OSAN SERIES

Established Series
BCO, UKT
22 April, 1970

The Osan series are members of the coarse loamy, mixed, mesic family of Typic Dystrudepts [Haplic Cambisols (Alumic Humic Dystric Siltic Chromic) classified by WRB]. These soils have strong brown gravelly loam A horizons, yellowish red gravelly loam BA horizons, yellowish red gravelly loam Bw1 horizons, yellowish red gravelly loam Bw2 horizons, and reddish brown gravelly sandy loam BC horizons. They are developed in mountainous areas and are derived from residual granite gneiss, micaceous schist and schist rocks.

Typifying pedon: Osan gravelly loam-forest (Colors are for moist soil).

Slope: 30-60%

Soil moisture regime: Udic

Siol temperature regime: Mesic

Parent material: Residuum on granite gneiss

Diagnostic features : An ochric epipedon from a depth of 0 to 17 cm and a cambic horizon from a depth of 34 to 102 cm (A cambic horizon from a depth of 34 to 102 cm by WRB).

Described by: Song, K. C., S. J. Jung , and D. C. Noh, 24 Sep., 2009.

Morphological properties of typifying pedon.

A - 0 to 17 cm. Strong brown (10YR 5/4) gravelly loam; moderate fine to medium granular structure; firm, sticky and plastic; many fine to medium tree roots; common fine to medium pores; 10% gravels; clear smooth boundary.

BA - 17 to 34 cm. Yellowish red (5YR 4/6) gravelly loam; moderate medium to coarse subangular blocky structure; firm, sticky and plastic; many medium to coarse tree roots; common fine to medium pores; 15% gravels; gradual smooth boundary.

Bw1 - 34 to 60 cm. Yellowish red (5YR 4/6) gravelly loam; weak fine to medium subangular blocky structure; firm, sticky and plastic; common fine to medium roots; common fine to medium pores; 15% gravels; clear smooth boundary.

Bw2 - 60 to 102 cm. Yellowish red (5YR 5/6) gravelly loam; weak fine to medium subangular blocky structure; firm, sticky and plastic; common fine to medium roots; common fine to medium pores. 20% gravels; clear smooth boundary.

BC - 102 to 180 cm. Reddish brown (5YR 4/4) gravelly sandy loam; weak fine to medium subangular blocky structure; firm, sticky and plastic; few fine to medium roots; few fine pores. 20% gravels.

The typifying pedon has an ochric epipedon from a depth of 0 to 17 cm and a cambic horizon from a depth of 34 to 102 cm. That can be classified as Inceptisol. It has an udic soil moisture regime and keys out as Udept. Also it meets the requirements of Typic Dystrudept. The typifying pedon has coarse loamy particle-size class and mesic soil temperature class. Therefore it can be classified as coarse loamy, mixed, mesic family of Typic Dystrudept.

Type Location: About 700 meters west of the Saam 7 Ri Maeulhoegwan, Saam Ri, Wonsam Myeon, Yongin city, Gyeonggi Do (127^{o} 17' 59.6", 37^{o} 10' 56.9").

Range in Characteristics: These soils have ochric epipedons and cambic horizons. The solum thickness ranges from 100 to 200 cm. Depth to hardrock is more than 2 meters. Common fine to medium white and yellow micas are throughout the profiles. Base saturation is less than 60 percent. Reaction is ver strongly to strongly acid. A horizons are strong brown gravelly loam, silt loam, or sandy loam. Cambic B horizons are yellowish red, reddish brown, or dark red gravelly loam or silt loam.

Competing Series and Their Differentiae: The Songsan, Daesan, and Ulsan series are similar. The Songsan soils are derived from metamorphic rocks such as biotite, granite-gneiss and schist. The Daesan soils are derived from phyllite or schist of Ogcheon system. The Ulsan soils are derived from porphyritic materials.

Setting: The Osan soils occur chiefly in moderately steep to steep mountainous areas underlain by granite gneiss, schist and micaceous schist. Dominant slopes are 15 to 60 percent and range from 7 to 100 percent.

Principal Associated Soils: The Wongog, Pogog and Seongsan soils are associated in local valley

alluvial-colluvial and foot slope position. The Songjeong and Yesan soils are associated on similar and steeper slopes.

Drainage and Permeability: Well drained. Permeability is probably moderate and runoff is rapid.

Use and Vegetation: Most of these soils grow pine forest, shrub, wild grasses, and some mixed forest.

Distribution and Extent: The Osan soils are of moderate extent and distributed in mountainous areas with granitic gneiss geology throughout the country.

Series Established: Bucheon city, Gyeonggi Do, 1969. **Revised,** Yongin city, Gyeonggi Do, 2009.

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	.002 - .05	.05 - 2	LT .0002	LT .002	.002 - .02	.02 - .05	.05 - .10	.10 - .25	.25 - .50	.5 - 1	1 - 2
		- - - - - - - - - - - - Pct of < 2mm (3A1) - - - - - - - - - - - -											
0-17	A	18.4	52.4	29.2			37.6	13.8	5.7	8.0	0.1	9.8	5.6
17-34	BA	16.9	52.1	31.1			29.1	23.0	5.8	8.4	0.1	11.2	5.6
34-60	Bw1	17.3	56.0	26.7			22.7	33.3	3.0	9.6	0.2	11.1	2.8
60-102	Bw2	15.0	55.0	30.0			28.8	26.2	4.2	9.8	0.1	11.9	4.0
102-180	BC	12.5	53.0	34.5			26.5	26.5	7.2	9.1	0.1	11.1	7.0

Depth (cm)	Coarse Fractions(mm) Weight				>2mm Wt	Orgn C	Total N	Extr P	Total S	(-- Dith -Cit --) Extractable		
	2-5	5-20	20-75	.1-75	Pct of Whole	6A1c	6B3a	6S3	6R3a	Fe 6C2b	Al 6G7a	Mn 6D2a
	Pct of < 75mm (3B1)				Soil	Pct < 2mm		g/kg		Pct of < 2mm		
0-17						1.98						
17-34						1.29						
34-60						1.06						
60-102						0.94						
102-180						0.73						

Depth (cm)	Ratio/Clay		Atterberg Limits		(Bulk Density)			COLE	(- Water Content -)				WRD
	CEC	1500 kPa	LL	PI	Field Moist	33 kPa	Oven Dry	Whole Soil	Field Moist	10 kPa	33 kPa	1500 kPa	Whole 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
0-17	0.60				1.14				15.4				
17-34	0.51				1.12				15.2				
34-60	0.55				1.25				14.2				
60-102	0.55				1.40				13.0				
102-180	0.63												

Depth (cm)	(NH4OAc Extractable Bases)					Acid-ity	Extr Al	(----- CEC -----)			Al Sat
	Ca	Mg	K	Na	Sum Bases			Sum Cats	NH4-OAc	Bases + Al	
	5B5a	5B5a	5B5a	5B5a							
	6N2e	6O2d	6Q2b	6P2b		6H5a	6G9a	5A3a	5A8b	5A3b	5G1
	- - - - - - - - - - - - meq / 100g - - - - - - - - - - - -										Pct
0-17	0.2	0.1	0.2	0	0.6	20.3	7.5	20.8	10.9	8.1	93.1
17-34	0.2	0.1	0.1	0	0.4	18.8	6.4	19.2	8.7	6.8	93.9
34-60	0.2	0.2	0.2	0	0.6	17.8	5.5	18.4	9.6	6.1	90.6
60-102	0.3	0.2	0.3	0	0.8	16.8	4.6	17.6	8.3	5.4	84.8
102-180	0.2	0.3	0.2	0	0.7	15.1	3.7	15.8	7.9	4.4	83.7

Depth (cm)	(Base Sat)		CO3 as CaCO3	Res	Cond	(------ pH ------)				Acid Opt Den	Oxalate Extraction		
	Sum	NH4-OAc	<2mm			NaF	KCl	CaCl2 .01M	H2O		Al	Fe	Si
	5C3	5C1	6E1g	8E1	8I	8C1d		8C1f	8C1f	8J	6G12	6C9a	6V2
	---- Pct ----			ohms /cm	dS/m		1: 1	1: 2	1: 1		- Pct of <2mm -		
0-17	2.7	5.1					3.8	4.2	4.8				
17-34	2.2	4.8					3.9	4.4	4.9				
34-60	3.1	6.0					3.9	4.4	5.0				
60-102	4.7	9.9					3.9	4.5	5.2				
102-180	4.5	9.1					4.0	4.5	5.1				