

Proposed by F.J. Dent, 1966
Revised by :
P. Vijarnsorn and staff, 1988
W. Sirichuaychoo, 2004

AO LUEK SERIES

Field Symbol: Ak

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

Setting: Ao Luek soils are formed on residuum from limestone or limestone associated with shale (karst topography) and occurred on gently undulating to undulating terrain at an elevation from 30 to 100 m above mean sea level. Slope ranges from 2 to 12 percent. The climate is Tropical Monsoon (Koppen 'Am'). Average annual precipitation more than 1,500 mm. Average annual air temperature is from 26 °C to 28°C.

Drainage, Permeability and Surface Runoff: Drainage is well drained, permeability is slow to moderate and surface runoff is medium to rapid.

Vegetation and Land Use: The majority of these soils are under tropical evergreen forest, cleared for planted para rubber, oil palms, fruit trees, coffee and some upland crops.

Characteristic Profile Features: The Ao Luek series is a member of the very-fine, kaolinitic, isohyperthermic Rhodic Kandiodox (soil taxonomy, 2003). It is very deep soils with clay kandic B horizon throughout the solum. The color is fairly uniform down the profile with dark reddish brown surface or Ap horizon and red or dark red subsurface of kandic B horizon. Ao Luek series has clay more than 40 percent after mixing 18 cm of the soil surface. Strongly acid to slightly acid, reaction values range from 5.5 to 6.5 and slightly decreases with depth, very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

Typifying Pedon: Ao Luek clay, para rubber plantation, 5 km from Phetkasem road, Ban Nam Cha, Amphoe Sawi, Changwat Chumphon, 6-7 percent slopes, 30 m above mean sea level (sheet name Amphoe Sawi, sheet number 4841IV, coordinate 037379).

Profile Code Number: S-58/90, described by Piboon Pramojane and staffs, 11 December 1971 (moist colors unless otherwise stated).

Horizon	Depth (cm)	Description
Ap	0-11	Dark reddish brown (2.5YR3/4) clay; moderate fine and medium subangular blocky structure; firm, sticky and plastic; many fine and medium interstitial and common fine and very fine tubular pores; many fine roots; slightly acid (field pH 6.5); clear wavy boundary.
BA	11-18	Dark red (2.5YR3/6) clay; moderate fine and medium subangular blocky structure; firm, sticky and plastic; common fine cutan on roots holes; many fine and medium interstitial and common very fine and fine tubular pores; many fine and few large roots; slightly acid (field pH 6.5); diffuse wavy boundary.
Bt1	18-67	Dark red (10R3/6) clay; moderate fine and medium subangular blocky structure; firm, sticky and plastic; many cutan on ped faces and roots holes; many fine interstitial and common very fine and fine tubular pores; many fine roots; moderately acid (field pH 6.0); diffuse wavy boundary.
Bt2	67-100	Dark red (10R3/6) clay; moderate fine and medium subangular blocky structure; firm, sticky and plastic; common cutan on roots holes and ped faces; many fine interstitial and many fine tubular pores; very few fine roots; strongly acid (field pH 5.5); diffuse wavy boundary.

Type Location:

Name of district, Amphoe Ao Luek, Changwat Krabi.

Range of Profile Features:

The surface or A horizon clay, ranges from 10 to 20 cm in thickness and has colors 5YR or 2.5YR hues, values 4 or higher and chromas 4 or higher. The structure is moderate and strong fine and medium subangular blocky. Very strongly acid to slightly acid, reaction values range from 5.0 to 6.5.

The subsurface of kandic B horizon clay, has color 2.5YR or 10R hues, values 3 or less (or 4 when dry) and chromas 3 to 6, normally meet ≥ 50 percent between 25-125 cm from the soil surface. The structure is moderate and strong medium and coarse subangular blocky. The kandic B horizon shows well developed cutans on ped faces and in pores. Few scattered small round and hard ironstone nodules may occurred in the deeper subsoil, less than 35 percent by volume. Very strongly acid to strongly acid, reaction values range from 4.5 to 5.5.

The Ao Luek Soils may has 2.5YR or 10R hues, values 4 or more and chromas 3 to 6 (Typic Kandiodox).

Similar Soil Series:

Krabi series (Kbi): fine, kaolinitic, isohyperthermic Typic Kandiodults, derived from shale or equivalent rocks, colors of kandic B horizon, 5YR hues (2.5YR in deeper subsoil), values 4 to 5 and chromas 2 to 6.

Pak Chong series (Pc): very-fine, kaolinitic, isohyperthermic Rhodic Kandiuustox, ustic soil moisture regime.

Principal Associated Soils:

These include Krabi series.

ANALYSIS RESULTS (oven dry basis)

Profile code No.: S-58/90

Soil series: Ao Luek series (Ak)

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			
Pc-87	0-11	Ap	20.5	32.5	47.0						c	cl-c	6.2	5.6	0.9	5.3	234
Pc-88	11-18	BA	14.5	15.5	70.0						c	c	6.3	5.3	0.6	3.3	630
Pc-89	18-67	Bt1	10.5	9.5	80.0						c	c	5.3	4.2	2.1	3.9	615
Pc-90	67-100	Bt2	10.5	9.0	80.5						c	c	5.3	4.0	0.0	3.6	126

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)				
				0-11	3.0	4.83		11.90	3.00	0.60	0.03	15.53	11.60	27.13	28.1			
11-18	1.2	1.44		3.20	1.40	1.20	0.05	5.85	8.90	14.75	12.4	17.7	47	40			0.05	
18-67	0.8	0.64		0.90	0.40	1.00	0.03	2.33	10.90	13.23	7.7	9.6	30	18			0.05	
67-100	2.2	0.42		0.90	0.30	0.20	0.03	1.43	11.90	13.33	7.4	9.2	19	11			0.02	

Surveyor: P Pramojanee & staff

Reported by: W. Sirichuaychoo

Date: Dec. 11, 1971

Date: Nov. 23, 1998