

Proposed by C. Changprai, 1973
Revised by :
P. Vijarnsorn and staffs, 1988
W. Sirichuaychoo, 2004

BAN BUENG SERIES

Field Symbol: Bbg

Distribution: Occupies moderate extent in Southeast Coast of Thailand.

Setting: Bang Bueng soils are formed alluvium mostly from granite and quartzite and occurred on alluvial fan (granitic terrain). Relief is level to nearly level. Slope is 2 percent or less. Elevation ranges from 10 to 40 m above mean sea level. The climate is transitional zone between Tropical Savanna (Koppen 'Aw') and Tropical Monsoon (Koppen 'Am'). Average annual precipitation is from 1,200 to 1,800 mm. Average annual air temperature is 27°C.

Drainage, Permeability and Surface Runoff: Drainage is moderately well to somewhat poorly drained, permeability is rapid and surface runoff is medium. Ground water level falls below 1.5 m during dry season.

Vegetation and Land Use: Mainly used for sugar cane and cassava cultivation.

Characteristic Profile Features: The Ban Bueng series is a member of the isohyperthermic, coated Oxyaquic Quartzipsamments (Soil Taxonomy, 2003). They are very deep soils with sandy texture throughout the solum (>200 cm thick). The colors is grayish brown, brown or dark brown loamy sand of surface or A horizons overlying a pinkish gray, light brown or light reddish brown loamy coarse sand or coarse sand of subsurface of C horizon. Mottles occurred in the plow pan layer and in the deeper subsoil within 100 cm from the soil surface with strong brown, yellowish brown and/or dark yellowish brown colors. The sand fraction consists of medium and coarse in size. Soils reaction is slightly acid to moderately alkaline soils, reaction values range from 6.5 to 8.0.

Typifying Pedon: Ban Bueng loamy medium sandy - cassava plantation, Amphoe Ban Bueng, Changwat Chon Buri, 1 to 2 percent slopes.

Profile code no.: SE-15/21, described by C. Chaengprai and staffs, 7 August 1973 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
Ap	0-20	Grayish brown (10YR5/2) loamy medium sand; weak coarse subangular blocky structures breaking to single grain; friable, nonsticky and nonplastic; many fine interstitial pores, few fine and medium tubular pores; common fine roots; moderately alkaline (field pH 8.0); clear smooth boundary.
C1	20-42	Very pale brown (10YR7/3) loamy coarse sand; common coarse distinct brown to dark brown (10YR4/3) mottles; massive; slightly firm, nonsticky and nonplastic; many fine interstitial pores, few fine and medium tubular pores; more compact than above horizon; few fine roots; moderately alkaline (field pH 8.0); gradual smooth boundary.
C2	42-95	Very pale brown (10YR7/3) loamy coarse sand; many coarse distinct brown to dark brown (10YR4/3) mottles; very weak coarse subangular blocky structure breaking to single grains; friable, nonsticky and nonplastic; many fine and medium interstitial pores, common fine tubular pores; no roots; moderately alkaline (field pH 8.0); gradual smooth boundary.
C3	95-130	Light brown (7.5YR6/4) loamy coarse sand; many medium and coarse distinct strong brown (7.5YR5/6) mottles; very weak coarse subangular blocky structure breaking to single grains; friable, nonsticky and nonplastic; many fine and medium interstitial pores, few fine tubular pores; few hard iron nodules; no roots; moderately alkaline (field pH 8.0); gradual smooth boundary.

Cg 130-150 Pinkish gray (5-7.5YR7/2) loamy coarse sand; common medium and coarse distinct brownish yellow (10YR6/6) and few coarse distinct strong brown (7.5YR5/6) mottles; weak coarse subangular blocky structure breaking to single grains; firm, nonsticky and nonplastic; many fine and medium interstitial pores, few fine tubular pores; common slightly hard iron nodules; no roots; moderately alkaline (field pH 8.0).

Type Location:

Name of district, Amphoe Ban Bueng, Changwat Chonburi.

Range of Profile Features:

The surface or A horizon loamy sand or sand (medium or coarse sand) is from 10 to 30 cm thick and has 10YR or 7.5YR hues, values 3 to 5 and chromas 2 to 4. Structure is weak medium and/or coarse blocky breaking to single grain and single grain. Moderately acid to moderately alkaline, reaction values range from 6.0 to 8.0.

The subsurface horizon (AC or C) loamy sand or sand (medium or coarse sand) has 10YR and 7.5YR hues, values 6 to 7 and chromas 2 to 4 and brownish or yellowish mottles, mottles chromas of 2 or less may occurred in deeper subsoil. Structure is very weak coarse blocky and single grain. Slightly acid to moderately alkaline, reaction values range from 6.5 to 8.0.

The lower subsoil or C horizon loamy sand or sand (medium or coarse sand) saturated within 100 cm from the surface for some time (more than 30 days), mottled of brown, grayish brown and gray color. Slightly acid to moderately alkaline, reaction values range from 6.5 to 8.0. Slightly hard and/or hard iron stone nodules may occur in this horizon.

Similar Soil Series:

Sattahip series (Sh): isohyperthermic, coated Typic Quartzipsamments, has better drained and occurs in higher position. The mottles may occur in very deep subsoil (below 1 meter).

Ubon series (Ub): loamy, siliceous, semiactive, isohyperthermic Aquic Arenic (Grossarenic) Haplustalfs, has somewhat poorly to moderately well drained and gray mottled within 75 cm from the soil surface. The argillic B horizon occurred below 1 meter. Used for paddy rice.

Nam Phong series (Ng): loamy, siliceous, semiactive, isohyperthermic Arenic (Grossarenic) Haplustalfs, has well to somewhat excessively drained in higher position. The argillic B horizon occurred below 1 meter. Used for upland crops.

Principal Associated Soils:

These include Sattahip, Chon Buri and Map Bon series. The Sattahip (sandy soil) and Map Bon soils occur in higher position whereas the Chon Buri soils occur in lower position.

Chon Buri series (Cb): fine-loamy, mixed, semiactive, isohyperthermic Typic Endoaqualfs, occurred in lower position with poorly drained.

Map Bon series: fine-loamy, mixed, subactive, isohyperthermic Typic Kandiuults.

Sattahip series (Sh): isohyperthermic, coated Typic Quartzipsamments, has better drained and occurs in higher position. The mottles may occur in very deep subsoil (below 1 meter).

ANALYSIS RESULTS

Profile code No.: SE-15/21

(oven dry basis)

Soil series: Ban Bueng series (Bbg)

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				
Pd-1641	0-20	Ap	81.5	13.5	5.0					ls	ls	5.2	4.7	0.3	38.7	41
Pd-1642	20-42	C1	83.0	15.5	1.5					ls	ls	6.0	5.0	0.9	3.6	35
Pd-1643	42-95	C2	86.5	11.5	2.0					s	lcos	6.5	5.2	0.9	4.2	27
Pd-1644	95-130	C3	87.0	10.5	2.5					s	lcos	6.4	5.1	0.0	3.1	32
Pd-1645	130-150	Cg	74.0	20.5	5.5					ls	lcos	6.4	5.0	0.6	3.0	35

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)				
				0-20	0.1	0.53		1.40	0.20	0.20	0.20	2.00	0.80	2.80	1.5			
20-42	0.1	0.18		0.90	0.30	0.10	0.10	1.40	1.10	2.50	0.8	53.3	100	56			0.05	
42-95	0.2	0.10		0.30	0.10	0.10	0.20	0.70	0.10	0.80	0.3	15.0	100	88			0.02	
95-130	0.1	0.98		0.60	0.30	0.10	0.30	1.30	0.50	1.80	1.2	48.0	100	72			0.05	
130-150	0.4	1.18		0.80	0.20	0.10	0.10	1.20	0.10	1.30	0.6	10.9	100	92			0.05	

Surveyor: Chaleao Chaengprai & staff

Reported by: W. Sirichuaychoo

Date: August 7, 1973

Date: Nov. 2, 1998