

Proposed by: W. Boonyawat, 1968  
Revised by:  
1. N. Chorphaka, 1988  
2. A. Potichan, 2004

**SOP PRAP SERIES**

**Field Symbol: So**

**Distribution:** Occupies small extent in Northern Thailand and the Central Highlands.

**Setting:** Sop Prap soils are residual soils derived from basalt and occur on dissected lava flows. Relief is gently undulating to rolling. Slopes range from 2 to 12%. Elevation ranges from 150 to 250 m above sea level. The climate is Tropical Savanna (Koppen 'Aw'). Annual precipitation ranges from 1,000 to 1,500 mm.

**Drainage, Permeability and Runoff:** Well drained. Permeability is moderate. Runoff is slow to rapid.

**Vegetation and Land Use:** Mainly mixed deciduous and dipterocarp forest. Parts are cleared for upland crops such as maize, sugarcane, sorghum etc.

**Characteristic Profile Features:** Sop Prap series is a member of the fine, smectitic, isohyperthermic Lithic Haplustolls. They are shallow, slightly acid to neutral soils characterized by a very dark grayish brown or very dark brown clay loam or clay A horizon and a very dark grayish brown or dark brown clay B horizon. This overlies a weathering zone which grades to bedrock within 50 cm of the soil surface.

**Typifying Pedon:** Profile code no. is NC-47/71 (moist colours unless otherwise stated).

**Location:** Ban Nam Ron, 15 km south-east of Amphoe Muang Changwat Phetchabun.

**Sheet Name:** Changwat Phetchabun

**Sheet No.:** 5241 IV

**Coordinate:** 343027

**Elevation:** 160 m (MSL)

**Relief:** gently undulating

**Slope:** 2-3%

**Physiography:** dissected lava flows

**Parent material:** residuum derived from basalt

**Drainage:** well drained

**Permeability:** moderate

**Runoff:** slow

**Ground water depth:** >2 m

**Flooding depth:** -

**Duration:** -

**Frequency:** -

**Annual rainfall:** 1,124.7 mm

**Mean temp.:** 27.2 °C

**Climate type:** Tropical Savannah (Aw)

**Natural vegetation or land use:** mixed deciduous forest

**Described by:** Bos and J.D. Cowie

**Date:** 16 December, 1969

**Revised by:** Aniruth Potichan

**Date:** 27 May, 2004

Horizon	Depth (cm)	Description
A	0-18	Black (10YR2/1) clay; strong fine and medium subangular blocky structure; firm, sticky and plastic; few subangular basalt gravels; abundant very fine and medium roots; neutral (field pH 7.0); clear and smooth boundary.
Bw	18-30/37	Very dark brown (10Y 2/2) clay; strong medium and fine subangular blocky structure; firm, sticky and plastic; frequent subangular basalt gravels and many coarse sand size, yellow weathering basalt fragments; abundant very fine and medium roots; moderately alkaline (field pH 7.5); abrupt and irregular boundary.
R	30/37+	Gray, hard basalt with very dark brown (10YR2/2) clay in cracks; the rocks have a weathered surfaces 0.5 to 1 mm thick; common fine and very fine roots occur in cracks; slightly acid (field pH 6.5).

**Type Location:**

Sop Prap series was named for Amphoe Sop Prap, Changwat Lampang however a typifying pedon was not described.

### Range of Profile Features:

The A horizon is from 10 to 20 cm thick, has 10YR hue, values of 2 or 3 and chromas of 1 or 2. Structure is moderate to strong fine and medium blocky or granular. Field pH values range from 6.0 to 7.0.

The B horizon has 10YR and 7.5YR hues, values of 2 or 3 and chromas of 2 to 4. Structure is strong fine and medium blocky. Field pH values range from 6.0 to 7.5.

Scattered, weathering basalt fragments may occur in both A and B horizon.

### Similar Soil Series:

Chai Badan series (Cd): also basalt derived but has a moderately deep solum with bedrock occurring between 50 and 125 cm of the soil surface.

### Principal Associated soils:

These include Chai Badan, Lamnarai and Buri Ram series which occupy adjacent and slightly lower positions on dissected lava flows.

#### ANALYSIS RESULTS

(oven dry basis)

Profile code no.: NC-47/71

Soil series: Sop Prap (So)

Lab No.	Depth (cm)	Horizon	Particle size distribution analysis (% by weight)							Texture		pH		CaCO <sub>3</sub> %	P, mg kg <sup>-1</sup> Bray 2	K, mg kg <sup>-1</sup> NH <sub>4</sub> OAc	
			USDA grading			Sand-fraction grading				Lab	Field	1:1	1:1				
			sand	silt	clay	vc	c	m	f	vf	result	estim <sup>n</sup>	water				KCl
P-49	0-18	A	24.0	23.0	53.0						c	c	6.9	5.8	4.3	34.8	262
P-50	18-30/37	Bw	23.0	36.0	41.0						c	c	6.1	4.9	2.5	29.2	72

Depth (cm)	Air dried to oven dried	C %	N %	Exchange capacity and cations (cmol <sub>(c)</sub> kg <sup>-1</sup> )									Base satur <sup>n</sup> (%)		ECEC cmol <sub>(c)</sub> kg <sup>-1</sup> (B+D)	Al KCl extr. cmol <sub>(c)</sub> kg <sup>-1</sup> (D)	Electrical conduct <sup>y</sup> (ECx10 <sup>6</sup> ) dS m <sup>-1</sup>
				Ca	Mg	K	Na	SUM cations (B)	Extr. acidity (A)	SUM (B+A)	CEC NH <sub>4</sub> OAc (C)	CEC 100g Clay	B/Cx100	(Bx100)/(B+A)			
				0-18	7.1	2.81		33.90	11.60	0.60	0.30	46.40	12.00	58.40			
18-30/37	7.9	0.91		26.90	11.90	0.10	0.30	39.20	13.50	52.70	57.8	141.0	68	74			0.04

Surveyor: Bos and J.D. Cowie

Date: 16 December, 1969