

Proposed by F.R. Moormann, 1964
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

SADAO SERIES

Field Symbol: Sd

Distribution: Occupies a small extent in Peninsular Thailand and some areas in Southeast Coast of Thailand.

Setting: Sadao soils are formed from sandstone or coarse grain clastic rocks and occurred on denudation surface. Relief is gently undulating to rolling. Slope ranges from 2 to 20 percent. Elevation ranges from 40 to 60 m above mean sea level. The climate is Tropical Monsoon (Koppen 'Am'). Average annual air temperature is from 26 °C to 28°C. Average annual precipitation is from 1,800 to 3,000 mm.

Drainage, Permeability and Surface Runoff: Drainage is well drained, Permeability is estimated to be moderate to rapid and surface runoff is rapid. The ground water level is below 3 m throughout the year.

Vegetation and Land Use: Originally Tropical Evergreen Forest, only few remnants of which now remain. Now mainly in a variety of upland crops with para rubber dominant. When abandoned, reverts to thick stands of secondary shrubs and bamboo.

Characteristic Profile Features: Sadao series is a member of the coarse-loamy, kaolinitic, isohyperthermic Typic Kandiodults (soil taxonomy, 2003). They are very deep soils and are characterized by a dark brown or brown sandy loam surface or A horizon overlying a red or yellowish red sandy loam kandic B horizon. Moderately acid to slightly acid, reaction values range from 6.0 to 6.5.

Typifying Pedon: Sadao sandy loam - Dipterocarp forest, Ban Nai Chong, Tambon Nongkok, Amphoe Muang, Changwat Krabi, 20 m above mean sea level, 4 to 5 percent slopes (sheet name Changwat Krabi, sheet number 4735 I).

Profile Code Number: S-64/22, described by P. Pramojane, 16 January 1973 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
A	0-10	Dark brown to brown (7.5YR4/4) sandy loam; moderate fine to medium subangular blocky structure; friable, nonsticky and nonplastic; many fine roots, very strongly acid (field pH 4.5); clear smooth boundary.
AB	10-22	Reddish brown to yellowish red (5YR4/4-6) sandy loam; weak to moderate medium to coarse subangular blocky structure; friable, nonsticky and nonplastic; many interstitial and few fine to medium tubular pores; many fine roots, very strongly acid (field pH 4.5); clear smooth boundary.
Bt1	22-44	Yellowish red to red (5-2.5YR5/6) sandy loam; weak to moderate medium and coarse subangular blocky structure; slightly firm, slightly sticky and nonplastic; few thin cutan in pores; many very fine to fine interstitial and common fine tubular pores; many fine and few medium roots, very strongly acid (field pH 4.5); diffuse smooth boundary.
Bt2	44-80	Red (2.5YR5/6) sandy loam; weak to moderate coarse subangular blocky structure; friable, slightly sticky and nonplastic; common thin cutan on ped faces; many very fine interstitial and common fine tubular pores; many fine roots; extremely acid (field pH 4.0); clear wavy boundary.
Bt3	80-100 ⁺	Red (2.5YR4-5/6) sandy clay loam; weak to moderate coarse subangular blocky structure; friable, slightly sticky and slightly plastic; common thin cutan on ped face and in pores; many very fine interstitial and common fine tubular pores; few fine roots, extremely acid (field pH 4.0).

Type Location:

Name of district, Amphoe Sadao, Changwat Songkhla.

Range of Profile Features:

The surface or A horizon sandy loam or loamy sand is 10 to 20 cm in thickness and has 7.5YR hues, values 3 to 5 and chromas 2 to 4. The structure is weak fine subangular blocky. Very strongly to moderately acid, reaction values range from 5.0 to 6.0.

The kandic B horizon sandy loam (sandy clay loam may occurred in deeper subsoil) 5YR or 2.5YR hues, values 3 to 5 and chromas 6 to 8. Structure is weak and moderate fine and medium blocky. Very strongly to strongly acid, reaction values range from 5.0 to 5.5.

Similar Soil Series:

Fang Daeng series (Fd): fine-loamy, kaolinitic, isohyperthermic Typic Kandiudults.

Principle Associated Soils:

These include Na Thawi, Fang Daeng and Khlong Thom series.

Na Thawi series (Nat): coarse-loamy, kaolinitic, isohyperthermic Typic Kandiudults.

Khlong Thom series (Km): fine-loamy, kaolinitic, isohyperthermic Typic Kandiudults.

ANALYSIS RESULTS

(oven dry basis)

Profile code No.: SE-15/20

Soil series: Sattahip series (Sh)

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-1638	0-25	Ap	82.0	17.0	1.0						ls	ls	5.0	4.3	0.3	4.0	44
Pd-1639	25-58	C1	80.5	14.0	5.5						ls	ls	5.4	4.4	0.3	2.5	35
Pd-1640	58-120+	C2	81.0	16.0	3.0						ls	ls	5.5	4.5	0.6	3.1	29

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)				
0-25	0.5	0.36		0.40	0.10	0.10	0.20	0.80	1.40	2.20	1.2	120.0	67	36			0.02	
25-58	0.1	0.14		0.40	0.10	0.10	0.20	0.80	0.80	1.60	0.6	10.9	100	50			0.03	
58-120+	0.1	0.20		0.30	0.10	0.05	0.10	0.55	0.40	0.95	0.5	16.7	100	58			0.02	

Surveyor: C. Chaengprai & staff

Date: August 6, 1973

Reported by: W. Sirichuaychoo

Date: Oct. 26, 1998