

# GOCHEON SERIES

Established Series  
SJD, JYH, UKT  
6 April, 1973

The Gocheon series are members of the coarse loamy over sandy skeletal, mixed, mesic family of Anthraquic Eutrudepts [Hydragric Anthrosols (Eutric Oxyaquic) classified by WRB]. These soils have dark gray sandy loam Ap horizons with dark brown mottles, very dark grayish brown sandy loam BAg horizons with dark yellowish brown and reddish brown mottles, brown sandy loam Bw horizons with brown mottles, and brown very gravelly loamy coarse sand C horizons. These soils are on alluvial plains.

**Typifying Pedon:** Gocheon sandy loam-paddy rice. (Colors are for moist soil).

Slope: 0-2%

Elevation: 278 m above m.s.l.

Soil moisture regime: Udic (Anthraquic)

Soil temperature regime: Mesic

Parent material: Alluvium

Diagnostic features: An ochric epipedon from a depth of 0 to 18 cm and a cambic horizon from a depth of 38 to 61 cm (An anthraquic horizon from a depth of 0 to 38 cm and a hydragric horizon from a depth of 38 to 61 cm by WRB).

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Morphological properties of typifying pedon.

**Ap** - 0 to 18 cm. Dark gray (10YR 4/1) sandy loam; few fine to medium distinct dark brown (7.5YR 3/4) mottles; structureless, puddled; slightly sticky and slightly plastic; common fine to medium roots; common fine to medium pores; 5% fine gravels; clear smooth boundary.

**B<sub>Ag</sub>** - 18 to 38 cm. Very dark grayish brown (10YR 3/2) gravelly sandy loam; many medium to coarse faint dark yellowish brown (10YR 3/4) mottles and common prominent reddish brown (2.5YR 4/4) mottles; weak medium to coarse platy structure; very firm, slightly sticky and slightly plastic; few fine roots; few fine pores; 10% gravels; gradual smooth boundary.

**B<sub>w</sub>** - 38 to 61 cm. Brown (7.5YR 4/3) gravelly sandy loam; common medium to coarse faint brown (7.5YR 4/4) mottles; weak coarse platy structure; slightly firm, sticky and plastic; few fine roots; few medium to coarse pores; 15% gravels; clear wavy boundary.

**C** - 61 to 150 cm. Brown (10YR 4/3) very gravelly loamy coarse sand; structureless, massive; slightly sticky and slightly plastic; no roots; no pores; 40% gravels and cobbles.

The typifying pedon has an ochric epipedon from a depth of 0 to 18 cm and a cambic horizon from a depth of 38 to 61 cm. That can be classified as Inceptisol. It is used for paddy field, but does not have aquic conditions for some time in normal years in a layer at a depth between 40 and 50 cm from the mineral soil surface. Therefore it can be classified as Udept. It has a base saturation (by NH<sub>4</sub>OAc) of 60% or more in one or more horizons at a depth between 25 and 75 cm from the mineral soil surface. That keys out as Eutrudept. It has anthraquic conditions and can be classified as Anthraquic Eutrudept.

The typifying pedon has coarse loamy over sandy skeletal particle-size class and has mesic soil temperature class. Therefore it can be classified as coarse loamy over sandy skeletal, mixed, mesic family of Anthraquic Eutrudept.

**Type Location:** About 400 meters south-west of Pyeongji Church, Pyeongji Ri, Maryeong Myeon, Jinan Gun, Jeollabug Do (127° 22' 38.6", 35° 43' 29.2").

**Range in Characteristics:** These soils have ochric epipedons and cambic horizons. The solum thickness ranges from 50 to 100 cm. Reaction is strongly to slightly acid and base saturation is more than 50 percent. Ap horizons are dark grayish brown, grayish brown, very dark gray, or gray sandy loam or loam with few gravels. B<sub>w</sub> horizons are dark yellowish brown, yellowish brown gravelly sandy loam or loam with yellowish brown mottles. C horizons are dark yellowish brown, yellowish brown, or brownish yellow very gravelly to very cobbly loamy sand.

**Competing Series and Their Differentiae:** These are Deogcheon, Seoggye, Gacheon, and Manseong soils. The Deogcheon soils are better drained and used for cultivated upland. The Seoggye soils are coarse loamy over sandy texture family and are worse drained. The Gacheon soils are worse drained. The Manseong soils are fine loamy over sandy skeletal and have imperfectly drainage.

**Setting:** The Gacheon soils occur on continental flood plains along the main rivers and are

derived from mixed recent alluvial materials. Dominant slopes are about 1 percent and range from 0 to 2 percent.

**Principal Associated Soils:** These are associated with the Hwangryong, Namgye, Hagsan, Tongcheon, and Gacheon soils. The Hwangryong soils are sandy skeletal texture family and somewhat excessively drainage occurred in river sides. The Namgye soils are sandy skeletal and moderately well drained soils and also occur in river sides. The Hagsan soils have fine loamy over sandy texture family, and occur on similar physiographic positions.

**Drainage and Permeability:** The Gocheon soils are moderately well 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 Gocheon soils are of small extent and occur on alluvial plains along the streams throughout the country.

**Series Established:** Wanju Gun, Jeollabug Do, 1973. **Revised,** Jinan Gun, Jeollabug Do, 2013.

#### 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) - - - - -													
0-18	Ap	16.7	41.3	42.0			19.9	21.4	8.9	14.4	8.8	6.3	3.6
18-38	B <sub>Ag</sub>	15.8	38.5	45.7			17.3	21.2	9.4	15.4	10.2	7.3	3.4
38-61	B <sub>w</sub>	14.7	34.1	51.2			15.5	18.6	11.1	17.6	12.0	7.5	3.1
61-150	C	8.8	16.6	74.6			6.8	9.8	13.8	23.5	13.9	12.9	10.5

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		
0-18					2.39							
18-38					1.13							
38-61					0.30							
61-150					0.12							

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
0-18	0.64				1.27				33.4				
18-38	0.55												
38-61	0.56												
61-150	0.74												

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
0-18	3.0	0.4	0.7	0.2	4.3	10.1	1.0	14.4	10.7	5.3	1.8
18-38	3.3	0.5	0.3	0.1	4.3	7.5	0.4	11.9	8.6	4.8	8.8
38-61	4.2	0.9	0.7	0.2	5.9	5.2	0	11.1	8.3	5.9	0
61-150	2.8	0.7	0.4	0.2	4.0	6.2	0.1	10.2	6.5	4.1	1.9

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 -
0-18	30.1	40.7					4.1	4.7	5.3				
18-38	36.6	50.3					4.2	4.9	5.6				
38-61	53.2	71.7					4.4	5.2	6.2				
61-150	39.4	62.3					4.3	5.2	6.1				