

The background of the slide is a photograph of a rural landscape. In the foreground, there is a green grassy field with some dark shadows from trees. In the middle ground, there are several trees, including a prominent bare tree on the left and a tall evergreen on the right. The sky is clear and blue.

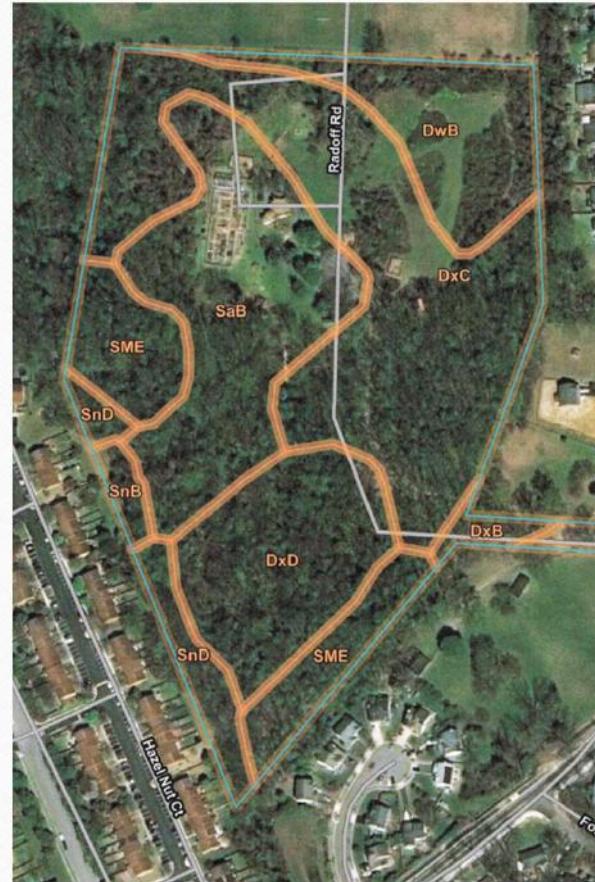
Predominant Soils of Goshen Farm

Developed By Lauren Guidry

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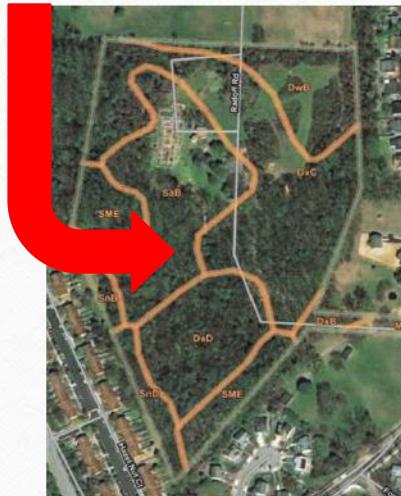
Study Area: 1420 Cape St. Claire Rd Annapolis, 21409

Goshen Farm consists of eight different soil types. The majority of Goshen Farm consists of Sassafras and Downer-Phalanx which are the main focus of this study. Sassafras is Maryland's state soil and occurs on 5.0 acres of the 23.0 acres discussed. Downer-Phalanx occurs on 8.0 acres of the 23.0 acres in the area of interest discussed.



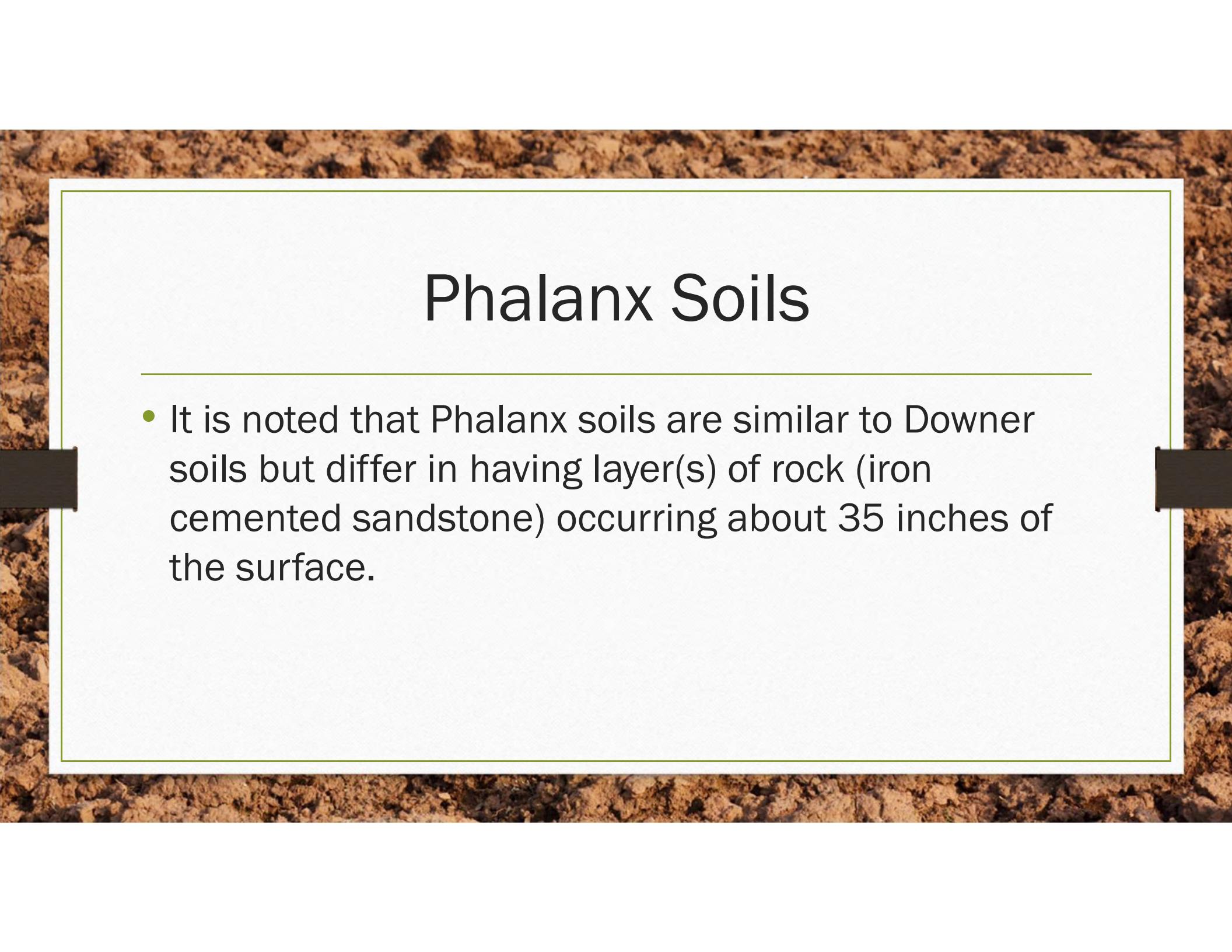
Soils of Goshen Farm

Sassafras Fine Sandy Loam, 2 to 5 Percent Slopes (SaB)



Downer-Phalanx Complex, 5 to 10 Percent Slopes (DxC)





Phalanx Soils

- It is noted that Phalanx soils are similar to Downer soils but differ in having layer(s) of rock (iron cemented sandstone) occurring about 35 inches of the surface.



Surface Textures

- Texture is a measured property of soil. It can be determined in the field or the laboratory.
- The mineral fraction of soil is composed of sand, silt, and clay.
- Organic matter and Clay exerts the greatest influence on the soil properties.
- Sands and sandy loams are coarse-textured soils that are extremely permeable.

Surface texture: Sassafras Soil (SaB)

Fine sandy loam

- Sand- 72.4%
- Silt- 17.6%
- Clay- 10.0%

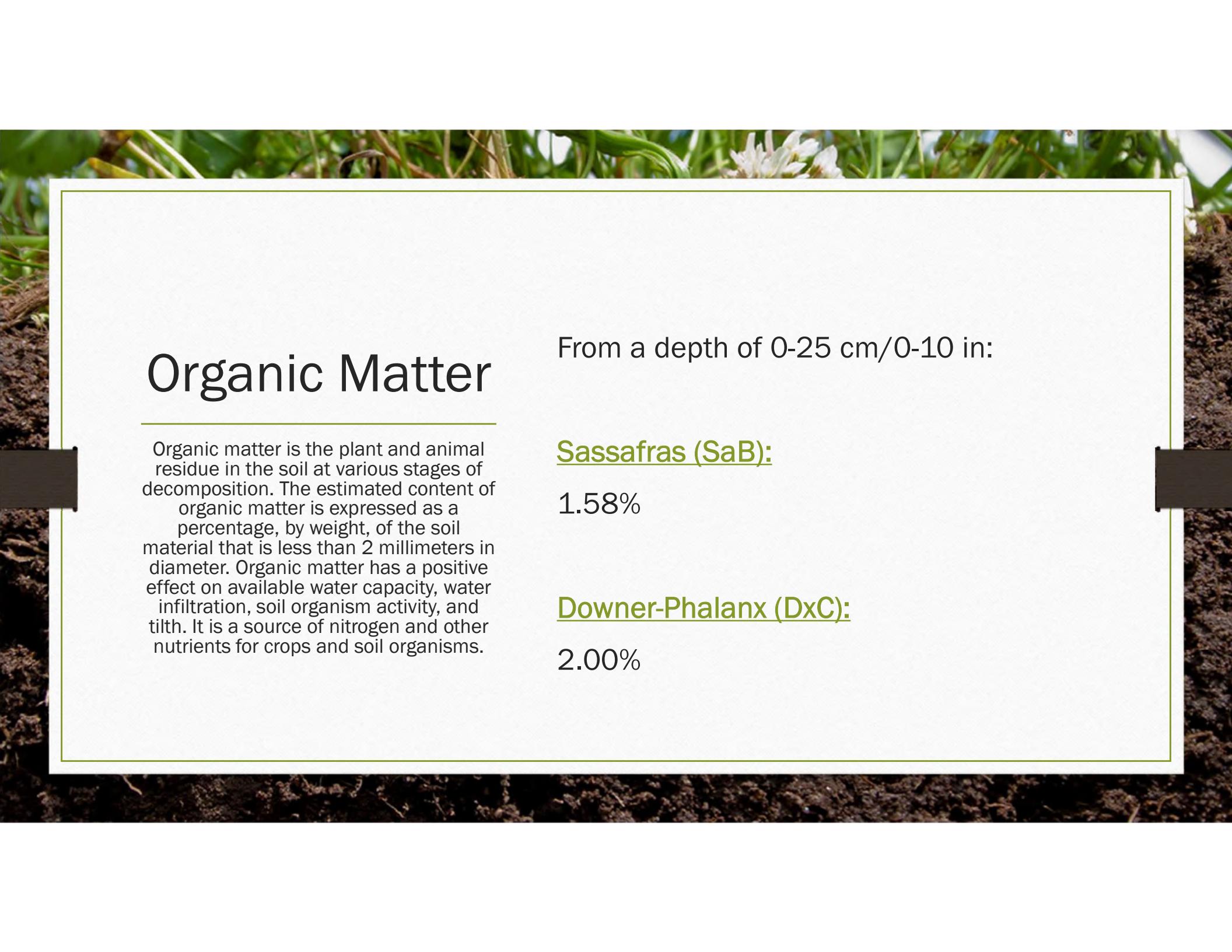


Surface Texture:
Downer-Phalanx
Complex (DxC)

Loamy sand

- Sand- 84.0%
- Silt- 10.0%
- Clay- 6.0%





Organic Matter

Organic matter is the plant and animal residue in the soil at various stages of decomposition. The estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

From a depth of 0-25 cm/0-10 in:

Sassafras (SaB):

1.58%

Downer-Phalanx (DxC):

2.00%

Available Water Capacity (AWC)

- Available water capacity refers to the amount of water that the soil is capable of storing for use by plants.
- The capacity for water storage is given in centimeters of water per centimeter of soil for each soil layer.
- The most important properties that influence AWC are the content of organic matter, soil texture, bulk density, and soil structure.
- Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems.

Available Water Capacity

Sassafras (SaB)

- 0-10 inches in depth
- 0.062 inches of water

Downer-Phalanx (DxC)

- 0-10 inches in depth
- 0.047 inches of water

Drainage

Soils of Maryland are categorized into six drainage classes. The classes are excessively-drained, well-drained, moderately well-drained, somewhat poorly-drained, and very poorly-drained. Well drained means that seasonal high water table is greater than 40 inches of the surface.

Sassafras (SaB):

Category = well-drained

Downer-Phalanx Complex (DxC):

Category = well-drained



Intern determining soil color by using the Munsell Soil Color Chart.
(below)



Retired Maryland Assistant State Soil Scientist misting the Sassafras soil pit to enhance soil color.
(above)



Intern measuring the depth of the hole augured into Downer-Phalanx soil.
(above)

Land Capability Classifications

Sassafras (SaB):

Classification = 2e

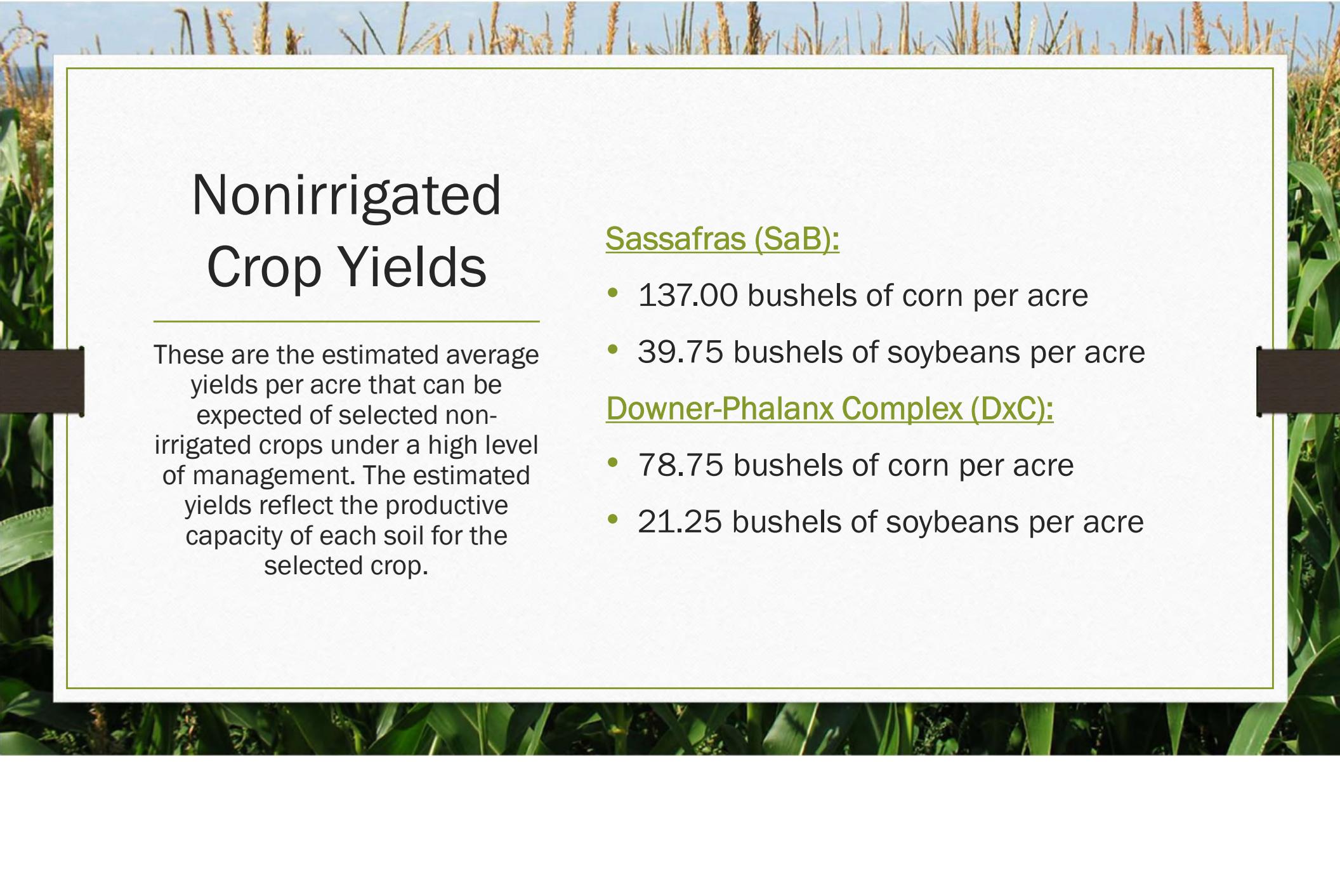
- Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- The letter "e", is a subclass, that shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained

Land Capability Classifications

Downer-Phalanx Complex (DxC):

Classification = 3e

- Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.
- The letter "e", is a subclass, that shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained



Nonirrigated Crop Yields

These are the estimated average yields per acre that can be expected of selected non-irrigated crops under a high level of management. The estimated yields reflect the productive capacity of each soil for the selected crop.

Sassafras (SaB):

- 137.00 bushels of corn per acre
- 39.75 bushels of soybeans per acre

Downer-Phalanx Complex (DxC):

- 78.75 bushels of corn per acre
- 21.25 bushels of soybeans per acre

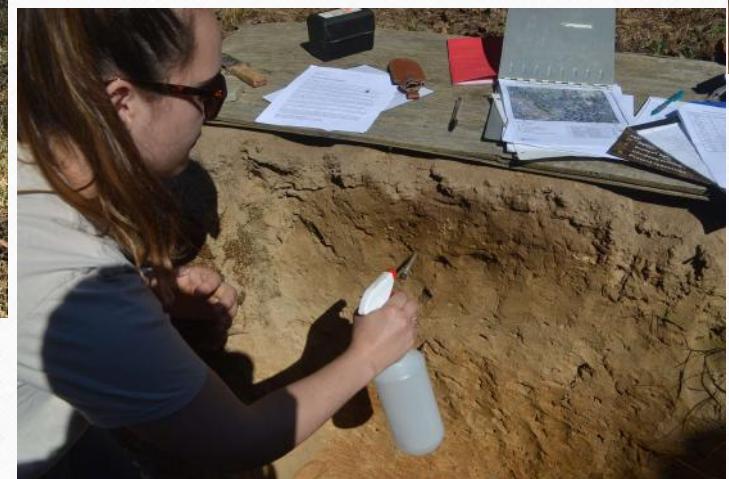


Intern taking Sassafras soil sample to examine texture.
(above)



Intern determining the texture of Downer-Phalanx soil.
(above)

Intern misting Sassafras soil pit.
(below)





Forest Productivity

- The "site index" is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years.
 - The “site index” applies to fully stocked, even-aged, unmanaged stands.
 - The “volume of wood fiber” is the yield likely to be produced by the tree species.
 - The “volume of wood fiber” is expressed as cubic feet per acre per year.
- 



Forest Productivity

Sassafras (SaB)

- Loblolly pine site index 85 ft.
 - Volume of wood fiber 114.0 cu ft.
- Yellow-poplar site index 80 ft.
 - Volume of wood fiber 72.0 cu ft.

Downer- Phalanx Complex (DxC)

- Loblolly pine site index 70 ft.
 - Volume of wood fiber 101.0 cu ft.
- Yellow-poplar site index 90 ft.
 - Volume of wood fiber 90.0 cu ft.



What is Web Soil Survey?

Web Soil Survey is the website created by the National Resources Conservation Service (NRCS) in which anyone can access information about the soils around them. There is thorough information about the soils of almost all the counties in the United States including over 100 soil interpretations. The website is open for any and all people who are curious about the land they live on.

You are here: Web Soil Survey Home

The simple yet powerful way to access and use soil data.

START WSS

Welcome to Web Soil Survey (WSS)

Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information.

Soil surveys can be used for general farm, local, and wider area planning. Onsite investigation is needed in some cases, such as soil quality assessments and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center at the following link: [USDA Service](#)

I Want To...

- Start Web Soil Survey (WSS)
- Know Web Soil Survey Requirements
- Know Web Soil Survey operation hours
- Find what areas of the U.S. have soil data
- Find information by topic
- Know how to hyperlink from other documents to Web Soil Survey
- Know the SSURGO data structure
- Use Web Soil Survey on a mobile device

Announcements/Events

- [Web Soil Survey](#)

Using Web Soil Survey

How to find each soil component on Web Soil Survey:

First Step for all: select an Area of Interest (AOI) then use the following steps for each component.

- Surface Textures – Soil Data Explorer – Soil Physical Properties – Surface Texture
- Organic Matter – Soil Data Explorer – Soil Physical Properties – Organic Matter
- Available Water Capacity – Soil Data Explorer – Soil Physical Properties – Available Water Capacity

Using Web Soil Survey Continued

- Land Capability Classifications – Suitabilities and Limitations for Use – Land Classifications – Nonirrigated Capability Class/Nonirrigated Capability Subclass
- Nonirrigated Crop Yields – Suitabilities and Limitations for Use – Vegetative Productivity – Yields of Nonirrigated Crops (Component)
- Forest Productivity – Suitabilities and Limitations for Use – Vegetative Productivity- Forest Productivity (Tree Site Index)

How to find your own property using Web Soil Survey...

1. Press the green “Start WSS” button when entering the website
2. Under “Quick Navigation” select “Address”
3. Enter your address and select “View” (a map of your address will appear)
4. Select the very last button on the tool bar which says “AOI” and has an odd shape in the button
5. You will then use the tool to draw lines around your property which will then allow you to find information about the soil specific to your address

Conclusion: Which soil is more productive?

- The two dominant soils at Goshen Farm, Sassafras and Downer, were studied with regard to the following seven soil properties: surface textures, organic matter, available water capacity, drainage, land capability classifications, non-irrigated crop yields, and forest productivity.
- In reference to overall productivity, although the data shows Downer has slightly more organic matter than Sassafras, all the other six soil properties result in Sassafras being the more productive soil.

Sassafras (SaB)



Downer-Phalanx Complex (DxC)



Note the beautiful green lawn on Sassafras soil adjacent to the parched lawn on the Downer soil (photo taken on the same day)



Sources

“The Goshen Farm Preservation Society.” *Goshen Farm Preservation Society*, <https://www.goshenfarm.org/>.

“Natural Resources Conservation Service.” *State Soils | NRCS Soils*, https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=stelp_rdb1236841

NRCS. *Web Soil Survey – Home*,
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.