APPLES

You are a apple farmer in Georgia. Your farm is open to the public, and people come and pick their own apples at your farm. You need to design a management plan to increase pollinator activity on your farm to increase apple production.

Sun Requirements: Full sun
Soil Type: Loamy
Soil pH: Neutral
Bloom Time: Summer, fall
Flower Color: Pink, white
Hardiness Zones: 3, 4, 5, 6, 7, 8

https://www.almanac.com/plant/apples

Soil Map—Fannin and Union Counties, Georgia

Map Scale: 1:4,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fannin and Union Counties, Georgia
Survey Area Data: Version 13, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

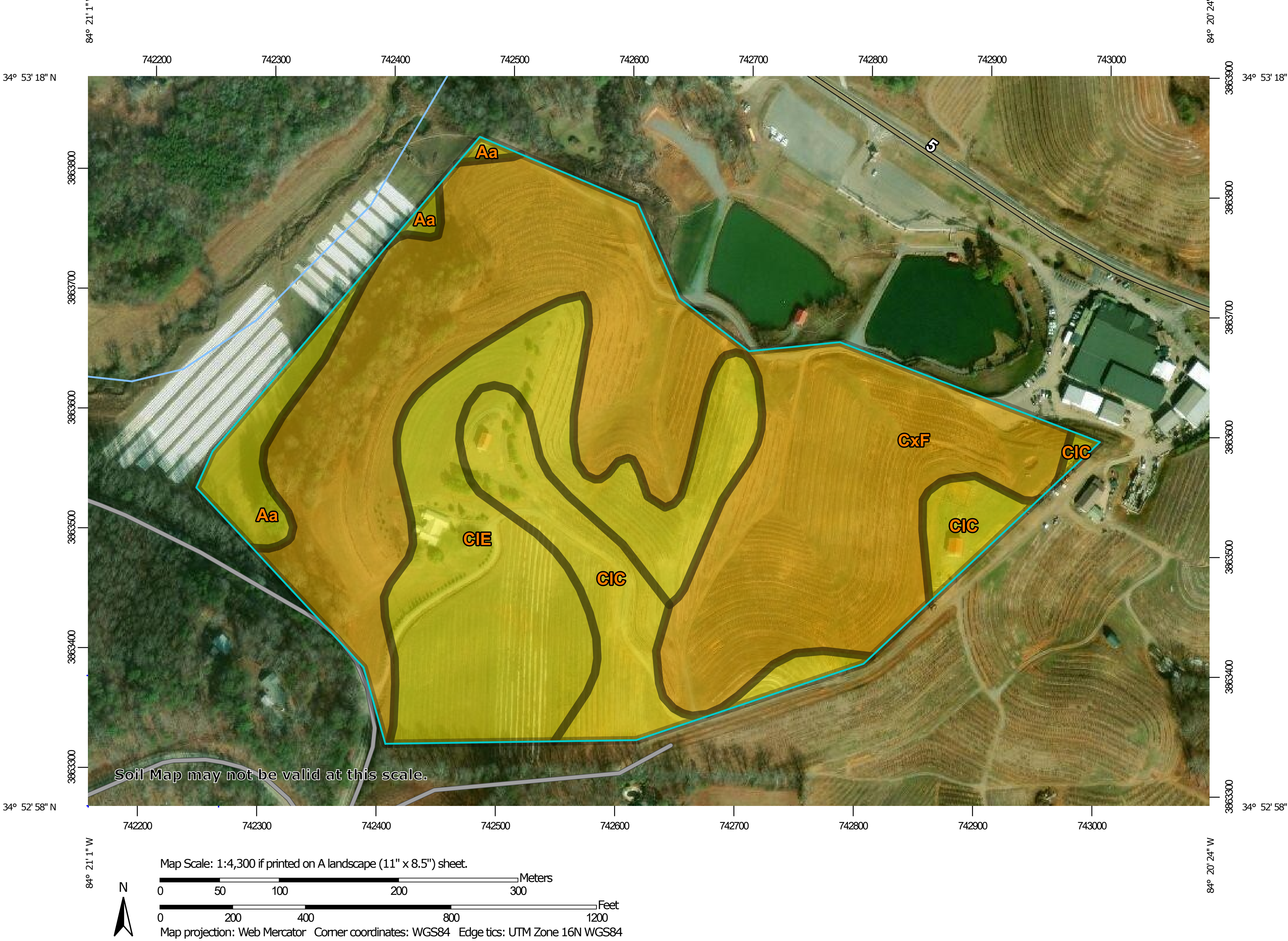
Date(s) aerial images were photographed: Mar 20, 2015—Oct 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Aa	Arkaqua loam, frequently flooded	2.3	4.3%
ClC	Clifton-Evard complex, 6 to 10 percent slopes	6.6	12.4%
ClE	Clifton-Evard complex, 10 to 25 percent slopes	13.8	25.7%
CxF	Cowee-Evard complex, 25 to 45 percent slopes	30.9	57.6%
Totals for Area of Interest		**53.6**	**100.0%**

Soil Health - Soil Reaction (pH)—Fannin and Union Counties, Georgia



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Points

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fannin and Union Counties, Georgia
Survey Area Data: Version 13, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 20, 2015—Oct 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Soil Health - Soil Reaction (pH)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Aa	Arkaqua loam, frequently flooded	5.5	2.3	4.3%
ClC	Clifton-Evard complex, 6 to 10 percent slopes	5.5	6.6	12.4%
ClE	Clifton-Evard complex, 10 to 25 percent slopes	5.5	13.8	25.7%
CxF	Cowee-Evard complex, 25 to 45 percent slopes	4.8	30.9	57.6%
Totals for Area of Interest			**53.6**	**100.0%**

Description

Soil reaction (pH) is a measure of acidity or alkalinity. Chemically, it is a measurement of the hydrogen ion activity [H+] in the soil solution. The pH scale ranges from 0 to 14; a pH of 7 is considered neutral. If pH values are greater than 7, the solution is considered basic or alkaline; if they are below 7, the solution is acidic.

Significance:

The acidity or alkalinity of a soil affects the availability of plant nutrients, the activity of microorganisms, and the solubility of soil minerals (Brady, 1990). In general, pH values between 6 and 7.5 are optimum for general crop growth. Site-specific interpretations for soil health will depend on specific land uses and crop tolerances. In acid soils, calcium and magnesium, nitrate-nitrogen, phosphorus, boron, and molybdenum are deficient but aluminum and manganese are abundant, in some cases at levels toxic to some plants (USDA-NRCS, 2008). Phosphorus, iron, copper, zinc, and boron are frequently deficient in very alkaline soils. Bacterial populations and activity decline at low pH levels, whereas fungi adapt to a large range of pH (acidic and alkaline). Nitrification and nitrogen fixation are also inhibited by low pH (USDA-NRCS, 2008). To increase pH, liming, adding organic residues rich in basic cations, and rotating crops to interrupt the acidifying effect of leguminous crops are effective. Applying ammonium-based fertilizers, urea, sulfur, or ferrous sulfate; irrigating with acidifying fertilizers; or using acidifying residues (acid moss, pine needles, sawdust) decrease soil pH (USDA-NRCS, 2008).

Factors Affecting Soil Reaction:

Inherent factors.—The natural soil pH reflects the combined effects of climate, vegetation, topography, parent material, and time. Temperature and rainfall are two major factors that control the intensity of leaching and soil mineral weathering. Acidity is generally associated with leached soils, and alkalinity is generally associated with soils in drier regions. In arid climates, soil weathering and leaching are less intense, cations accumulate, and the soil becomes neutral or alkaline. In soils where the pH is less than 5, aluminum becomes soluble and reacts with water to produce hydrogen ions. Sandy soils may acidify more easily compared to clay soils because they have a low buffering capacity and tend to leach more readily. Vegetation has an effect on soil pH through the type of organic matter that is added; certain types of vegetation are soil acidifying (USDA-NRCS, 2008).

Dynamic factors.—The conversion of uncultivated land into cropland can result in drastic pH changes after a few years. These changes are caused by the removal of cations by crops, the acceleration of leaching, the effect of fertilizers and amendments, and the variations in organic matter content and soil buffering capacity (USDA-NRCS, 2008). Inorganic amendments (lime and gypsum) and organic amendments rich in cations increase soil pH. Ammonium from organic matter mineralization (nitrification), ammonium-based fertilizers, and sulfur compounds lower the pH. High rates of water percolation and infiltration can increase the leaching of cations and accelerate soil acidification.

Measurement:

The pH reported here is measured using the 1:1 soil to water ratio method (Soil Survey Staff, 2014). A crushed soil sample is mixed with an equal amount of water, and the pH of the suspension is measured.

References:

Brady, N.C. 1990. The nature and properties of soils. 10th ed. Macmillan Publishers, NY.

Smith, J.L., and J.W. Doran. 1996. Measurement and use of pH and electrical conductivity for soil quality analysis. In: J.W. Doran and A.J. Jones (eds.) Methods for Assessing Soil Quality. Soil Science Society of America Special Publication 49:169-185.

Soil Survey Staff. 2014. Kellogg Soil Survey Laboratory methods manual. Soil Survey Investigations Report No. 42, Version 5.0. R. Burt and Soil Survey Staff (eds.). U.S. Department of Agriculture, Natural Resources Conservation Service.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Soil quality indicators—Soil pH.

Rating Options

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

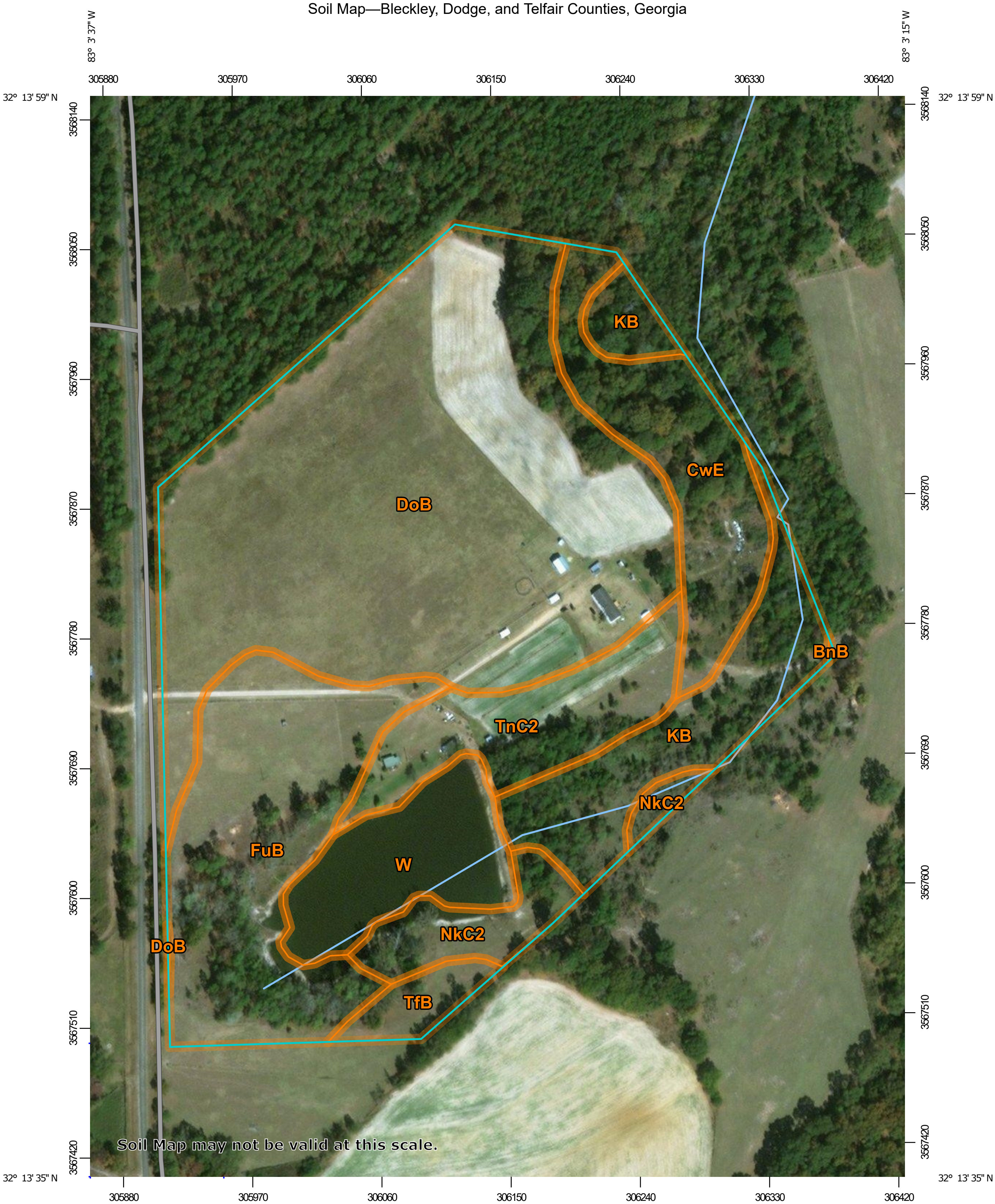
Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

BELL PEPPER

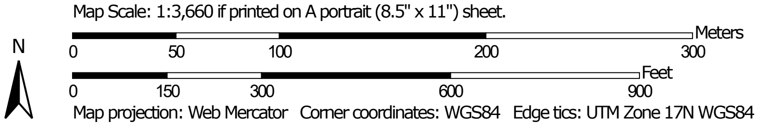
You are a pepper farmer in Georgia. You grow peppers to sell to local grocery stores. You need to design a management plan to increase pollinator activity on your farm to increase pepper production.

Sun Requirements: Full sun
Soil Type: Loamy
Soil pH: Acidic, neutral
Bloom Time: Summer
Flower Color: White
Hardiness Zones: 4, 5, 6, 7, 8, 9, 10, 11

https://www.almanac.com/plant/bell-peppers



Map Scale: 1:3,660 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bleckley, Dodge, and Telfair Counties, Georgia
Survey Area Data: Version 15, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

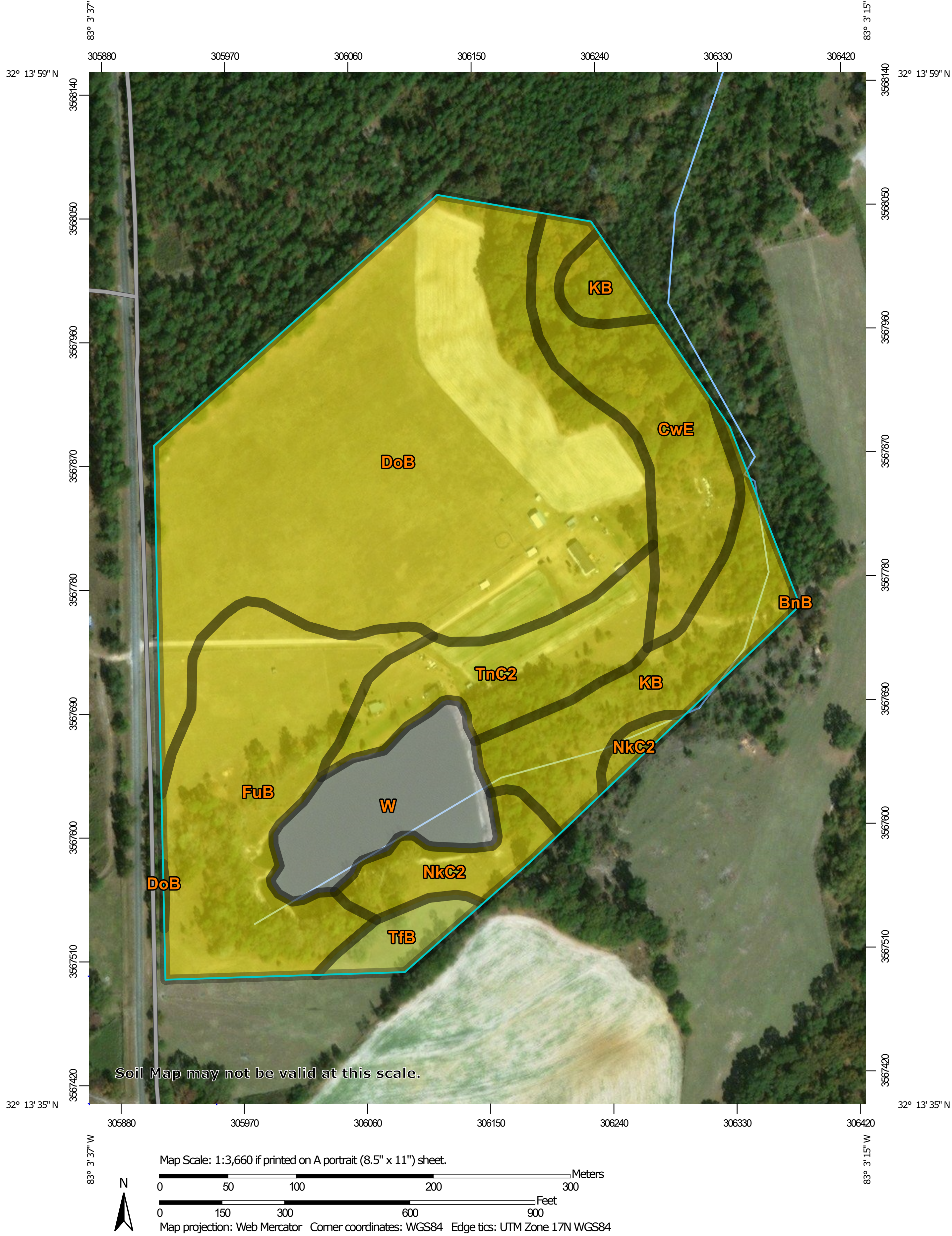
Date(s) aerial images were photographed: Dec 3, 2015—Feb 13, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BnB	Bonifay sand, 0 to 8 percent slopes	0.0	0.0%
CwE	Cowarts-Nankin-Ailey complex, 8 to 25 percent slopes	4.2	9.1%
DoB	Dothan loamy sand, 2 to 5 percent slopes	20.4	44.1%
FuB	Fuquay loamy sand, 0 to 5 percent slopes	7.5	16.3%
KB	Kinston-Bibb association, 0 to 2 percent slopes, frequently flooded	4.7	10.2%
NkC2	Nankin sandy loam, 5 to 8 percent slopes, moderately eroded	1.9	4.2%
TfB	Tifton loamy sand, 2 to 5 percent slopes	0.8	1.8%
TnC2	Tifton sandy loam, 5 to 8 percent slopes, eroded	3.5	7.5%
W	Water	3.2	6.9%
Totals for Area of Interest		**46.2**	**100.0%**

Soil Health - Soil Reaction (pH)—Bleckley, Dodge, and Telfair Counties, Georgia



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Points

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bleckley, Dodge, and Telfair Counties, Georgia
Survey Area Data: Version 15, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 3, 2015—Feb 13, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Soil Health - Soil Reaction (pH)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BnB	Bonifay sand, 0 to 8 percent slopes	5.0	0.0	0.0%
CwE	Cowarts-Nankin-Ailey complex, 8 to 25 percent slopes	5.3	4.2	9.1%
DoB	Dothan loamy sand, 2 to 5 percent slopes	5.3	20.4	44.1%
FuB	Fuquay loamy sand, 0 to 5 percent slopes	5.5	7.5	16.3%
KB	Kinston-Bibb association, 0 to 2 percent slopes, frequently flooded	5.5	4.7	10.2%
NkC2	Nankin sandy loam, 5 to 8 percent slopes, moderately eroded	5.3	1.9	4.2%
TfB	Tifton loamy sand, 2 to 5 percent slopes	6.0	0.8	1.8%
TnC2	Tifton sandy loam, 5 to 8 percent slopes, eroded	5.5	3.5	7.5%
W	Water		3.2	6.9%
Totals for Area of Interest			**46.2**	**100.0%**

Description

Soil reaction (pH) is a measure of acidity or alkalinity. Chemically, it is a measurement of the hydrogen ion activity [H+] in the soil solution. The pH scale ranges from 0 to 14; a pH of 7 is considered neutral. If pH values are greater than 7, the solution is considered basic or alkaline; if they are below 7, the solution is acidic.

Significance:

The acidity or alkalinity of a soil affects the availability of plant nutrients, the activity of microorganisms, and the solubility of soil minerals (Brady, 1990). In general, pH values between 6 and 7.5 are optimum for general crop growth. Site-specific interpretations for soil health will depend on specific land uses and crop tolerances. In acid soils, calcium and magnesium, nitrate-nitrogen, phosphorus, boron, and molybdenum are deficient but aluminum and manganese are abundant, in some cases at levels toxic to some plants (USDA-NRCS, 2008). Phosphorus, iron, copper, zinc, and boron are frequently deficient in very alkaline soils. Bacterial populations and activity decline at low pH levels, whereas fungi adapt to a large range of pH (acidic and alkaline). Nitrification and nitrogen fixation are also inhibited by low pH (USDA-NRCS, 2008). To increase pH, liming, adding organic residues rich in basic cations, and rotating crops to interrupt the acidifying effect of leguminous crops are effective. Applying ammonium-based fertilizers, urea, sulfur, or ferrous sulfate; irrigating with acidifying fertilizers; or using acidifying residues (acid moss, pine needles, sawdust) decrease soil pH (USDA-NRCS, 2008).

Factors Affecting Soil Reaction:

Inherent factors.—The natural soil pH reflects the combined effects of climate, vegetation, topography, parent material, and time. Temperature and rainfall are two major factors that control the intensity of leaching and soil mineral weathering. Acidity is generally associated with leached soils, and alkalinity is generally associated with soils in drier regions. In arid climates, soil weathering and leaching are less intense, cations accumulate, and the soil becomes neutral or alkaline. In soils where the pH is less than 5, aluminum becomes soluble and reacts with water to produce hydrogen ions. Sandy soils may acidify more easily compared to clay soils because they have a low buffering capacity and tend to leach more readily. Vegetation has an effect on soil pH through the type of organic matter that is added; certain types of vegetation are soil acidifying (USDA-NRCS, 2008).

Dynamic factors.—The conversion of uncultivated land into cropland can result in drastic pH changes after a few years. These changes are caused by the removal of cations by crops, the acceleration of leaching, the effect of fertilizers and amendments, and the variations in organic matter content and soil buffering capacity (USDA-NRCS, 2008). Inorganic amendments (lime and gypsum) and organic amendments rich in cations increase soil pH. Ammonium from organic matter mineralization (nitrification), ammonium-based fertilizers, and sulfur compounds lower the pH. High rates of water percolation and infiltration can increase the leaching of cations and accelerate soil acidification.

Measurement:

The pH reported here is measured using the 1:1 soil to water ratio method (Soil Survey Staff, 2014). A crushed soil sample is mixed with an equal amount of water, and the pH of the suspension is measured.

References:

Brady, N.C. 1990. The nature and properties of soils. 10th ed. Macmillan Publishers, NY.

Smith, J.L., and J.W. Doran. 1996. Measurement and use of pH and electrical conductivity for soil quality analysis. In: J.W. Doran and A.J. Jones (eds.) Methods for Assessing Soil Quality. Soil Science Society of America Special Publication 49:169-185.

Soil Survey Staff. 2014. Kellogg Soil Survey Laboratory methods manual. Soil Survey Investigations Report No. 42, Version 5.0. R. Burt and Soil Survey Staff (eds.). U.S. Department of Agriculture, Natural Resources Conservation Service.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Soil quality indicators—Soil pH.

Rating Options

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

BLUEBERRIES

You are a blueberry farmer in Georgia. Your farm is open to the public, and people come and pick their own blueberries at your farm. You need to design a management plan to increase pollinator activity on your farm to increase blueberry production.

Sun Requirements: Full sun
Soil Type: Any
Soil pH: Acidic
Bloom Time: Spring, summer
Flower Color: White, pink
Hardiness Zones: 3, 4, 5, 6, 7, 8, 9

https://www.almanac.com/plant/blueberries

Map Scale: 1:3,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 45, 90, 180, 270

Feet: 0, 150, 300, 600, 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gwinnett County, Georgia
Survey Area Data: Version 11, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 10, 2019—May 19, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AmC2	Appling sandy loam, 6 to 10 percent slopes, moderately eroded	7.2	52.7%
ApB	Appling-Hard Labor complex, 2 to 6 percent slopes	3.7	26.8%
Cfs	Chewacla silt loam, 0 to 2 percent slopes, frequently flooded	2.8	20.4%
Totals for Area of Interest		**13.6**	**100.0%**

Soil Health - Soil Reaction (pH)—Gwinnett County, Georgia

Map Scale: 1:3,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 45, 90, 180, 270

Feet: 0, 150, 300, 600, 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Points

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gwinnett County, Georgia
Survey Area Data: Version 11, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 10, 2019—May 19, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Soil Health - Soil Reaction (pH)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AmC2	Appling sandy loam, 6 to 10 percent slopes, moderately eroded	5.2	7.2	52.7%
ApB	Appling-Hard Labor complex, 2 to 6 percent slopes	5.2	3.7	26.8%
Cfs	Chewacla silt loam, 0 to 2 percent slopes, frequently flooded	5.5	2.8	20.4%
Totals for Area of Interest			**13.6**	**100.0%**

Description

Soil reaction (pH) is a measure of acidity or alkalinity. Chemically, it is a measurement of the hydrogen ion activity [H+] in the soil solution. The pH scale ranges from 0 to 14; a pH of 7 is considered neutral. If pH values are greater than 7, the solution is considered basic or alkaline; if they are below 7, the solution is acidic.

Significance:

The acidity or alkalinity of a soil affects the availability of plant nutrients, the activity of microorganisms, and the solubility of soil minerals (Brady, 1990). In general, pH values between 6 and 7.5 are optimum for general crop growth. Site-specific interpretations for soil health will depend on specific land uses and crop tolerances. In acid soils, calcium and magnesium, nitrate-nitrogen, phosphorus, boron, and molybdenum are deficient but aluminum and manganese are abundant, in some cases at levels toxic to some plants (USDA-NRCS, 2008). Phosphorus, iron, copper, zinc, and boron are frequently deficient in very alkaline soils. Bacterial populations and activity decline at low pH levels, whereas fungi adapt to a large range of pH (acidic and alkaline). Nitrification and nitrogen fixation are also inhibited by low pH (USDA-NRCS, 2008). To increase pH, liming, adding organic residues rich in basic cations, and rotating crops to interrupt the acidifying effect of leguminous crops are effective. Applying ammonium-based fertilizers, urea, sulfur, or ferrous sulfate; irrigating with acidifying fertilizers; or using acidifying residues (acid moss, pine needles, sawdust) decrease soil pH (USDA-NRCS, 2008).

Factors Affecting Soil Reaction:

Inherent factors.—The natural soil pH reflects the combined effects of climate, vegetation, topography, parent material, and time. Temperature and rainfall are two major factors that control the intensity of leaching and soil mineral weathering. Acidity is generally associated with leached soils, and alkalinity is generally associated with soils in drier regions. In arid climates, soil weathering and leaching are less intense, cations accumulate, and the soil becomes neutral or alkaline. In soils where the pH is less than 5, aluminum becomes soluble and reacts with water to produce hydrogen ions. Sandy soils may acidify more easily compared to clay soils because they have a low buffering capacity and tend to leach more readily. Vegetation has an effect on soil pH through the type of organic matter that is added; certain types of vegetation are soil acidifying (USDA-NRCS, 2008).

Dynamic factors.—The conversion of uncultivated land into cropland can result in drastic pH changes after a few years. These changes are caused by the removal of cations by crops, the acceleration of leaching, the effect of fertilizers and amendments, and the variations in organic matter content and soil buffering capacity (USDA-NRCS, 2008). Inorganic amendments (lime and gypsum) and organic amendments rich in cations increase soil pH. Ammonium from organic matter mineralization (nitrification), ammonium-based fertilizers, and sulfur compounds lower the pH. High rates of water percolation and infiltration can increase the leaching of cations and accelerate soil acidification.

Measurement:

The pH reported here is measured using the 1:1 soil to water ratio method (Soil Survey Staff, 2014). A crushed soil sample is mixed with an equal amount of water, and the pH of the suspension is measured.

References:

Brady, N.C. 1990. The nature and properties of soils. 10th ed. Macmillan Publishers, NY.

Smith, J.L., and J.W. Doran. 1996. Measurement and use of pH and electrical conductivity for soil quality analysis. In: J.W. Doran and A.J. Jones (eds.) Methods for Assessing Soil Quality. Soil Science Society of America Special Publication 49:169-185.

Soil Survey Staff. 2014. Kellogg Soil Survey Laboratory methods manual. Soil Survey Investigations Report No. 42, Version 5.0. R. Burt and Soil Survey Staff (eds.). U.S. Department of Agriculture, Natural Resources Conservation Service.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Soil quality indicators—Soil pH.

Rating Options

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 1

Bottom Depth: 25

Units of Measure: Inches

BROCCOLI

You are a broccoli farmer in Georgia. You grow broccoli to sell to local grocery stores. You need to design a management plan to increase pollinator activity on your farm to increase broccoli production.

Sun Requirements: Full sun
Soil Type: Sandy
Soil pH: Acidic, neutral
Bloom Time: Spring, fall
Flower Color: Yellow
Hardiness Zones: 3, 4, 5, 6, 7, 8, 9, 10

https://www.almanac.com/plant/broccoli

Map Scale: 1:2,370 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Baldwin, Jones, and Putnam Counties, Georgia
Survey Area Data: Version 17, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 17, 2016—Jan 12, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cst	Chewacla and Starr soils	1.7	12.5%
CyB2	Cecil sandy loam, 2 to 6 percent slopes, moderately eroded	0.0	0.2%
DhC2	Davidson clay loam, 6 to 10 percent slopes, moderately eroded	0.2	1.5%
EjB2	Enon soils, 2 to 6 percent slopes, eroded	8.7	61.8%
HYB2	Helena sandy loam, 2 to 6 percent slopes, eroded	0.3	1.8%
W	Water	0.9	6.4%
WiE	Wilkes soils, 10 to 25 percent slopes	2.2	15.8%
Totals for Area of Interest		**14.0**	**100.0%**

Map Scale: 1:2,370 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 35, 70, 140, 210

Feet: 0, 100, 200, 400, 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Points

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Baldwin, Jones, and Putnam Counties, Georgia
Survey Area Data: Version 17, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 17, 2016—Jan 12, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Soil Health - Soil Reaction (pH)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Cst	Chewacla and Starr soils	5.5	1.7	12.5%
CyB2	Cecil sandy loam, 2 to 6 percent slopes, moderately eroded	5.5	0.0	0.2%
DhC2	Davidson clay loam, 6 to 10 percent slopes, moderately eroded	5.3	0.2	1.5%
EjB2	Enon soils, 2 to 6 percent slopes, eroded	5.8	8.7	61.8%
HYB2	Helena sandy loam, 2 to 6 percent slopes, eroded	5.1	0.3	1.8%
W	Water		0.9	6.4%
WiE	Wilkes soils, 10 to 25 percent slopes	5.8	2.2	15.8%
Totals for Area of Interest			**14.0**	**100.0%**

Description

Soil reaction (pH) is a measure of acidity or alkalinity. Chemically, it is a measurement of the hydrogen ion activity [H+] in the soil solution. The pH scale ranges from 0 to 14; a pH of 7 is considered neutral. If pH values are greater than 7, the solution is considered basic or alkaline; if they are below 7, the solution is acidic.

Significance:

The acidity or alkalinity of a soil affects the availability of plant nutrients, the activity of microorganisms, and the solubility of soil minerals (Brady, 1990). In general, pH values between 6 and 7.5 are optimum for general crop growth. Site-specific interpretations for soil health will depend on specific land uses and crop tolerances. In acid soils, calcium and magnesium, nitrate-nitrogen, phosphorus, boron, and molybdenum are deficient but aluminum and manganese are abundant, in some cases at levels toxic to some plants (USDA-NRCS, 2008). Phosphorus, iron, copper, zinc, and boron are frequently deficient in very alkaline soils. Bacterial populations and activity decline at low pH levels, whereas fungi adapt to a large range of pH (acidic and alkaline). Nitrification and nitrogen fixation are also inhibited by low pH (USDA-NRCS, 2008). To increase pH, liming, adding organic residues rich in basic cations, and rotating crops to interrupt the acidifying effect of leguminous crops are effective. Applying ammonium-based fertilizers, urea, sulfur, or ferrous sulfate; irrigating with acidifying fertilizers; or using acidifying residues (acid moss, pine needles, sawdust) decrease soil pH (USDA-NRCS, 2008).

Factors Affecting Soil Reaction:

Inherent factors.—The natural soil pH reflects the combined effects of climate, vegetation, topography, parent material, and time. Temperature and rainfall are two major factors that control the intensity of leaching and soil mineral weathering. Acidity is generally associated with leached soils, and alkalinity is generally associated with soils in drier regions. In arid climates, soil weathering and leaching are less intense, cations accumulate, and the soil becomes neutral or alkaline. In soils where the pH is less than 5, aluminum becomes soluble and reacts with water to produce hydrogen ions. Sandy soils may acidify more easily compared to clay soils because they have a low buffering capacity and tend to leach more readily. Vegetation has an effect on soil pH through the type of organic matter that is added; certain types of vegetation are soil acidifying (USDA-NRCS, 2008).

Dynamic factors.—The conversion of uncultivated land into cropland can result in drastic pH changes after a few years. These changes are caused by the removal of cations by crops, the acceleration of leaching, the effect of fertilizers and amendments, and the variations in organic matter content and soil buffering capacity (USDA-NRCS, 2008). Inorganic amendments (lime and gypsum) and organic amendments rich in cations increase soil pH. Ammonium from organic matter mineralization (nitrification), ammonium-based fertilizers, and sulfur compounds lower the pH. High rates of water percolation and infiltration can increase the leaching of cations and accelerate soil acidification.

Measurement:

The pH reported here is measured using the 1:1 soil to water ratio method (Soil Survey Staff, 2014). A crushed soil sample is mixed with an equal amount of water, and the pH of the suspension is measured.

References:

Brady, N.C. 1990. The nature and properties of soils. 10th ed. Macmillan Publishers, NY.

Smith, J.L., and J.W. Doran. 1996. Measurement and use of pH and electrical conductivity for soil quality analysis. In: J.W. Doran and A.J. Jones (eds.) Methods for Assessing Soil Quality. Soil Science Society of America Special Publication 49:169-185.

Soil Survey Staff. 2014. Kellogg Soil Survey Laboratory methods manual. Soil Survey Investigations Report No. 42, Version 5.0. R. Burt and Soil Survey Staff (eds.). U.S. Department of Agriculture, Natural Resources Conservation Service.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Soil quality indicators—Soil pH.

Rating Options

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

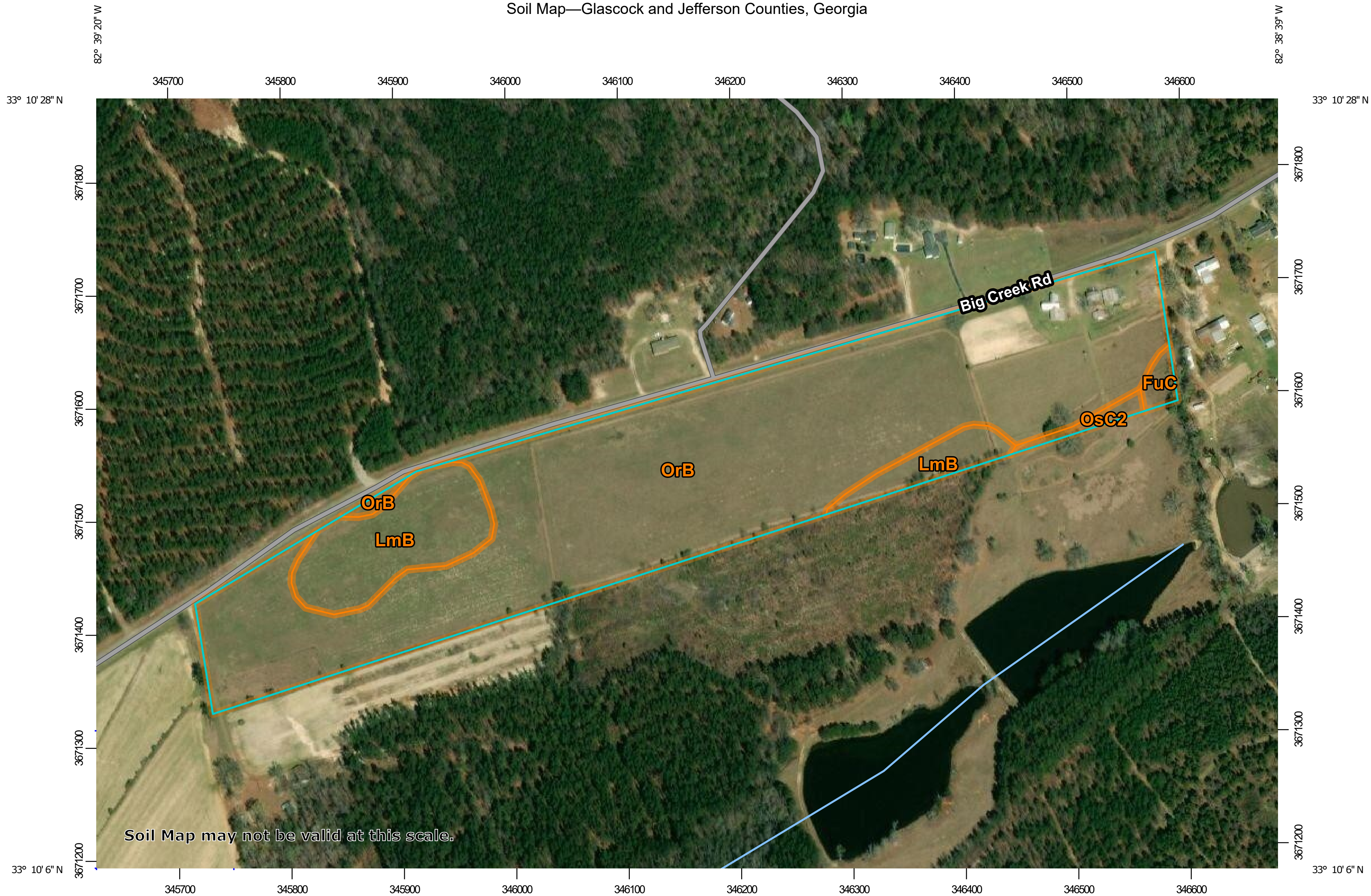
Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

WATERMELON

You are a watermelon farmer in Georgia. You grow watermelons to sell at a local farmers market. You need to design a management plan to increase pollinator activity on your farm to increase watermelon production.

Sun Requirements: Full sun
Soil Type: Sandy
Soil pH: Acidic, neutral
Bloom Time: Summer
Flower Color: Yellow
Hardiness Zones: 3, 4, 5, 6, 7, 8, 9, 10, 11

https://www.almanac.com/plant/watermelon



Map Scale: 1:4,810 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Glascock and Jefferson Counties, Georgia
Survey Area Data: Version 14, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

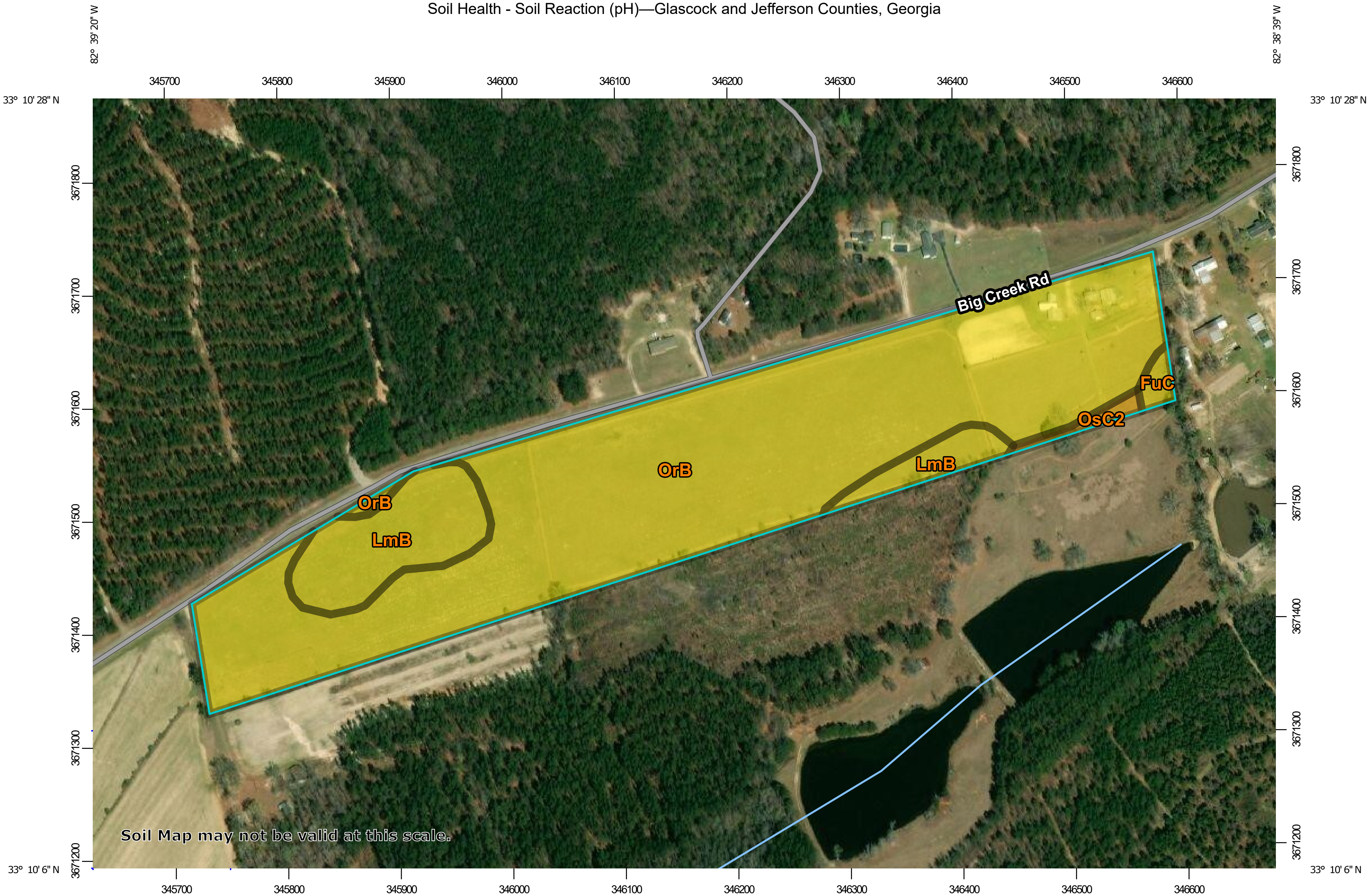
Date(s) aerial images were photographed: Oct 17, 2015—Apr 3, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

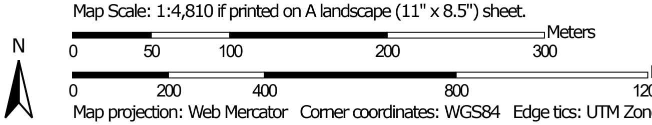
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FuC	Fuquay loamy sand, 5 to 8 percent slopes	0.3	1.0%
LmB	Lucy loamy sand, 0 to 5 percent slopes	4.3	14.2%
OrB	Orangeburg loamy sand, 2 to 5 percent slopes	25.5	83.8%
OsC2	Orangeburg sandy clay loam, 5 to 8 percent slopes, eroded	0.3	1.0%
Totals for Area of Interest		**30.4**	**100.0%**

Soil Health - Soil Reaction (pH)—Glascock and Jefferson Counties, Georgia



Map Scale: 1:4,810 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Points

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Glascock and Jefferson Counties, Georgia
Survey Area Data: Version 14, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 17, 2015—Apr 3, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Soil Health - Soil Reaction (pH)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
FuC	Fuquay loamy sand, 5 to 8 percent slopes	5.2	0.3	1.0%
LmB	Lucy loamy sand, 0 to 5 percent slopes	5.3	4.3	14.2%
OrB	Orangeburg loamy sand, 2 to 5 percent slopes	5.1	25.5	83.8%
OsC2	Orangeburg sandy clay loam, 5 to 8 percent slopes, eroded	5.0	0.3	1.0%
Totals for Area of Interest			**30.4**	**100.0%**

Description

Soil reaction (pH) is a measure of acidity or alkalinity. Chemically, it is a measurement of the hydrogen ion activity [H+] in the soil solution. The pH scale ranges from 0 to 14; a pH of 7 is considered neutral. If pH values are greater than 7, the solution is considered basic or alkaline; if they are below 7, the solution is acidic.

Significance:

The acidity or alkalinity of a soil affects the availability of plant nutrients, the activity of microorganisms, and the solubility of soil minerals (Brady, 1990). In general, pH values between 6 and 7.5 are optimum for general crop growth. Site-specific interpretations for soil health will depend on specific land uses and crop tolerances. In acid soils, calcium and magnesium, nitrate-nitrogen, phosphorus, boron, and molybdenum are deficient but aluminum and manganese are abundant, in some cases at levels toxic to some plants (USDA-NRCS, 2008). Phosphorus, iron, copper, zinc, and boron are frequently deficient in very alkaline soils. Bacterial populations and activity decline at low pH levels, whereas fungi adapt to a large range of pH (acidic and alkaline). Nitrification and nitrogen fixation are also inhibited by low pH (USDA-NRCS, 2008). To increase pH, liming, adding organic residues rich in basic cations, and rotating crops to interrupt the acidifying effect of leguminous crops are effective. Applying ammonium-based fertilizers, urea, sulfur, or ferrous sulfate; irrigating with acidifying fertilizers; or using acidifying residues (acid moss, pine needles, sawdust) decrease soil pH (USDA-NRCS, 2008).

Factors Affecting Soil Reaction:

Inherent factors.—The natural soil pH reflects the combined effects of climate, vegetation, topography, parent material, and time. Temperature and rainfall are two major factors that control the intensity of leaching and soil mineral weathering. Acidity is generally associated with leached soils, and alkalinity is generally associated with soils in drier regions. In arid climates, soil weathering and leaching are less intense, cations accumulate, and the soil becomes neutral or alkaline. In soils where the pH is less than 5, aluminum becomes soluble and reacts with water to produce hydrogen ions. Sandy soils may acidify more easily compared to clay soils because they have a low buffering capacity and tend to leach more readily. Vegetation has an effect on soil pH through the type of organic matter that is added; certain types of vegetation are soil acidifying (USDA-NRCS, 2008).

Dynamic factors.—The conversion of uncultivated land into cropland can result in drastic pH changes after a few years. These changes are caused by the removal of cations by crops, the acceleration of leaching, the effect of fertilizers and amendments, and the variations in organic matter content and soil buffering capacity (USDA-NRCS, 2008). Inorganic amendments (lime and gypsum) and organic amendments rich in cations increase soil pH. Ammonium from organic matter mineralization (nitrification), ammonium-based fertilizers, and sulfur compounds lower the pH. High rates of water percolation and infiltration can increase the leaching of cations and accelerate soil acidification.

Measurement:

The pH reported here is measured using the 1:1 soil to water ratio method (Soil Survey Staff, 2014). A crushed soil sample is mixed with an equal amount of water, and the pH of the suspension is measured.

References:

Brady, N.C. 1990. The nature and properties of soils. 10th ed. Macmillan Publishers, NY.

Smith, J.L., and J.W. Doran. 1996. Measurement and use of pH and electrical conductivity for soil quality analysis. In: J.W. Doran and A.J. Jones (eds.) Methods for Assessing Soil Quality. Soil Science Society of America Special Publication 49:169-185.

Soil Survey Staff. 2014. Kellogg Soil Survey Laboratory methods manual. Soil Survey Investigations Report No. 42, Version 5.0. R. Burt and Soil Survey Staff (eds.). U.S. Department of Agriculture, Natural Resources Conservation Service.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Soil quality indicators—Soil pH.

Rating Options

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 1

Bottom Depth: 25

Units of Measure: Inches

WHITE CLOVER

You are a cattle farmer in Georgia. You grow white clover in your fields for forage. You need to design a management plan to increase pollinator activity on your farm to increase forage production.

Sun Requirements: Full sun
Soil Type: Sandy, loamy, clay
Soil pH: Acidic, neutral
Bloom Time: Spring, fall
Flower Color: White
Hardiness Zones: 3, 4, 5, 6, 7, 8, 9, 10

Soil Map—Decatur County, Georgia

Map Scale: 1:5,310 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 250, 500, 1000, 1500

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Decatur County, Georgia
Survey Area Data: Version 15, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 11, 2016—Dec 15, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DoA	Dothan loamy sand, 0 to 2 percent slopes	1.1	1.8%
DoB	Dothan loamy sand, 2 to 5 percent slopes	11.2	18.9%
TfB	Tifton loamy sand, 2 to 5 percent slopes	44.2	74.5%
W	Water	2.8	4.8%
Totals for Area of Interest		**59.4**	**100.0%**

Soil Health - Soil Reaction (pH)—Decatur County, Georgia

Map Scale: 1:5,310 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 250, 500, 1000, 1500

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (pH < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
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Soil Rating Points

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- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
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Soil Health - Soil Reaction (pH)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
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Totals for Area of Interest			**59.4**	**100.0%**

Description

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U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Soil quality indicators—Soil pH.

Rating Options

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 1

Bottom Depth: 25

Units of Measure: Inches