

Proposed by S. Charoenpong, 1971
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

SAWI SERIES

Field Symbol: Sw

Distribution: Occupies small extent in Peninsular Thailand, mainly in Changwat Chumphon.

Setting: Sawi soils are formed from sandstone and occurred on denudation surface. Relief is nearly level to undulating. Slope ranges from 1 to 12 percent. Elevation is 20 to 40 m above mean sea level. The climate is Tropical Monsoon (Koppen 'Am'). Annual precipitation is from 1,800 to 2,500 mm Average annual temperature is 27°C.

Drainage, Permeability and Surface Runoff: Drainage is well drained, permeability is moderate and surface runoff is medium. Ground water level is below 2 m from the soil surface for most of the year.

Vegetation and Land Use: Originally Tropical Evergreen Forest, but is now secondary forest or has been cleared for the cultivation of upland crops including banana, pineapple, coconuts and water melon. Para rubber is also grown in places but is not as extensive as the other crops mentioned.

Characteristic Profile Features: The Sawi series is a member of the loamy-skeletal, mixed, semiactive, isohyperthermic Typic Paleudults (soil taxonomy, 2003). They are moderately deep soils to ironstones and are characterized by a dark brown or dark grayish brown sandy loam surface or A horizon and a yellowish brown or strong brown sandy loam subsurface of B horizon,, strongly acid to moderately acid, reaction values range from 5.5 to 6.0. These overlie a strong brown to yellowish red very gravelly sandy clay loam argillic B horizon which occurs below 50 cm but within 1 meter of the soil surface. The coarse fraction is composed of gravel size unconsolidated ironstone nodules. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Typifying Pedon: Sawi sandy loam - pasture, forage crop station, Amphoe Tha Sae, Changwat Chumphon, 2 to 5 percent slopes.

Profile Code Number: S-58/70, described by U. Pulsawath, 13 February 1971 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
Ap	0-14/18	Mixed color of dark grayish brown (10YR4/2) grayish brown (10YR5/2) light yellowish brown (10YR6/4) and strong brown (7.5YR5/6) sandy loam; weak fine to medium subangular blocky structure; friable, nonsticky and nonplastic; many interstitial and few tubular pores; few fine roots; moderately acid (field pH 6.0); clear wavy boundary.
Bw1	14/18-30	Reddish yellow (7.5YR6/6) sandy loam; weak fine to medium subangular blocky structure; friable, slightly sticky and nonplastic; many interstitial and few tubular pores; few fine roots; moderately acid (field pH 6.0); gradual smooth boundary.
Bw2	30-46	Light yellowish brown (10YR6/4) and strong brown (7.5YR5/6) sandy loam; weak fine to medium subangular blocky structure; friable, slightly sticky, slightly plastic; many interstitial and common tubular pores; few fine roots; strongly acid (field pH 5.5); gradual, smooth boundary.
Bt	46-76	Strong brown (7.5YR5/6) and yellowish red (5YR5/6) sandy clay loam; weak fine to medium subangular blocky structure; friable, slightly sticky and slightly plastic; patchy thin cutan along animal holes; many interstitial and tubular pores; few fine and medium roots; strongly acid (field pH 5.5); clear smooth boundary.
Btc	76-110	Strong brown (7.5YR5/6) and yellowish red (5YR5/6) gravelly sandy clay loam; weak fine to medium subangular blocky structure; friable, slightly sticky and

slightly plastic; patchy thin cutan along animal holes; many interstitial and tubular pores; laterite about 90% by volume of the soil matrix; strongly acid (field pH 5.5).

Type Location:

Name of district, Amphoe Sawi, Changwat Chumphon.

Range of Profile Features:

The surface or A horizon sandy loam is from 5 to 20 cm in thickness and has 10YR or 7.5YR hues, values 3 or 4 and chromas 2 to 4. Structure is weak fine and medium blocky and sandy clay loam textures may occur. Strongly acid to slightly acid, reaction values range from 5.5 to 6.5.

The subsurface or AB or BA or B horizon sandy loam has 7.5YR hues, values 4 to 6 and chromas 4 to 6 and 10YR hues, values 5 or 6 and chromas 4 to 6. Structure is weak fine and medium blocky and sandy clay loam textures may occur. Strongly acid to moderately acid, reaction values range from 5.5 to 6.0.

The argillic B horizon very gravelly sandy clay loam or clay loam has hues 7.5YR or 5YR, values 5 or 6 and chromas 6 or 8. Structure is difficult to define due to the high volume percent of ironstone nodules in the horizon. Very strongly acid to acid, reaction values range from 5.0 to 5.5.

Similar Soil Series:

Chumphon series (Cp): clayey-skeletal, kaolinitic, isohyperthermic Typic Paleudults, a layer of unconsolidated ironstone nodules occurs from shallow depth within 50 cm of the soil surface.

Hat Yai series (Hy): clayey-skeletal, kaolinitic, isohyperthermic Typic Paleudults, contains mixed gravels within 50 cm of the soil surface.

Khlong Chak series (Kc): clayey-skeletal, kaolinitic, isohyperthermic Typic Kandihumults, has redder colors throughout.

Principal Associated Soils:

These include Chumphon, Kho Hong and Tha Sae series.

Kho Hong series (Kh): coarse-loamy, kaolinitic, isohyperthermic Typic Kandiudults.

Tha Sae series (Te): fine-loamy, kaolinitic, isohyperthermic Typic Kandiudults.

ANALYSIS RESULTS

Profile code No.: S-58/70

(oven dry basis)

Soil series: Sawi series (Sw)

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
Pb-526	0-14/18	Ap	67.0	27.0	6.0						sl	sl	4.6	4.0	0.0	2.7	27
Pb-527	14/18-30	Bw1	61.0	22.0	17.0						sl	sl	4.5	3.7	0.0	2.3	29
Pb-528	30-46	Bw2	63.0	20.5	16.5						sl	sl	4.5	3.7	0.2	2.3	27
Pb-529	46-76	Bt	61.0	20.5	18.5						sl	scl	4.3	3.7	0.0	2.3	27
Pb-530	76-110	Btc	51.0	22.5	26.5						scl	gscl	4.6	3.7	0.2	2.0	50

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)
0-14/18	0.3	0.32		0.50	0.10	0.10	0.40	1.10	3.80	4.90	3.7	61.7	30	22			0.03						
14/18-30	0.3	0.18		0.40	0.10	0.04	0.20	0.74	4.30	5.04	3.8	22.4	19	15			0.02						
30-46	0.5	0.15		0.50	0.20	0.04	0.20	0.94	3.60	4.54	4.1	24.8	23	21			0.02						
46-76	2.9	0.16		0.50	0.20	0.05	0.30	1.05	4.80	5.85	5.2	28.1	20	18			0.02						
76-110	1.1	0.13		0.70	0.50	0.10	0.30	1.60	6.10	7.70	6.8	25.7	24	21			0.01						

Surveyor: U. Pulsawath

Reported by: W. Sirichuaychoo

Date: Feb. 13, 1971

Date: Nov. 20, 1998