GONGSEONG SERIES

Established Series
UKT, JYH, JFD
12 November, 1969

The Gongseong series are members of the fine, mixed, mesic family of Typic Paleudults [Cutanic Alisols (Profondic Siltic Chromic) classified by WRB]. These soils have reddish brown silty clay loam Ap horizons, strong brown silty clay BAt horizons, reddish brown silty clay Bt1 horizons, reddish yellow and reddish brown clay Bt2 horizons, red, reddish yellow, and yellowish red clay Bt3 horizons, and red and yellowish red clay loam BCt horizons. This series ares formed in old alluvium on moderately elevated river terraces.

Typifying Pedon : Gongseong silty clay loam-barley (Colors are for moist soil).

Slope: 2-7%

Elevation: 272 m above m.s.l.

Soil moisture regime: Udic

Soil temperature regime: Mesic

Parent material: Old alluvium

Diagnostic features: An ochric epipedon from a depth of 0 to 20 cm and an argillic horizon from a depth of 20 to 160 cm (An argic horizon from a depth of 20 to 160 cm by WRB).

Described by: Song, K. C., S. J. Jung, and D. C. Noh, 15 Oct., 2007.

Morphological properties of typifying pedon.

Ap - 0 to 20 cm. Reddish brown (7.5YR 4/4) silty clay loam; moderate medium granular

structure; friable, sticky and plastic; common fine to medium roots; common fine to medium roots; common fine pores; clear wavy boundary.

BAt - 20 to 45 cm. Strong brown (7.5YR 5/6) silty clay; strong fine angular blocky structure: few coarse black manganese mottles; firm, very sticky and very plastic; thin continuous clay cutans; common fine roots; few fine pores; clear wavy boundary.

Bt1 - 45 to 80 cm. Reddish brown (7.5YR 4/4) silty clay; strong medium angular blocky structure: firm, very sticky and very plastic; few fine roots; common fine to medium pores; gradual wavy boundary.

Bt2 - 80 to 100 cm. Mottled, Reddish yellow (7.5YR 6/6) and reddish brown (5YR 4/4) clay; strong medium to coarse angular blocky structure; very firm, very sticky and very plastic; common medium manganese concretions; thick continuous clay cutans; few fine roots; common fine to medium pores; clear wavy boundary.

Bt3 - 100 to 142 cm. Mottled, Red (2.5YR 4/6), reddish yellow (5YR 6/6), and yellowish red (5YR 4/6) clay; moderate medium to coarse angular blocky structure; firm, very sticky and very plastic; thick continuous clay cutans; few very fine roots; common fine pores; clear wavy boundary.

BCt - 142 to 160 cm. Mottled, Red (2.5YR 4/6) and yellowish red (5YR 4/6) clay loam; weak fine to medium subangular blocky structure; very firm, very sticky and very plastic; no roots; few fine pores.

The typifying pedon has an ochric epipedon from a depth of 0 to 20 cm and an argillic horizon from a depth of 20 to 160 cm. It has a base saturation (by sum of cations) of less than 35% at 125 cm below the upper boundary of the argillic horizon. That can be classified as Ultisol. It has an udic soil moisture regime, and can be classified as Udult. It does not have a densic, lithic, paralithic, or petroferric contact within 150 cm of the mineral soil surface, and with increasing depth, does not clay decrease of 20% or more from the maximum clay content within 150 cm of the mineral soil surface. It can be classified as Paleudult. Also it meets the requirements of Typic Paleudult.

The typifying pedon has fine particle-size class and mesic soil temperature class. Therefore it can be classified as fine, mixed, mesic family of Typic Paleudult.

Type Location: About 500 meters south-east of the Mumyeong Bridge, Deoggog Ri, Modong Myeon, Sangju city, Gyeongsangbug Do (127° 58' 54.5", 36° 19' 25.8").

Range in Characteristics: These soils have ochric epipedons and argillic horizons. Solum thickness ranges from 100 to 200 cm. Reaction ranges from very strongly to slightly acid except limed. Base saturation is less than 60 percent throughout the profile. A horizons are yellowish brown, dark yellowish brown, or reddish brown silt loam or silty clay loam. Bt horizons are yellowish red, red, or reddish yellow silty clay loam or silty clay. Clay content of the Bt horizons ranges between 35 and 60 percent.

Competing Series and Their Differentiae: These are the Bancheon, Sinhyeon, Goheung, and Jangpa series. The Bancheon soils are developed on dissected relatively high stream terraces. The Sinhyeon soils are developed in unconsolidated old leached fluvio-marine deposits. The Goheung soils occur on mountain foot slopes derived from colluvial materials. The Jangpa soils occur on lava plains derived from basaltic materials.

Setting: The Gongseong soils are on gently sloping to sloping moderate to strongly dissected alluvial terrace.

Principal Associated Soils: These are Bancheon, Gopyeong, Hwadong, Deogpyeong, and Geugrag soils. Soils of the Hwadong series are at lower elevations. The Bancheon and Gopyeong soils are associated in similar positions. Hwadong, Deogpyeong, and Geugrag soils are associated in lower positions.

Drainage and Permeability: The Gongseong soils are moderately well drained and very slowly permeable. Runoff is generally moderate.

Use and Vegetation: Most areas of these soils are used for upland crops such as barley, soybean, and red pepper.

Distribution and Extent: The Gongseong soils are relatively inextensive though they occur throughout the larger valleys in the south and central parts of Korea.

Series Established: Sangju city, Gyeongsangbug Do, 1969. **Revised,** Sangju city, Gyeongsangbug Do, 2007.

Laboratory data sheets of typifying prdon.

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) - - - - - - - - - - - -											
0-20	Ap	37.1	60.7	2.2			40.2	20.5	0.3	0.3	0.5	0.2	0.7
20-45	BAt	45.4	52.7	1.9			39.6	13.1	0.5	0.3	0.7	0.3	0.2
45-80	Bt1	43.4	53.6	3.0			40.8	12.8	0.8	0.4	0.7	0.6	0.5
80-100	Bt2	41.8	54.6	3.6			42.3	12.3	0.6	0.5	1.2	0.8	0.5
100-142	Bt3	50.7	47.0	2.3			34.3	12.7	0.4	0.2	0.8	0.6	0.3
142-160	BCt	53.5	43.6	2.9			32.6	11.0	0.3	0.1	0.9	0.9	0.7

Depth (cm)	Coarse Fractions(mm) Weight 2-5	5-20	20-75	.1-75	>2mm Wt Pct of Whole Soil	Orgn C	Total N	Extr P	Total S	(-- Dith -Cit --) Extractable Fe	Al	Mn
	Pct of < 75mm (3B1)					Pct < 2mm				Pct of < 2mm		
						6A1c	6B3a	6S3	6R3a	6C2b	6G7a	6D2a
0-20						0.84						
20-45						0.40						
45-80						0.31						
80-100						0.23						
100-142						0.23						
142-160						0.22						

Depth (cm)	Ratio/Clay CEC	1500 kPa	Atterberg Limits LL	PI	(Bulk Density) Field Moist	33 kPa	Oven Dry	COLE Whole Soil	(- Water Content -) Field Moist	10 kPa	33 kPa	1500 kPa	WRD 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
0-20	0.58				1.40				28.4				
20-45	0.50				1.44				28.8				
45-80	0.50				1.46				25.9				
80-100	0.51				1.54				23.6				
100-142	0.44				1.56				26.8				
142-160	0.43				1.46				29.4				

Depth (cm)	(NH4OAc Extractable Bases) Ca	Mg	K	Na	Sum Bases	Acid-ity	Extr Al	(----- CEC -----) Sum Cats	NH4-OAc	Bases + Al	Al Sat
	5B5a 6N2e	5B5a 6O2d	5B5a 6Q2b	5B5a 6P2b		6H5a	6G9a	5A3a	5A8b	5A3b	5G1
	- - - - - - - - - - - - meq / 100g - - - - - - - - - - - -										Pct
0-20	7.7	2.3	0.5	0.1	10.6	17.3	1.1	27.9	21.5	11.7	9.4
20-45	4.1	4.1	0.3	0.1	8.6	20.7	4.6	29.3	22.5	13.2	34.9
45-80	2.6	6.8	0.2	0.2	9.8	21.0	4.9	30.8	21.5	14.7	33.3
80-100	2.3	6.9	0.2	0.2	9.5	19.7	4.3	29.2	21.1	13.8	31.2
100-142	2.8	7.3	0.1	0.2	10.4	20.7	3.8	31.1	22.3	14.2	26.7
142-160	3.1	6.9	0.1	0.2	10.4	20.7	4.1	31.1	22.9	14.5	28.3

Depth (cm)	(Base Sat) Sum	NH4-OAc	CO3 as CaCO3 <2mm	Res	Cond	(------ pH ------) NaF	KCl	CaCl2 .01M	H2O	Acid Opt Den	Oxalate Extraction 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 -		
0-20	38.1	49.5					3.9	4.9	5.6				
20-45	29.3	38.1					3.5	4.4	5.3				
45-80	31.9	45.6					3.4	4.5	5.3				
80-100	32.5	44.9					3.2	4.4	5.3				
100-142	33.5	46.7					3.3	4.4	5.3				
142-160	33.4	45.2					3.3	4.4	5.3				