GANGJEONG SERIES

Established Series
PCS, JYH, UKT
10 Apr., 1977

The Gangjeong series are members of the fine, mixed, thermic family of Mollic Paleudalfs [Cutanic Luvisols (Epidystric Profondic Chromic) classified by WRB]. These soils have dark brown silt loam Ap horizons, reddish brown silty clay loam Bt1 horizons, dark yellowish brown silty clay loam Bt2 horizons with yellowish brown mottles, dark yellowish brown silty clay loam Bt3 horizons with grayish brown mottles, and strong brown and brown silty clay loam BCt horizons. These soils are developed on coastal lava plains.

Typifying Pedon: Gangjeong silt loam-garlic (Colors are for moist soil).

Slope : 2-7%

Elevation: 8 m above m.s.l.

Soil moisture regime: Udic

Soil temperature regime: Thermic

Parent material: Pyroclastic materials

Diagnostic features: An umbric epipedon from a depth of 0 to 30 cm and an argillic horizon from a depth of 30 to 180 cm (An umbric horizon from a depth of 0 to 30 cm and an argic horizon from a depth of 30 to 180 cm by WRB).

Described by: Song, K. C., S. J. Jung, and D. C. Noh, 6 Sep., 2007.

Morphological properties of typifying pedon.

Ap - 0 to 30 cm. Dark brown (10YR 3/3) silt loam; moderate medium to fine granular structure; friable, sticky and plastic; common fine roots; few fine pores; few slightly rounded quartz grits; abrupt smooth boundary.

Bt1 - 30 to 63 cm. Reddish brown (5YR 4/4) silty clay loam; moderate coarse prismatic structure; slightly firm, very sticky and very plastic; thin continuous clay cutans on ped faces; few very fine roots; common fine pores; quartz grits as above; clear wavy boundary.

Bt2 - 63 to 85 cm. Dark yellowish brown (10YR 4/4) silty clay loam; common medium faint dark yellowish brown (10YR 3/4) and common reddish ferrous mottles; moderate medium platy structure; firm, very sticky and very plastic; thick continuous clay cutans; few very fine roots; few fine pores; thin continuous black manganese films on ped faces; quartz grits as above; about 5% severely weathered gravels derived from basalt; clear wavy boundary.

Bt3 - 85 to 105 cm. Dark yellowish brown (10YR 4/4) silty clay loam; common faint medium grayish brown (10YR 5/2) mottles, and common coarse manganese and medium ferrous mottles; strong medium angular blocky structure; very firm, very sticky and very plastic; thick continuous clay cutans; no roots; quartz grits and gravels as above; gradual wavy boundary.

BCt - 105 to 180 cm. Strong brown (7.5YR 4/6) and brown (10YR 5/3) silty clay loam; mottles slightly decreased; very firm, very sticky and very plastic; clay cutans as above; few fine pores; few severely weathered gravels derived from basalt.

The typifying pedon has an umbric epipedon from a depth of 0 to 30 cm and an argillic horizon from a depth of 30 to 180 cm. It has a base saturation (by sum of cations) of 35% or more at 125 cm below the upper boundary of the argillic horizon. That can be classified as Alfisol. It has udic soil moisture regime, and can be classified as Udalf. It does not have a densic, lithic, or paralithic contact within 150 cm of the mineral soil surface, does not clay decrease with inceasing depth of 20% or more from the maximum clay content within 150 cm of the mineral soil surface, and has an argillic horizon with in 50% or more of the matrix of one or more subhorizons in its lower one-half, hue of 7.5YR or redder and chroma of 5 or more. It can be classified as Paleudalf. The upper 18 cm of the mineral soil meets the color requirements of a mollic epipedon after mixing. That can be classified as Mollic Paleudalf.

The typifying pedon has more than 35% clay at the particle-size control section and has thermic soil temperature regime. Therefore it can be classified as fine, mixed, thermic family of Mollic Paleudalf.

Type Location: About 300 meters north of Sindo 3 Ri, Daejeong Eub, Seogwipo city, Jeju Do (126° 10' 31.5", 33° 16' 59.7").

Range in Characteristics: These soils have umbric epipedons and argillic horizons. The solum thickness ranges from 150 to 200 cm and depth to hard bedrock is more than 2 meters. Reaction is strongly to slightly acid. Base saturation ranges from 40 to 80 percent. Ap horizons are dark brown silt loam or silty clay loam. Bt horizons are very thick yellowish brown, reddish

brown, or strong brown silty clay loam or silty clay with grayish brown mottles.

Competing Series and Their Differentiae: These are the Donghong, Mureung, and Susan soils. The Donghong soils occur on coastal lava plains around cinder cones and are well drained. The Mureung soils have Typic Subgroup and are well drained. The Susan soils have Typic Subgroup and occur on cinder cones.

Setting: The Gangjeong soils occur on gently sloping low lava plains of the northwestern parts in Jeju Do and are derived from pyroclastic materials. Slope ranges from 2 to 7 percent and dominant slopes are 2 percent.

Principal Associated Soils: The Mureung and Yeongrag soils are associated in high elevated lava plains. The Daejeong, Yongsu, and Haean soils are associated in lower elevated lava plains.

Drainage and Permeability: Moderately well drained. Runoff is slow and permeability is very slow.

Use and Vegetation: Most of these soils are used for cultivated upland.

Distribution and Extent: The Gangjeong soils are of small extent and are distributed on low lava plains of the northwestern regions in Jeju Do.

Series Established: Seogwipo city, Jeju Do, 1975. **Revised,** Seogwipo city, Jeju Do, 2007.

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) - - - - - - - - - - - -											
0-30	Ap	21.2	43.6	35.2			24.9	18.7	6.5	14.2	7.7	5.1	1.7
30-63	Bt1	43.0	31.3	25.7			14.7	16.6	5.4	11.0	5.7	3.0	0.6
63-85	Bt2	35.6	34.1	30.3			18.1	16.0	7.3	12.7	6.6	3.2	0.6
85-105	Bt3	35.4	54.0	9.6			35.1	18.9	2.7	2.8	1.9	1.6	0.6
105-180	BCt	36.1	56.8	7.1			40.6	16.2	2.1	1.8	1.3	1.3	0.6

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
	Pct of < 75mm (3B1)				Soil	Pct < 2mm		g/kg		Pct of < 2mm		
0-30						0.94						
30-63						0.75						
63-85						0.41						
85-105						0.19						
105-180						0.16						

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
0-30	0.73				1.51				21.9				
30-63	0.60				1.37				29.6				
63-85	0.78				1.23				40.6				
85-105	0.58				1.57				24.7				
105-180	0.61				1.61				23.0				

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
0-30	3.4	1.5	0.9	0.2	6.0	21.3	2.5	27.4	15.5	8.5	29.4
30-63	7.2	4.2	1.0	0.5	12.9	21.2	0	34.0	26.0	12.9	0
63-85	8.7	7.3	0.2	0.6	16.7	22.8	0	39.6	27.7	16.7	0
85-105	5.0	10.1	0.2	0.4	15.7	12.2	0	27.9	21.3	15.7	0
105-180	4.1	11.4	0.2	0.5	16.1	13.3	0.1	29.4	22.2	16.2	0.4

Depth (cm)	(Base Sat)		CO3 as CaCO3 <2mm	Res	P Ret	(------ pH ------)				Acid Opt Den	Oxalate Extraction Al	Fe	Si
	Sum	NH4-OAc				NaF	KCl	CaCl2 .01M	H2O				
	5C3	5C1	6E1g	8E1		8C1d		8C1f	8C1f	8J	6G12	6C9a	6V2
	---- Pct ----			ohms/cm	Pct		1: 1	1: 2	1: 1		- Pct of <2mm -		
0-30	22.0	38.9			33.3		3.9	5.4	5.1		0.21	0.56	0.03
30-63	37.8	49.5			65.1		5.2	5.7	6.1		0.42	0.92	0.10
63-85	42.3	60.5			46.5		5.4	6.1	6.3		0.40	1.04	0.13
85-105	56.3	73.8			40.1		5.1	5.9	6.2		0.18	0.34	0.07
105-180	54.7	72.6			39.2		4.9	6.0	6.2		0.16	0.32	0.06