

Plants and the Environment

The game of golf is played on a plot of land which consists of several different types of plant species. While the game is mainly played on managed turfgrass surfaces, also present on the course are trees, shrubs, native plants and flowers which serve as obstacles, hazards, backgrounds, aesthetic gardens, and habitat areas. As a result, golf courses provide an excellent opportunity to study plants, their identifying characteristics, growth and development processes, management requirements and the interdependent relationships between plants and environmental factors such as water, soil, air, and sunlight.

Student Learning Objectives

- 1. Collect data on the variety and number of plant species found on a golf course using appropriate data collection methods.**
Turfgrasses, trees, shrubs, annual and perennial flowers, and native plants.
- 2. Collect soil samples. Use appropriate testing techniques to analyze the samples to determine their composition of physical, mineral, and organic materials.**
Soils are made up of different physical, mineral, and organic materials. Soil tests for nitrogen, phosphorus and potassium are used to determine fertilizer needs of the plant.
- 3. Analyze a turfgrass plant to identify the parts and describe their main function.**
Leaves (absorb sunlight), roots (absorb nutrients from the soil), shoots and stems (provide structure) and thatch (holds water and nutrients; area with high microbial activity) comprise a turfgrass plant.
- 4. Understand golf course management strategies used to maintain healthy turf.**
Healthy turf improves the quality of the environment, and requires fewer chemical applications.

Field Trip Requirements

- Safe location on the golf course that is adjacent to a turf area where soil samples can be taken.
- Soil profiler or soil sampling probe, sample bags and soil screen sieves.
- LaMotte soil test kit and associated materials.

Field Trip Outline

The golf course superintendent or golf course representative will host a walking tour of the golf course with an emphasis on plant and soil management.

The field trip host will begin with a brief discussion about the importance of plants and what makes them grow. As the group is walking to the green or tee where the field trip activity will take place, the host will point out the wide variety of plants which can be found on a golf course. Share with the students an inventory of the total number plant species found on the course.

Once at the designated green or tee, the host will take a turf sample and show the students the soil profile pointing out the different parts of the plant. The host will then instruct the students on how to properly take soil samples. The students will then use the soil probe to collect soil samples for use in analyzing the physical and nutrient content of the soil. A portion of the collected soil will be placed in the screen sieves and shaken by the students for several minutes. The students can then examine the soil and organic contents on the different screens to see what soil is composed of. The remaining portion of collected soil will be used by the students to conduct soil tests for pH, nitrogen, phosphorus and potassium.

Analyze the results and discuss the outcomes and implications. Allow the students to get their hands dirty to create a lasting experience. After the students have finished with the soil tests the host can explain the various management practices used at the golf course to maintain healthy turfgrass. Practices may include; aerification, sand topdressing, mowing practices, maintaining sharp equipment, vertical mowing, chemical and fertilizer selection and application criteria, and irrigation scheduling. The tour can end with a discussion on the importance of maintaining plants in a healthy state so as to reduce the need for chemical pesticides.

Additional Resources

- Textbook titled: Turfgrass Management for Golf Courses by James B. Beard

