

Proposed by: -, 1966
Revised by:
1. N. Chorphaka, 1987
2. P. Wiwatwongwana, 2004

DAN SAI SERIES

Field Symbol: Ds

Distribution: Occupies moderate extent in the areas of Central Highlands, especially in Changwat Loei.

Setting: Dan Sai soils are formed from residuum and/or colluvium of mixed rocks (sandstone, shale, quartzite) and occur on dissected erosion surface and foot slope. Relief is gently rolling to hilly and slope range from 5 to 15 percent. Elevation is from 500 to 700 m above sea level. The climate is Tropical Savanna (Koppen 'Aw'). Average annual precipitation is from 1,100 to 1,400 mm. Mean annual air temperature is 27 °C.

Drainage, Permeability and Runoff: Well drained. Permeability and surface runoff are rapid. Groundwater table is very deep in both dry and wet seasons. They dry out very deep during the peak of hot season.

Vegetation and Land Use: Mainly mixed deciduous forest and dense dipterocarp forest. Parts have been cleared for shift shifting cultivation.

Characteristic Profile Features: Dan Sai series is a member of the fine-loamy, kaolinitic, isohyperthermic Typic Kandiusults. They are very deep soils and are characterized by a dark reddish brown or dark brown sandy loam or loam A horizon overlying a dark reddish brown or reddish brown or yellowish red fine sandy clay loam or loam upper argillic B horizon which in turn overlies a dark red or red fine sandy clay loam or clay loam lower argillic B horizon. Reaction is strongly acid to medium acid over very strongly acid to strongly acid in the subsoil.

Typifying Pedon: Profile code no. is NE-N-26/36 (Moist colors unless otherwise stated).

Location: From road cut, 2 km west of Ban Nong Bong, Amphoe Phu Rua Changwat Loei.

Sheet Name: Amphoe Phu Rua

Sheet No.: 5243 I

Coordinate:

Elevation: 1,240 m (MSL)

Relief: undulating

Slope: 5-12 %

Physiography: dissected erosion surface and footslope

Parent material: residuum and/or colluvium of mixed rocks (sandstone, shale, quartzite)

Drainage: well drained

Permeability: rapid

Runoff: rapid

Ground water depth: >2 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,238.1 mm

Mean temp.: 25.5 °C

Climate type: Tropical Savannah (Aw)

Natural vegetation or land use: mixed deciduous forest

Described by: Chaleao Changprai

Date: 20 July, 1973

Revised by: Phusit Wiwatwongwana

Date: 23 May, 2004

Horizon	Depth (cm)	Description
A	0-22	Dark reddish brown (5YR3/4) sandy loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine and few medium roots; medium acid (field pH 6.0) gradual, smooth boundary.
Bt1	22-42	Dark reddish brown (2.5YR2-3/4) fine sandy clay loam; weak medium and coarse subangular blocky structure; friable, sticky, plastic; patchy moderately thick clay coatings on ped faces, clay bridging between sand grains; few medium termite holes; many fine and common medium roots; strongly acid (field pH 5.5); gradual, smooth boundary.

Bt2	42-75	Dark red (2.5YR3/6) fine sandy clay loam; weak coarse subangular blocky structure; slightly firm, sticky, plastic; patchy thin and in places moderately thick clay coatings on ped faces; few medium termite holes; few fine and medium roots; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bt3	75-97	Red (2.5YR4/8-10R4/8) fine sandy clay loam; weak coarse subangular blocky structure; firm, sticky, plastic; patchy thin and in places moderately thick clay coatings on ped faces; few medium termite holes; few fine and medium roots; very strongly acid (field pH 5.0); gradual, smooth boundary.
Bt4	97-145+	Red (10R4/8) fine sandy clay loam; weak coarse subangular blocky structure; friable, sticky, plastic; patchy thin and in places moderately thick clay coatings on ped faced; few small termite holes; few fine and common medium roots; very strongly acid (field pH 5.0).

Type Location:

The Dan Sai series was named for Amphoe Dan Sai in which soils of this series were first described at road cut, about 1 km before Ban Nong Bua, coordination 1930.6/750.5 of topographic map sheet no. 5263 II.

Ranges of Profile Features:

The A horizon is from 10 to 25 cm thick and has 5YR or 7.5YR hues, values of 3 or 4 and chromas of 2 to 4. Structure is weak blocky. Field pH values range from 5.0 to 6.5.

The B horizon has 5YR or 2.5YR at upper part, values of 3 to 4 and chromas of 3 to 4. The lower B horizon has 2.5 YR or 10R, values of 3 or 4 and chromas of 4 to 8. Texture of clay may occur in very deep subsoil. Structure is weak blocky. Field pH values ranges from 4.5 to 5.5.

Similar Soil Series:

Warin series (Wn): derived from old alluvium and has paler color in the subsoil (5YR hues).

Yasothon series (Yt): derived from old alluvium.

Phon Ngam series (Png): has common to many pseudo-laterite and weathered parent rock fragments within 100-150 cm from the soil surface.

Principal Associated Soils:

These include Lat Ya, Tha Yang, Tha Li series and Slope Complex.

ANALYSIS RESULTS
(oven dry basis)

Profile code no.: NE-N-26/36
Soil series: Dan Sai (Ds)

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 ⁿ	water				KCl
Pd-1625	0-22	A	60.0	22.5	17.5						sl	sl	4.8	4.4	0.9	5.3	137
Pd-1626	22-42	BA	56.0	21.0	23.0						scl	fscl	4.7	4.3	0.6	4.5	47
Pd-1627	42-75	Bt1	56.7	18.4	24.9						scl	fscl	4.8	4.1	0.3	5.9	38
Pd-1628	75-97	Bt2	55.5	20.0	24.5						scl	fscl	4.8	4.1	0.6	4.0	27
Pd-1629	97-145+	Bt3	54.0	20.5	25.5						scl	scl	5.0	4.2	0.9	3.7	27

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)	AI 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)			
0-22	1.0	0.95		0.50	0.40	0.30	0.50	1.70	12.50	14.20	7.0	40.0	24	12			0.12
22-42	0.8	1.29		0.20	0.10	0.09	0.20	0.59	10.70	11.29	6.4	27.8	9	5			0.06
42-75	0.7	1.07		0.50	0.10	0.18	0.20	0.98	5.10	6.08	5.5	22.1	18	16			0.06
75-97	0.8	0.59		1.00	0.20	0.04	0.09	1.33	7.40	8.73	4.5	18.4	30	15			0.03
97-145+	0.8	0.40		0.30	0.10	0.05	1.20	1.65	6.60	8.25	3.7	14.5	45	20			0.03

Surveyor: Chaleao Changprai

Date: 20 July, 1973