



# Soil and Recycling Department

## Lesson 5 Citizen Science!

### Club Site Soil Quality

[http://soils.usda.gov/sqi/assessment/state\\_sq\\_cards.html](http://soils.usda.gov/sqi/assessment/state_sq_cards.html)

#### Essential Questions:

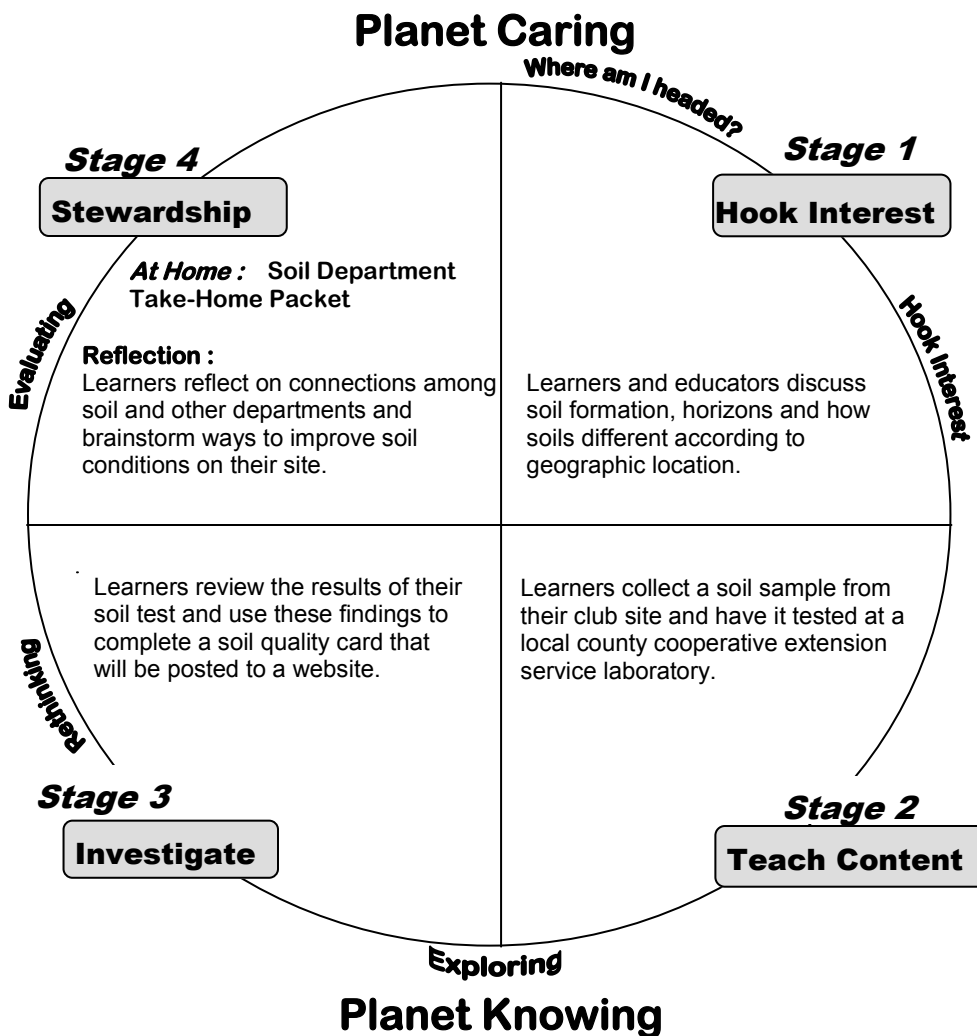
*What is the condition of the soil of my GEN club site?  
How can I contribute to the understanding of ecosystem health?*

#### At a Glance:

Working as citizen scientists, learners investigate the condition of the soil on their club site. Learners conduct soil tests, complete a soil quality card from the Natural Resources Conservation Service website and post their findings as a contribution to a comprehensive soil survey of their region. This information is important to soil scientists in their attempt to better understand ecosystem health and how to live more efficiently and effectively with the land.

#### Concepts:

- Healthy soil is the foundation for healthy plants. Healthy plants feed more animals and lead to a healthy ecosystem.
- Because departments of Garden Earth are interdependent, soils with an imbalance of phosphorus or nitrogen may affect water quality within the watershed.



#### Objectives

*Learners ...*

- 1) explore the ground beneath their feet while collecting a soil sample from their club site.
- 2) gain understanding about the presence and retention of chemicals from fertilizers and other substances in soils by having the soil of their club site tested by soil scientists.

## PROCEDURES IN BRIEF: Lesson 5—Citizen Science! Club Site Soil Quality

### Stage 1

1. Discuss soil formation, horizons and how soils differ according to geographic location. Highlight the connection between healthy soil and healthy ecosystems and reasons for soil degradation, such as the loss of topsoil due to overuse and development. The USDA provides information that can be downloaded to help in understanding the complexity of soil (see Resources and Links).

### Stage 2

1. Learners collect a soil sample from their club site using a trowel or bulb planter. To get a better representation of soil type, collect a core of soil of approximately two inches in diameter and six inches deep from three places and place them together in one container. Mix the soil by stirring or gently shaking. Remove a portion of the combined soil sample and put into a smaller container such as a paper or plastic bag.

2. Take or send the soil sample to a local county cooperative extension service soil laboratory or a USDA service center. If the lab is close enough, it may be possible to arrange a tour of the lab as a field trip for your club members. (This activity must take place over two club meetings to allow time for results to be obtained from the lab.)

### Stage 3

1. Learners review the results of their soil test and use these findings to complete a soil quality card downloaded from the USDA Natural Resources Conservation Service website. This card was designed by farmers and homeowners to be used to evaluate the condition of soil and determine what actions to take to improve their soil for crops, reduce runoff and subsequently improve water quality within their watershed.

2. Send soil quality cards via email or mail to the NRCS Soil Quality Webmaster to contribute to the comprehensive characterization and mapping of regional soils across the United States.

### Stage 4: *Reflection*

1. Learners reflect on the connections among the soil and other Garden Earth departments. They brainstorm ways to improve soil conditions and runoff issues. Learners use their ideas to design a service learning project drawing from the resources and skills of parents and community members to improve soil quality at their club site.

### Supplies

- USDA soil publication for background information
- Trowel or bulb planter
- Container/bucket for mixing soil
- Soil sample bag
- Extension service contact
- Computer and internet access
- Soil quality card

### Resources and Links

- USDA soil information  
[http://soils.usda.gov/use/urban/downloads/primer\(for\\_printing\).pdf](http://soils.usda.gov/use/urban/downloads/primer(for_printing).pdf)

<http://soils.usda.gov/sqi/publications/resources.html>

- USDA Service Center Locator  
<http://offices.sc.egov.usda.gov/locator/app>

- NRCS soil cards for GA residents  
[http://soils.usda.gov/sqi/assessment/files/GA\\_card.pdf](http://soils.usda.gov/sqi/assessment/files/GA_card.pdf)

- NRCS Soil Quality Webmaster link  
[http://soils.usda.gov/sqi/assessment/state\\_sq\\_cards.html](http://soils.usda.gov/sqi/assessment/state_sq_cards.html)