

GAPA SERIES

Established Series
UKT
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The Gapa series are members of the mixed, thermic family of Typic Udipsamments [Haplic Arenosols (Eutric) classified by WRB]. These soils have dark yellowish brown medium sand A horizons, light yellowish brown medium sand C1 horizons, and yellowish brown and light yellowish brown stratified medium sand C2 horizons. These soils are derived from sea shell marine deposits and developed on beach areas.

Typifying Pedon: Gapa sand-wild grass (Colors are for moist soil).

Slope: 2-7%

Elevation: 2 m above m.s.l.

Soil moisture regime: Udic

Soil temperature regime: Thermic

Parent material: Marine deposits

Diagnostic features: An ochric epipedon from a depth of 0 to 15 cm

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Morphological properties of typifying pedon.

A - 0 to 15 cm. Dark yellowish brown (10YR 4/4) medium sand; structureless, single grained; loose, non sticky and non plastic; many fine to medium roots; few worm holes; few sea shells; clear smooth boundary.

C1 - 15 to 38 cm. Light yellowish brown (10YR 6/4) medium sand; structureless, single grained; loose, non sticky and non plastic; few fine to medium roots; few worm holes; few sea shells;

clear smooth boundary.

C2 - 38 to 200 cm. Yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) stratified medium sand; structureless, single grained; loose, non sticky and non plastic; few fine to medium roots; few worm holes; few sea shells.

The typifying pedon has an ochric epipedon from a depth of 0 to 15 cm. But it does not have other diagnostic horizons. Therefore it can be classified as Entisol. It has less than 35% rock fragments and a texture class of loamy fine sand or coarser in all layers within the particle-size control section. It keys out as Psamment. It has an udic soil moisture regime and can be classified as Udipsamment. Also it meets the requirements of Typic Udipsamment. The typifying pedon has thermic soil temperature regime, and can be classified as mixed, thermic family of Typic Udipsamment.

Type Location: Sand dune of the eastern side of Sinyang Swimming Beach, Sinyang Ri, Seongsan Eub, Seogwipo city, Jeju Do (126° 41' 37.0", 33° 27' 54.0").

Range in Characteristics: These soils have ochric epipedons. Depth to bed rock is more than 3 meters and probably ranges from 3 to 5 meters. Reaction is moderately to strongly alkaline throughout the control section. Base saturation is more than 60 percent. A horizons are light yellowish brown, grayish brown, or dark yellowish brown sand or loamy sand (fine shell fragments). C horizons are yellowish brown or light yellowish brown sand or loamy sand (fine shell fragments).

Competing Series and Their Differentiae: These include the Hwabong, Nagdong, Haeri, Togye, Ibseog, Onpyeong and Myeongji series. All of these soils are derived from continental alluvial materials and are lower pH. The Hwabong soils are yellow colors and have quartz grits. The Nagdong soils are brown colors and loamy fine sand texture. The Haeri soils comprise of fine quartz grit sand. The Togye soils have gravelly sandy texture family throughout and occur in local valley, mountain foot slope and alluvial fan positions. The Ibseog soils are sandy skeletal texture family. The Onpyeong soils are darker soil color. The Myeongji soils have moderately thick darker A horizons and contain gray mottles between 50 and 100 cm.

Setting: The Gapa soils occur on beach and sea levee areas. They are derived from entirely fine shell fragments. Slopes range from 2 to 15 percent and dominant slopes are 2 to 7 percent.

Principal Associated Soils: The Onpyeong, Mureung, Donggwi and Aewol soils are associated. The Onpyeong soils are associated with similar physiographic positions. The Mureung, Donggwi and Aewol soils are associated with higher positions.

Drainage and Permeability: Somewhat excessively drained and very rapid permeability. Runoff is slow.

Use and Vegetation: Most Gapa soils are used for upland crops such as barley, sweet potato and rye. Small areas are used for recreation places such as bath beach.

Distribution and Extent: The Gapa soils are of small extent and occur along the beach areas in Jeju Do.

Series Established: Bugjeju Gun, Jeju Do, 1971. Revised, Seogwipo city, Jeju Do, 2010.

Laboratory data sheets of typifying pedon.

Depth (cm)	Horizon	(--- Total ---)			(-- Clay --)		(-- Silt --)		(----- Sand -----)				
		Clay	Silt	Sand	Fine	Coarse	Fine	Coarse	VF	F	M	C	VC
		LT	.002	.05	LT	LT	.002	.02	.05	.10	.25	.5	1
		.002	- .05	- 2	.0002	.002	- .02	- .05	- .10	- .25	- .50	- 1	- 2
- - - - - Pct of < 2mm (3A1) - - - - -													
0-15	A	5.6	3.6	90.8			1.3	2.4	2.2	33.1	41.3	12.0	1.0
15-38	C1	1.0	0.9	98.1			0.4	0.5	0.2	16.3	49.2	31.1	3.3
38-200	C2	1.0	1.3	97.1			0.4	0.9	0.4	23.9	52.1	21.9	2.6

Depth (cm)	Coarse Fractions(mm)				>2mm	Orgn	Total	Extr	Total	(-- Dith -Cit --)		
	Weight				Wt	C	N	P	S	Extractable		
	2-5	5-20	20-75	.1-75	Pct of					Fe	Al	Mn
					Whole	6A1c	6B3a	6S3	6R3a	6C2b	6G7a	6D2a
	Pct of < 75mm (3B1)				Soil	Pct < 2mm		g/kg		Pct of < 2mm		
0-15						2.42						
15-38						0.75						
38-200						0.13						

Depth (cm)	Ratio/Clay		Atterberg		(Bulk Density)			COLE	(- Water Content -)				WRD
	CEC	1500	Limits		Field	33	Oven	Whole	Field	10	33	1500	Whole
		kPa	LL	PI	Moist	kPa	Dry	Soil	Moist	kPa	kPa	kPa	Soil
	8D1	8D1	4P1	4P	4A3a	4A1d	4A1h	4D1	4B4	4B1c	4B1c	4B2a	4C1
	Pct <0.4mm				- - g/cc - -			cm/cm	-- Pct of <2mm --				cm/cm
0-15	1.7				0.92				20.4				
15-38	4.2				1.19				17.8				
38-200	3.6												

Depth (cm)	(NH4OAc Extractable Bases)					Acid-	Extr	(----- CEC -----)			Al
	Ca	Mg	K	Na	Sum	ity	Al	Sum	NH4-	Bases	Sat
	5B5a	5B5a	5B5a	5B5a	Bases			Cats	OAc	+ Al	
	6N2e	6O2d	6Q2b	6P2b		6H5a	6G9a	5A3a	5A8b	5A3b	5G1
	- - - - - meq / 100g - - - - -										Pct
0-15	25.2	2.6	0.1	0.3	28.3	0	0	28.3	9.9	28.3	0
15-38	21.5	1.7	0	0.3	23.6	0	0	23.6	4.2	23.6	0
38-200	21.1	1.8	0.1	0.3	23.3	0	0	23.3	3.6	23.3	0

Depth (cm)	(Base Sat)		CO3 as	Res	P Ret	(----- pH -----)				Acid Oxalate Extraction			
	Sum	NH4-	CaCO3			NaF	KCl	CaCl2	H2O	Opt	Al	Fe	Si
		OAc	<2mm					.01M		Den			
	5C3	5C1	6E1g	8E1		8C1d		8C1f	8C1f	8J	6G12	6C9a	6V2
	---- Pct ----		ohms/cm		Pct	1: 1 1: 2 1: 1				- Pct of <2mm -			
0-15	100	100			61.5		7.5	7.6	8.2		0.32	0.51	0.14
15-38	100	100			93.9		8.1	8.1	8.9		0.23	0.40	0.12
38-200	100	100			93.5		8.1	8.1	9.0		0.32	0.61	0.21