GACHEON SERIES

Established Series
SJD, JYH, UKT
4 April, 1974

The Gacheon series are members of the coarse loamy over sandy skeletal, mixed, mesic family of Fluvaquentic Endoaquepts [Fluvic Gleyic Hydragric Anthrosols (Dystric) classified by WRB]. These soils have thick grayish brown sandy loam Ap horizons and moderately deep dark gary sandy loam with yellowish brown mottled cambic B horizons. The C horizons are light brownish gray very gravelly loamy coarse sand with few or no mottles. These soils are formed on very gently sloping gravelly alluvial plains.

Typifying Pedon : Gacheon sandy loam-rice (Field description Wanju Gun profile No. 49; colors are for moist soil).

Slope: 0-2%

Elevation: m above m.s.l.

Soil moisture regime: Aquic

Temperature regime: Mesic

Parent material: Alluvium

Diagnostic features: An ochric epipedon from a depth of 0 to 22 cm and a cambic horizon from a depth of 35 to 58 cm (An anthaquic horizon from a depth of 0 to 22 cm and a hydragric horizon from a depth of 22 to 58 cm by WRB).

Morphological properties of typifying pedon.

Ap1 - 0 to 10 cm. Grayish brown (2.5Y 5/2) sandy loam; structureless, massive; friable, slightly

sticky and slightly plastic; few fine micas; many fine to medium roots; clear smooth boundary; pH 5.5.

Ap2 - 10 to 22 cm. Dark gray (5Y 4/1) sandy loam; common fine to medium prominent dark reddish brown (5YR 3/4) mottles; structureless, massive; friable, slightly sticky and slightly plastic; few fine micas; common fine to medium roots; clear smooth boundary; pH 5.7.

BAg - 22 to 35 cm. Dark gray (5Y 4/1) sandy loam; common fine prominent yellowish brown (10YR 5/8) mottles; weak coarse prismatic structure; friable, slightly sticky and slightly plastic; few fine micas; few fine pores; few fine roots; clear smooth boundary; pH 6.0.

Bg - 35 to 58 cm. Very dark gray (5Y 3/1) gravelly sandy loam; few fine prominent dark yellowish brown (10YR 4/4) mottles; weak coarse prismatic structure; friable, slightly sticky and slightly plastic; few fine micas; about 15 percent gravels; abrupt smooth boundary; pH 6.0.

Cg - 58 to 100 cm. Light brownish gray (2.5Y 6/2) very gravelly to cobbly sand; structureless, single grained; loose, non sticky and non plastic; few fine micas; about 50 percent coarse fragments; pH 6.0.

Type Location: About 300 meters north of Deogcheon Ri, Gwi Myeon, Wanju Gun, Jeollabug Do.

Range in Characteristics: These soils have ochric epipedons and cambic horizons. Solum thickness ranges from 50 to 100 cm. Gravel and cobble contents range from 5 to 35 percent in the solum and from 35 to 90 percent in the C horizons. Depth to bed rock is more than 5 meters or more. Soil reaction is strongly to medium acid and base-saturation is less than 60 percent. Ap horizons are grayish brown, dark grayish brown, very dark grayish brown, or olive gray sandy loam or loam with common fine yellowish brown or dark reddish brown mottles. Bg horizons are dark gray, very dark gray, or olive gray sandy loam or loam with yellowish brown, strong brown, or yellowish red mottles and some gravels. C horizons are gray, dark gray, grayish brown, brownish gray, or light brownish gray very gravelly to cobbly loamy sand or coarse sand.

Competing Series and Their Differentiae: These are the Tongcheon, Seoggye, Deogcheon, Manseong, Gocheon and Seogcheon soils. The Tongcheon soils have fine loamy over sandy skeletal textures and are moderately well drained. The Seoggye soils are coarse loamy over sandy texture family. The Deogcheon soils are well drained class. The Manseong soils are fine loamy over sandy skeletal texture. The Gocheon soils are moderately well drained class. The Seogcheon soils are coarse loamy throughout the horizons and gravel free.

Setting: The Gacheon soils are on nearly level and very gently sloping alluvial plains. Slopes are dominantly about 1 percent and ranges from 0 to 2 percent.

Principal Associated Soils: These are the Hwangryong, Namgye, Hagsan, Tongcheon and Subug series. The Hwangryong soils that have sandy skeletal texture family and somewhat excessively drained, are associated with river sides. The sandy skeletal and moderately well drained Namgye soils are also associated with river sides. The Hagsan and Tongcheon soils are similar

physiographic positions. The Subug soils are associated with local valley and fan areas.

Drainage and Permeability: The Gacheon soils are imperfectly drained and permeability is moderately rapid. Runoff is slow.

Use and Vegetation: Most of these soils are used for paddy rice and barley.

Distribution and Extent: The Gacheon soils are of small extent and occur on alluvial plains along the streams throughout the country.

Series Established: Wanju Gun, Jeollabug Do, 1973.

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) - - - - - - - - - - -											
0-10	Ap1	8.6	29.1						14.7	27.1	12.5	5.6	2.4
10-22	Ap2	9.0	30.6						15.1	27.0	12.2	4.1	2.0
22-35	BAg	7.4	23.5						7.2	17.1	23.0	14.2	7.6
35-58	Bg	6.7	22.2						8.0	16.7	22.0	15.8	8.6
58-100	Cg	3.1	8.7						4.3	9.1	29.7	31.8	13.3

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	Fe	Al	Mn				
						6A1c	6B3a	6S3	6R3a	6C2b	6G7a	6D2a
	Pct of < 75mm (3B1)				Soil	Pct < 2mm		g/kg	Pct of < 2mm			
0-10						1.34						
10-22						0.97						
22-35						0.51						
35-58						0.57						
58-100						0.18						

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
0-10										38.6	23.4	7.2	
10-22										36.5	23.8	7.1	
22-35										27.8	19.5	6.1	
35-58					-					22.9	17.2	5.9	
58-100					-					9.7	5.8	4.0	

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
0-10	2.05	0.38	0.15	0.11					7.10		
10-22	1.82	0.34	0.06	0.10					7.25		
22-35	1.82	0.41	0.06	0.08					5.70		
35-58	1.70	0.38	0.06	0.08					5.15		
58-100	0.82	0.23	0.06	0.07					2.45		

Depth (cm)	(Base Sat)		CO3 as	Res	Cond	(------ pH ------)				Acid Oxalate Extraction			
	Sum	NH4-	CaCO3			NaF	KCl	CaCl2	H2O	Opt	Al	Fe	Si
		OAc	<2mm					.01M		Den			
	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 -			
0-10		37.9					4.2		4.8				
10-22		32.0					4.1		4.9				
22-35		41.6					4.3		5.5				
35-58		43.1					4.3		5.6				
58-100		48.2					4.8		6.1				

Depth (cm)	Active	Easily Red	Avail.	Extractable		S.G.	Atterberg	
	Fe	Mn	SiO2	Acti.			Limits %	
	%	ppm	ppm	H	Al		LL	PI
0-10	0.54	31	43					
10-22	0.58	45	50					
22-35	0.67	54	55					
35-58	0.55	52	54					
58-100	0.34	11	39					