

LOCATION WAPATO

OR+WA

Established Series  
Rev. GEO/DRJ/RWL  
08/2006

# WAPATO SERIES

The Wapato series consists of very deep, poorly drained soils that formed in loamy mixed alluvium. Wapato soils are on flood plains. Slopes are 0 to 3 percent. The mean annual precipitation is about 45 inches and the mean annual temperature is about 52 degrees F.

**TAXONOMIC CLASS:** Fine-silty, mixed, superactive, mesic Fluvaquentic Endoaquolls

**TYPICAL PEDON:** Wapato silty clay loam - cultivated cropland. (Colors are for moist soil unless otherwise noted.)

**Ap**--0 to 9 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak and moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and moderately plastic; many very fine roots; many very fine pores; very dark brown (10YR 2/2) coatings on peds; slightly acid (pH 6.4); abrupt smooth boundary.

**A**--9 to 16 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; moderate fine subangular blocky structure; hard, friable, slightly sticky and moderately plastic; common fine roots; many very fine and common fine pores; very dark brown (10YR 2/2) coatings on peds; many fine prominent dark reddish brown (5YR 3/2) masses of iron accumulation; few fine black (10YR 2/1) masses of manganese accumulation; slightly acid (pH 6.2); gradual smooth lower boundary. (Combined thickness of the A horizon is 10 to 24 inches)

**Bgl**--16 to 22 inches; dark grayish brown (10YR 4/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; few very fine roots; many very fine and few fine pores; many fine prominent dark reddish brown (5YR 3/2) masses of iron accumulation; few fine black (10YR 2/1) masses of manganese accumulation; moderately acid (pH 5.8); clear smooth boundary.

**Bg2**--22 to 32 inches; dark grayish brown (10YR 4/2) silty clay loam, light brownish gray (10YR 6/2) dry; moderate medium fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; many very fine and few fine pores; many fine prominent reddish brown (5YR 4/4) masses of iron accumulation; common fine black (10YR 2/1) masses of manganese accumulation; moderately acid (pH 5.8); clear smooth boundary. (Combined thickness of the Bg horizon is 14 to 42 inches)

**BCg**--32 to 60 inches; grayish brown (10YR 5/2) silty clay, light gray (10YR 7/2) dry; weak subangular blocky structure; hard, firm, very sticky and moderately plastic; few very fine pores;

many fine prominent brown (7.5YR 4/4) masses of iron accumulation; common medium and fine black (10YR 2/1) masses of manganese accumulation; moderately acid (pH 5.6).

**TYPE LOCATION:** Yamhill County, Oregon; fifty feet south of abandoned county road; about 2.200 feet west and 100 feet south of the NE corner of section 23, T. 5 S., R. 5 W. Willamette Meridian. . (Latitude 45 degrees, 07 minutes, 48 seconds N.; Longitude 123 degrees, 15 minutes, 52 seconds W. NAD 27.) Muddy Valley, Oregon USGS 7.5 minute topographic quadrangle

**RANGE IN CHARACTERISTICS:** The soils are saturated with water during the winter season unless artificially drained. The mean annual soil temperature ranges from 52 to 56 degrees F. Depth to bedrock is greater than 60 inches. The 10 to 40 inch control section average 27 to 35 percent clay and less than 15 percent sand coarser than very fine sand. Depth to aquic conditions with distinct or prominent redox concentrations and chroma of 2 or less is from 0 to 12 inches. The mollic epipedon is 10 to 24 inches thick.

The A horizon has value of 2 or 3 moist, 4 or 5 dry, and chroma of 2 moist and 2 or 3 dry. Distinct masses of iron and manganese accumulation are throughout the A horizon or only in the lower part. It has 0 to 5 percent gravel. It is silt loam or silty clay loam. Soil reaction is strongly acid to neutral.

The Bg horizon has hue of 10YR to 5Y, value of 4 or 5 moist, 5 to 7 dry, and chroma of 1 or 2 moist and dry. It has distinct to prominent masses of iron and manganese accumulation. It is dominantly silty clay loam with 27 to 35 percent clay, but may range to silty clay below a depth of 30 inches. It has 0 to 5 percent gravel. It is slightly acid to strongly acid.

The BCg or C horizons are neutral, 10YR to 5GY, value of 4 to 6 moist, 5 to 7 dry, and chroma of 0 to 2 moist and dry. It has 0 to 15 percent gravel. It is silty clay loam or silty clay with 35 to 50 percent clay. In some pedons, the solum below 40 inches is underlain by stratified layers containing gravel and cobbles. It is moderately acid or slightly acid.

**COMPETING SERIES:** These are the [Beaucoupl](#), [Blackoar](#), [Bridgeson](#), [Copperas](#), [Ettrick](#), [Fella](#), [Gorham](#), [Jollygiant](#) (T), [Leshara](#), [Lummi](#), [Sauvie](#), and [Sepo](#) series.

[Beaucoupl](#) soils: 10 to 30 percent clay and 5 to 40 percent sand in the lower part of the series control section

[Blackoar](#) soils: 18 to 27 percent clay in the series control section.

[Bridgeson](#) soils: 5 to 20 percent volcanic glass in pscs; mean annual soil temperature of 47 to 50 degrees F.

[Copperas](#) soils: paralithic contact at 40 to 60 inches

[Ettrick](#) soils: 18 to 27 percent clay in the control section; mean annual soil temperature of 47 to 50 degrees F.

[Fella](#) soils: calcium carbonate at depths of 16 to 40 inches

[Gorham](#) soils: discontinuity and sandy textures with 5 to 15 percent clay and 60 to 85 percent sand in the lower part of the series control section

[Jollygiant](#) soils: 17 to 30 percent clay in the lower part of the series control section; have a difference between average summer and winter temperatures of 6 to 9 degrees C.

[Leshara](#) soils: free carbonates at depths of 10 to 26 inches

[Lummi](#) soils: mean annual temperature of 51 to 53 degrees F.; particle-size control section with 18 to 27 percent clay

[Sauvie](#) soils: have stratified sandy loam to silt loam textures with 7 to 20 percent clay in the lower part of the series control section

[Sepo](#) soils: calcium carbonate within 40 inches; have 18 to 30 percent clay in the lower part of the series control section

**GEOGRAPHIC SETTING:** The Wapato soils are in depressions on flood plains and basin-like areas. Elevations are 100 to 2,500 feet. The slope is 0 to 3 percent. The soils formed in silty recent alluvium. The climate is characterized by warm to hot summers and moist to wet winters. Mean January temperature is 39 to 40 degrees F. and mean July temperature is 65 to 68 degrees F. The mean annual temperature is 50 to 56 degrees F. The mean annual precipitation is typically 30 to 60 inches but may range to 90 inches in high winter rainfall valleys of southwestern Oregon (MLRA 5). The frost-free period is 150 to 210 days.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the [Camas](#), [Cloquato](#), [Chehalis](#), [Clato](#), [Cove](#), [Maytown](#), [McBee](#), [Newberg](#), [Reed](#), and [Waldo](#) soils. Camas soils are sandy-skeletal and occur on bars on flood plains. The medium textured Cloquato and Clato soils and moderately fine textured Chehalis soils are well drained and occur on higher flood plains. Maytown and McBee soils are moderately well drained with redoximorphic features in the lower part of the B horizon and occur in depressions on flood plains. In addition, Maytown soils have an ochric epipedon. Newberg soils are coarse-loamy and occur on level to slightly convex flood plains. Reed soils are fine textured, poorly drained and have an ochric epipedon. Cove and Waldo soils are fine textured. In addition, Cove soils have a mollic epipedon thicker than 24 inches and occur on fans and terraces.

**DRAINAGE AND PERMEABILITY:** Poorly drained; moderately slow permeability. Wapato soils are subject to occasional to frequent flooding for brief periods from December to April. An apparent high water table is at its uppermost limit from December to April and is ponded from January to March.

**USE AND VEGETATION:** Most of these soils are cultivated. Hay and pasture are major crops. When drained, beans and small grains are also raised. Native vegetation is red alder, Oregon ash, black cottonwood, willow, wild rose and sedges.

**DISTRIBUTION AND EXTENT:** Wapato soils occur on flood plains in southwestern Washington, in the Willamette Valley, and other interior river valleys of southern and southwestern Oregon. MLRA 2, 5. The series is of moderate extent.

**MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE:** Portland, Oregon

**SERIES ESTABLISHED:** Yamhill County, Oregon, 1917.

**REMARKS:** Diagnostic horizons and features recognized in this pedon:

Mollic epipedon - the zone from 0 to 16 inches (Ap, and A horizons)

Aquolls feature - chroma of 2 or less (redox depletions) in the lower part of the mollic epipedon and distinct masses of iron accumulation from 9 to 60 inches

Endoaquolls feature - the soil is saturated with water in all layers from the upper boundary of saturation to a depth of 80 inches or more

Fluvaquentic feature - and irregular decrease in organic-carbon from a depth of 10 inches to 50 inches (A, Bg1, Bg2, and upper 18 inches of BCg horizons)

Wapato soils are found on the Ingram geomorphic surface in the Willamette Valley, Oregon.

Differentiation from the Sauvie series needs further evaluation.

The classification was changed from Fluvaquentic Haplaquolls to Fluvaquentic Endoaquolls in 1994.

**ADDITIONAL DATA:** Characterization data available for User Pedon ID#'s 91OR067003 and 99OR047002, NSSL, Lincoln, NE.

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