

# 2025-26 Soils Learning Objectives & Resources

## North Dakota Envirothon *Updated 2/5/26 (updates in red)*

### Overview

North Dakota is a “Prairie” State. The ND Envirothon Soils discipline will integrate the study and use of North Dakota’s soils.

### Soils Learning Objectives

#### Physical Properties of Soil and Soil Formation

- Understand the importance of soils and appreciate the relatively small amount of usable soil that exists on Earth.
- Know the five soil forming factors, and understand how they influence soil properties.
- Understand the origin and types of soil parent materials.
- Understand basic soil forming processes: additions, losses, translocations, and transformations.
- Recognize and understand features of Soil Profiles and be able to use this information to determine basic soil properties and limitations.
- Identify and describe soil characteristics (texture, structure, and color- using Munsell color charts).

#### Chemical Properties of Soil and Soil Fertility

- Know that plants must receive essential micronutrients and macronutrients from the soil to be healthy and understand that soil fertility relates to the physical and chemical properties of the soil in addition to the quantity of nutrients.
- Understand soil pH, electrical conductivity, and other chemical properties.

#### Soil Ecosystems and Soil Health

- Recognize that biological diversity is important for soil health and hence plant, human and environmental health.
- Recognize that understanding soil ecosystems is important to soil management.
- Understand that soils are a biological system that require living organisms to provide nutrients to growing plants.

#### Soil Conservation and Land Use Management

- Compare different land uses and conservation practices and their impact on soils and erosion.
- Understand how soil is impacted by point & nonpoint source pollution & the importance of soil management to agriculture and clean water.

- Understand how the hydrologic, carbon and nutrient cycles relate to soil management.

#### Web Soil Survey and Soil Surveys

- Use published and on-line soil data and other resources to learn how land use affects soil, and the limitations of local soils.
- Understand the eight Land Capability Classes and how they are important in determining appropriate land use.
- Understand soil drainage classes and be able to recognize the characteristics of hydric soils and know how soils fit into the definition of wetlands.

### *Removed Land capability classification (2/5/26)*

### Soils Resources *(added links 2/5/26)*

The resources listed below will be used to test the student's understanding of the learning objectives. All of these are hyperlinked to the online version of the resource.

[From the Surface Down](#), USDA/NRCS - Overview of soil horizons, formation, and properties

[Soil Health for Educators](#), USDA/NRCS - Soil Health Guides and Videos

[Web Soil Survey](#), USDA/NRCS - Online database of available soil maps, data, and interpretations.

[Field Indicators of Hydric Soils in the United States](#), USDA/NRCS - Information used to identify soils that meet hydric soil criteria.

[Soil Field Guide for Identifying Ecological Sites](#), USDA/NRCS - Booklet used by North Dakota NRCS staff to identify which ecological site a soil meets.

[Soil Field Guide for Identifying Conservation Tree and Shrub Groups](#), USDA/NRCS - Booklet used by North Dakota NRCS staff to identify which conservation tree and shrub groups a soil meets.

[Cropland In Field Soil Health Assessment Guide](#), USDA/NRCS - Guide used by NRCS staff for identifying soil health concerns. Includes information about important soil health concerns.

[Interpreting Indicators of Rangeland Health](#), USDI/BLM - Guide used by BLM staff for identifying indicators of rangeland health

[Field Book for Describing and Sampling Soils](#), USDA/NRCS - Book used by NRCS Soil Scientists to consistently and uniformly describe soils in the field. Currently on Version 4.0

## For More Information (updated contact information 2/5/26)

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