

Proposed by: F.R. Moormann, 1967
Revised by:
1. N. Chorhaka, 1988
2. A. Potichan, 2004

CHAI BADAN SERIES

Field Symbol: Cd

Distribution: Occupies moderate extent in the Central Highlands.

Setting: Chai Badan soils are on gently undulating to rolling slopes of dissected lava flows. Slopes range from 3 to 16 percent. They are derived from residuum and colluvium from basalt, andesite and occasionally rhyolite. The climate is Tropical Savanna (Koppen 'Aw'). The annual precipitation ranges from 1,100 to 1,600 mm. Elevation ranges from 60 to 150 m above sea level.

Drainage, Permeability and Runoff: Moderately well drained. Runoff is slow to rapid. Permeability is estimated to be moderate to slow.

Vegetation and Land Use: Mixed deciduous and dry evergreen forest. Parts are cleared for upland crops such as corn, sorghum, soy bean, peanuts and sunflower etc.

Characteristic Profile Features: Chai Badan series is a member of the fine, smectitic, isohyperthermic Leptic Haplusterts. They are moderately deep soils. Weathered parent rocks usually occur lower than 50 cm but within 100 cm from the soil surface. These soils are characterized by a very dark gray or very dark grayish brown silty clay or clay A horizon overlying a dark grayish brown, dark brown or brown silty clay or clay cambic B horizon. Cracks occur deeply from the surfaces to C horizon during the dry season. Slickensides can be observed in the profile. Some secondary lime nodules are usually present in the C horizon.

Typifying Pedon: Profile code no. 9 (moist colours unless otherwise stated).

Location: On the left side of the road about 2 km from Ban Nong Makha Noi to Ban Wang Ang, Ban Nong Makha Noi, Tambon Bua Watthana, Amphoe Nong Phai Changwat Phetchabun.

Sheet Name: Amphoe Nong Phai

Sheet No.: 5240 IV

Coordinate: 177663

Elevation: 110 m (MSL)

Relief: undulating

Slope: 4 %

Physiography: basaltic plain

Parent material: colluvium from basalt and/or andesite

Drainage: moderately well drained

Permeability: moderate

Runoff: -

Ground water depth: >1.5 m

Flooding depth: -

Duration: -

Frequency: -

Annual rainfall: 1,247 mm

Mean temp.: 27.2 °C

Climate type: Tropical Savannah (Aw)

Natural vegetation or land use: corn

Described by: N. Chorhaka and S. Jungnitniran

Date: 21 August, 1997

Revised by: Aniruth Potichan

Date: 23 May, 2004

Horizon	Depth (cm)	Description
Ap	0-20	Dark brown (7.5YR3/2) clay loam, moderate fine and medium subangular blocky structure; firm, sticky and plastic; many very fine and fine roots; moderately alkaline (field pH 8.0); clear and smooth boundary.
AB	20-40	Dark brown (10YR3/3) clay loam, moderate fine and medium subangular blocky structure; firm, sticky and plastic; many very fine and fine roots; moderately alkaline (field pH 8.0); gradual and smooth boundary.
Bss1	40-61	Dark grayish brown (10YR4/2) clay; many fine and medium distinct mottles of strong brown (7.5YR4/6); moderate medium and coarse subangular blocky structure; firm, sticky and plastic; few very fine, fine medium and coarse roots; few slickensides and pressure faces; moderately alkaline (field pH 8.0); gradual and smooth boundary.

Bss2	61-90	Very dark grayish brown (10YR3/2) clay; common fine distinct mottles of strong brown (7.5YR4/6); moderate medium and coarse subangular blocky structure; firm, sticky and plastic; few fine roots; many slickensides and pressure faces; moderately alkaline (field pH 8.0); abrupt and smooth boundary.
Cr	90-140+	Highly weathered of basalt or andesite; do not take sample.

Type Location:

Chai Badan series was named for Amphoe Chai Badan, Changwat Lop Buri.

Range of Profile Features:

The A horizon ranges from 20 to 40 cm in thickness and has hue of 10YR, values of 2 to 3 and chromas of 1 to 2. The texture of clay loam or silty clay loam may occur. The pH value ranges from 6.5 to 8.0.

The cambic B horizon has relatively browner color with hues of 7.5 to 10YR, values of 4 to 5, chromas of 2 to 3. The pH value ranges from 7.0 to 8.0.

The structure of the uncultivated A is strong fine to medium granular and blocky and becomes medium to coarse blocky if cultivated. The surface of this soil, however, may be resistant to pressure if excess cultivation has been undergone. The structures of the cambic B horizon is very coarse prismatic breaking to medium and coarse blocky.

Similar Soil Series:

Buri Rum series (Br): deep soils and having darker and grayer color.

Samo Thod series (Sat): deep soils and higher chroma.

Principal Associated Soils:

Chai Badan series are associated with Samo Thod, Tha Li and Lam Narai series occupying similar topographic position; and Buri Ram series on lower and flatter terrain.

ANALYSIS RESULTS
(oven dry basis)

Profile code no.: Network (9)
Soil series: Chai Bardan series (Cd)
Received no. 40-705

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 water	1:1 KCl			
			sand	silt	clay	vc	c	m	f	vf	result	estim ⁿ					
4022223	0-20	Ap	12.0	63.6	24.4	1.7	1.7	1.9	2.6	4.1	sil	cl	7.3	6.4		0.1	
4022224	20-40	AB	12.0	55.8	32.2	2.0	1.4	1.1	2.8	4.7	sicl	cl	7.3	6.2		0.2	
4022225	40-61	BSS1	11.1	44.3	44.6	1.2	0.8	1.3	2.9	4.9	sic	c	7.1	5.9		0.1	
4022226	61-90	BSS2	14.0	35.6	50.4	3.2	1.5	1.4	3.3	4.6	c	c	7.0	5.6		0.1	
4022227	90-140+	Cr	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd		nd	

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)				
0-20	6.0	1.53		93.00	3.80	0.40	0.30	97.50	3.60	101.10	58.3	238.9	100	96	97.5		-	
20-40	6.7	1.16		56.90	3.70	0.30	0.20	61.10	5.30	66.40	56.4	175.2	100	92	61.1		-	
40-61	5.9	0.86		42.80	4.20	0.30	0.30	47.60	5.80	53.40	49.5	111.0	96	89	47.6		-	
61-90	6.3	0.51		54.20	4.20	0.30	0.40	59.10	6.30	65.40	55.8	110.7	100	90	59.2		-	
90-140+	nd	nd		nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd		-	

Surveyor: N. Chorphaka and S. Jungnitniran

Date: 21 August, 1997

Reported by Samruay Kruitkun