JANGWON SERIES

Established Series
UKT, JFD
7 November, 1969

The Jangwon series are members of the fine loamy, mixed, mesic family of Typic Fragiudalfs [Umbric Cutanic Alisols (Fragic Humic Siltic) classified by WRB]. These soils have very dark grayish brown loam Ap horizons, dark brown gravelly loam AB horizons, dark yellowish brown gravelly clay loam Bt horizons and dark yellowish brown silty clay loam Btx horizons. They are formed in dissected foot slope positions derived from granite, porphyry and shale materials.

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

Slope: 7-15%

Elevation: 157 m above m.s.l.

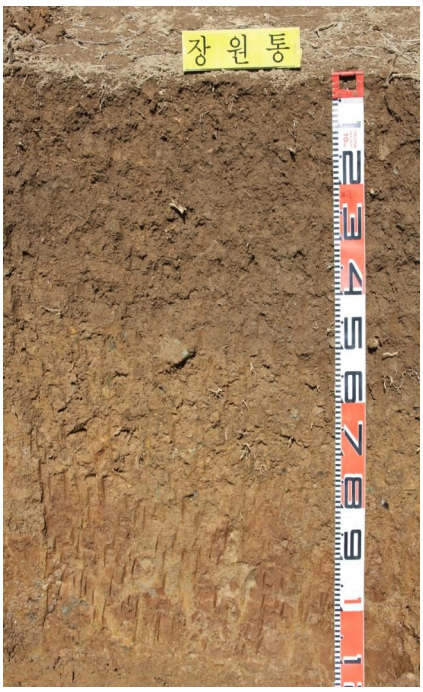
Soil moisture regime: Udic

Soil temperature regime: Mesic

Parent material: Colluvium from acidic crystaline rocks

Diagnostic features: An umbric epipedon from a depth of 0 to 20 cm, an argillic horizon from a depth of 48 to 150 cm, and a fragipan from a depth of 80 to 150 cm (An umbric horizon from a depth of 0 to 20 cm, an argic horizon from a depth of 48 to 150 cm, and a fragic horizon from a depth of 80 to 150 cm by WRB).

Described by: Song, K. C., S. J. Jung, and D. C. Noh, 16 March, 2010.



Morphological properties of typifying pedon.

Ap - 0 to 20 cm. Very dark grayish brown (10YR 3/2) loam; weak fine to medium subangular

blocky structure; friable, slightly sticky and slightly plastic; many fine to medium roots; common fine pores; clear smooth boundary.

AB - 20 to 48 cm. Dark brown (10YR 3/3) gravelly loam; weak fine to medium subangular blocky structure; friable, sticky and plastic; common fine to medium roots; common fine pores; 15% gravels; few worm holes; clear smooth boundary.

Bt - 48 to 82 cm. Dark yellowish brown (10YR 4/4) gravelly clay loam; moderate fine to medium angular blocky structure; firm, sticky and plastic; thin continuous clay cutans; common fine to medium roots; common fine pores; 20% gravels; clear smooth boundary.

Btx - 82 to 150 cm. Dark yellowish brown (10YR 4/3) silty clay loam; strong medium to coarse angular blocky structure; very firm, very sticky and very plastic; thick continuous clay cutans; no roots; few fine pores.

The typifying pedon has an umbric epipedon from a depth of 0 to 20 cm and an argillic horizon from a depth of 48 to 150 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 has a fragipan within 100 cm of the mineral soil surface and keys out as Fragiudalf. Also it meets the requirements of Typic Fragiudalf.

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

Type Location: About 200 meters west of the Jeomchon Village, Daeil Ri, Gachang Myeon, Dalseong Gun, Daegu city (128^{o} 38' 58.0", 35^{o} 45' 48.9").

Range in Characteristics: These soils have umbric epipedo, and fragipans. Solum thickness is 100 to 200 cm and depth to hard rock is generally more than 3 meters. The fragipans generally occur between 50 and 100 cm. Base saturation is more than 35 percent. Reaction is strongly to slightly acid. Ap horizons are very dark grayish brown gravelly silt loam or loam. AB horizons are dark brown gravelly silt loam or loam. Bt horizons are dark yellowish brown gravelly clay loam. Btx horizons are very firm or extremely firm, when dry and do not soften appreciably when moist. They are dark yellowish brown, pale brown, strong brown, or brown gravelly silty clay loam or clay loam.

Competing Series and Their Differentiae: These are the Yeongog, Pogog, and Gangreung series. The Yeongog soils are gravel free fine silty texture family. The Pogog soils have fine texture and are derived from granite gneiss. The Gangreung soils have fine textures occur on river terraces.

Setting: The Jangwon soils occur on gently sloping to moderately steep alluvial-colluvial foot slopes. Dominant slopes are 7 to 30 percent and range is from 2 to 60 percent.

Principal Associated Soils: The Mudeung, Ulsan, Daegu, and Samgag soils are associated in higher residual landscape positions. The Anryong, Gaghwa and Iwon soils are associated in

similar landscape positions. The Jisan and Sangju soils may be associated below the Jangwon soils.

Drainage and Permeability: The Jangwon soils are moderately well drained and very slowly permeable. The runoff is moderate or rapid depending on the slopes.

Use and Vegetation: Most areas are used for tobacco, barley, soybean, sesame, melon, millet, red pepper, buckwheat, and similar non irrigated upland crops.

Distribution and Extent: The Jangwon soils are of small extent and occur in small areas throughout the country.

Series Established: Gwangsan Gu, Gwangju city, 1966. **Revised,** Dalseong Gun, Daegu city, 2010.

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) - - - - - - - - - - - -											
0-20	A	22.9	51.7	25.4			22.8	28.8	4.7	5.8	5.7	6.3	2.9
20-48	BA	21.4	53.2	25.4			10.2	43.0	4.3	5.7	5.5	6.1	3.7
48-82	Bt	29.0	53.8	17.2			15.6	38.2	2.9	3.7	3.5	3.9	3.2
82-150	Btx	32.7	51.9	15.4			20.7	31.2	3.6	4.1	3.2	3.1	1.3

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		
0-20						2.00						
20-48						1.72						
48-82						1.57						
82-150						1.30						

Depth (cm)	Ratio/Clay		Atterberg		(Bulk Density)			COLE	(- Water Content -)				WRD
	CEC	1500 kPa	Limits		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
0-20	0.67				1.20				29.9				
20-48	0.70				1.38				24.0				
48-82	0.53				-				-				
82-150	0.56				1.52				24.4				

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
0-20	4.7	1.5	0.6	0	6.9	11.7	1.4	18.6	15.4	8.3	17.1
20-48	5.3	1.5	0.4	0.1	7.3	9.5	0.9	16.8	15.0	8.3	11.5
48-82	5.6	1.7	0.3	0.1	7.7	7.9	0.7	15.6	15.4	8.4	8.4
82-150	8.1	4.6	0.3	0.2	13.2	8.9	0.8	22.1	18.5	14.0	5.9

Depth (cm)	(Base Sat)		CO3 as CaCO3 <2mm	Res	Cond	(------ pH ------)				Acid Oxalate Extraction			
	Sum	NH4-OAc				NaF	KCl	CaCl2 .01M	H2O	Opt Den	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	37.0	44.7					3.7	4.4	5.2				
20-48	43.5	48.7					3.9	4.6	5.6				
48-82	49.3	49.9					3.9	4.7	5.7				
82-150	59.7	71.3					4.0	5.0	6.1				