

GAGHWA SERIES

Established Series
UKT, KBJ, JFD
3 November, 1969

The Gagghwa series are members of the fine, mixed, mesic family of Typic Haplohumults [Leptic Umbric Cutanic Alisols (Alumic Humic Hyperdystric Siltic) classified by WRB]. These soils have dark brown sandy loam Ap horizons, dark grayish brown silt loam BA_t horizons, brown silty clay loam B_{t1} horizons, and dark yellowish brown silty clay B_{t2} horizons. They are developed on mountain colluvial slopes derived from acidic crystalline or similar materials.

Typifying Pedon: Gagghwa sandy loam-corn (Colors are for moist soil).

Slope: 7-15%

Elevation: 513 m above m.s.l.

Soil moisture regime: Udic

Soil temperature regime: Mesic

Parent material: Colluvium from granite and granite-gneiss

Diagnostic features: An umbric epipedon from a depth of 0 to 19 cm and an argillic horizon from a depth of 19 to 84 cm (An umbric horizon from a depth of 0 to 19 cm and an argic horizon from a depth of 19 to 84 cm by WRB).

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Morphological properties of typifying pedon.

Ap - 0 to 19 cm. Dark brown (10YR 3/3) sandy loam; structureless, massive; friable, slightly sticky and slightly plastic; common fine to medium roots; common fine to medium pores; soil dressing; clear smooth boundary.

BAt - 19 to 34 cm. Dark grayish brown (10YR 4/2) silt loam; moderate granular structure; firm, sticky and plastic; few fine roots; common fine to medium pores; clear smooth boundary.

Bt1 - 34 to 54 cm. Brown (10YR 4/3) silty clay loam; moderate subangular blocky structure; firm, sticky and plastic; thin patch clay cutans; common fine roots; common fine pores; clear smooth boundary.

Bt2 - 54 to 84 cm. Dark yellowish brown (10YR 4/4) silty clay; moderate angular blocky structure; firm, very sticky and very plastic; thin continuous clay cutans; few fine roots; common fine to medium pores; few macro worm pores; about 20% bouldary stones; clear wavy boundary.

R - More than 84 cm. Granite bedrock.

The typifying pedon has an umbric epipedon from a depth of 0 to 19 cm and an argillic horizon from a depth of 19 to 84 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 0.9% or more organic carbon in the upper 15 cm of the argillic horizon and keys out as Humult. Also it meets the requirements of Typic Haplohumult.

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

Type Location: About 400 meters west of the Mumyeong Bridge, Sinri 4 Ri, Dachwa Myeon, Pyeongchang Gun, Gangwon Do (128° 26' 56.9", 37° 32' 14.1").

Range in Characteristics: These soils have umbric epipedons and argillic horizons. Solum thickness ranges 50 to 100 cm. Depth to hard rock is less than 100 cm. Reaction is very strongly acid. Base saturation is less than 35 percent. Ap horizons are dark brown loam to clay loam. Bt horizons are brown, dark yellowish brown, or yellowish red clay loam, silty clay loam, or silty clay.

Competing Series and Their Differentiae: These are the Jeongeub, Unbong, Ungyo, and Mangsil series. The Jeongeub soils have 10 to 35% gravels in the profiles. The Unbong and Ungyo soils have fine loamy texture class. The Mangsil soils occur at high elevations in mountainous regions with moderately weathered andesite materials and have fine loamy texture class.

Setting: The Gaghwa soils occur on sloping to moderately steep, dissected, colluvial slopes. Dominant slopes are between 7 and 15 percent and the range is from 2 to 60 percent.

Principal Associated Soils: The Anryong, Jangwon, Wonji, Chilgog, and Geumgog soils are associated. The Anryong, Jangwon, and Wonji soils are associated in similar positions. The Chilgog and Geumgog soils are associated in lower positions.

Drainage and Permeability: Well drained. Runoff is medium to rapid. Permeability is moderately slow or slow.

Use and Vegetation: Most of these soils are used for upland crops such as barley, sesame, radish

Distribution and Extent: The Gaghwa soils occur on mountain colluvial slopes and fan terraces in granite, granite gneiss and areas of similar materials throughout the country. These soils have large extent though individual areas may be relatively small.

Laboratory data sheets of typifying pedon.

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
0-19	0.74				1.34					17.5			
19-34	0.67				1.37					28.5			
34-54	0.49				10.9					37.1			
54-84	0.48				1.37					30.5			
84-													

