series (Ptg): has higher pH values throughout and without yellow jarosite mottles or red mottles.

Rangsit series (Rs): has fine family and contain distinct jarosite mottles.

Bang Khen series (Bn): has fine family, contain distinct gypsum and red mottles and pH values about 5.5-6.5 throughout profile.

Chachoengsao series (Cc): has fine family, contain distinct red mottles and pH values about 5.5-7.0 throughout profile.

Principal Associated Soils: These include Bang Khen, Rangsit, Chachoengsao and Phan Thong series occupying similar positions on the former tidal flats.

ANALYSIS RESULTS

Profile code No. 4

(oven dry basis)

Soil series : Don Mueang (Dm)

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			
33787	0-26	Apg	26.5	44.1	29.4						cl	cl	4.6	3.8		6.0	195
33788	26-53	Bg	25.1	45.3	29.6						cl	cl	4.0	3.3		-	148
33789	53-80	Bjg1	26.7	44.1	29.2						cl	cl	3.8	3.1		-	156
33790	80-120	Bjg2	28.8	42.1	29.1						cl	cl	3.7	3.0		1.0	179
33791	120-170	BCg	21.7	46.9	31.4						cl	cl	3.7	2.9		1.0	203
33792	170-240	Cg	24.7	42.0	33.3						cl	cl	3.8	3.1		3.0	234

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol _(c) kg ⁻¹)										Base satur ⁿ (%)		ECEC cmol _(c) kg ⁻¹ (B+D)	Al KCl extr. cmol _(c) 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)			
0-26		0.87	0.09	4.17	3.38	0.50	1.80	9.85	9.91	19.76	10.21	34.7	96	50			2.64	
26-53		0.19	0.03	2.56	2.48	0.38	1.44	6.86	13.77	20.63	10.27	34.7	67	33			1.84	
53-80		0.04	0.03	2.32	2.44	0.40	1.64	6.80	12.43	19.23	9.50	32.5	72	35			1.93	
80-120		0.06	0.02	2.85	3.52	0.46	1.84	8.67	9.24	17.91	10.27	35.3	84	48			1.98	
120-170		0.13	0.02	3.38	4.57	0.52	2.50	10.97	10.08	21.05	11.14	35.5	98	52			2.20	
170-240		0.02	0.02	3.88	5.43	0.60	2.86	12.77	9.91	22.68	11.79	35.4	100	56			2.59	