



SOIL QUALITY AND SITE ASSESSMENT CARD

for Connecticut Community Gardeners

What are Soil Quality and Site Assessment Cards?

- ❖ They are field tools developed collaboratively by the local community, the Natural Resources Conservation Service, and conservation partners
- ❖ They are used to assess the current status of soil quality, and over time will determine changes in soil quality affected by management
- ❖ These cards can be used throughout Connecticut
- ❖ They display locally selected soil quality and site assessment indicators and associated descriptive terms
- ❖ They list soil quality and site assessment indicators that can be assessed without the aid of technical or laboratory equipment
- ❖ The only tools required are a shovel and a coat hanger (or wire flag)
- ❖ Examples of indicators include compacted soil layers, abundance of earthworms, and amount of sun exposure

Why Develop Soil Quality and Site Assessment Cards for Connecticut?

- ❖ They are tools for people to assess soil quality on a site themselves
- ❖ The assessment is a tool to communicate with soil scientists and other environmental professionals about issues and problems relating to soil quality
- ❖ The cards focus on indicators identified by community people

These cards are not, however, intended to be used by farmers or people involved in production agriculture. Although they were designed for community garden use, they can also be used to rate sites and soil for other potential land uses. Keep in mind the cards are for people to do general evaluation of property, but are not a substitute for detailed, on-site investigations by professionals. Professional investigations may be necessary to satisfy federal, state, and local regulations.

After completing the assessment, decide how your ratings will affect your plans for the site. For indicators you rated as **Poor**, look at the **Management Options** section for that indicator. Design your site plans with these options in mind. Should you have questions about the process, contact

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SOIL INDICATOR SCORECARD

for Connecticut Community Gardeners



USDA, Natural Resources Conservation Service

Date: _____

Site Name: _____

Form Completed By: _____

applicable box

Soil Indicator	Poor	Tolerable	Best
19. Can you use the soil that is on the site? (Is there soil on this site?)	No. Need to bring soil to site. <input type="checkbox"/>	Some. <input type="checkbox"/>	Yes, all soil is workable. <input type="checkbox"/>
Surface of Soil			
20. Cracks on soil surface in July and August.	Many cracks. <input type="checkbox"/>	Occasional thin cracks. <input type="checkbox"/>	No cracks. <input type="checkbox"/>
21. How do existing plants grow? Compare same kind of plant.	Plants are dead or scraggly. <input type="checkbox"/>	Plant color and size are different. <input type="checkbox"/>	Plants look healthy. <input type="checkbox"/>
Soil Examination			
22. Smell of soil.	Oily, chemically, gasoline, rotten eggs, or bad or strange. <input type="checkbox"/>	No smell. <input type="checkbox"/>	Fresh, earthy. <input type="checkbox"/>
<i>It is not possible to smell some contaminants, like lead, in the soil. Avoid the site if the soil smell is poor unless you can determine the site history is safe and environmental testing for contaminants indicates the areas is safe. Do not touch the soil if the smell is offensive.</i>			
23. How hard is it to dig a hole two feet deep?	Not possible. <input type="checkbox"/>	Moderately difficult. <input type="checkbox"/>	Easy. <input type="checkbox"/>
24. Try to insert a wire coat hanger into soil surface two days after rainfall during the growing season.	Coat hanger bends or cannot be inserted. <input type="checkbox"/>	Coat hanger can be pushed in with pressure. <input type="checkbox"/>	Coat hanger goes in easily with fingers. <input type="checkbox"/>
	Soil feels firm. <input type="checkbox"/>	Soil feels somewhat firm. <input type="checkbox"/>	Soil feels loose. <input type="checkbox"/>
25. Depth of soil	Less than 1 foot. <input type="checkbox"/>	Between 1 and 2 feet. <input type="checkbox"/>	More than 2 feet. <input type="checkbox"/>
26. Depth of topsoil layer	0-2 inches. <input type="checkbox"/>	2-5 inches. <input type="checkbox"/>	5+ inches. <input type="checkbox"/>
27. Color of topsoil layer	Yellow, gray, multi-colored. <input type="checkbox"/>	Light brown. <input type="checkbox"/>	Black, dark brown, dark red, color is uniform. <input type="checkbox"/>
28. Moisture of soil two days after heavy rain.	Soil is very dry or very wet. <input type="checkbox"/>	Soil is somewhat dry or muddy. <input type="checkbox"/>	Soil is moist, but not muddy. <input type="checkbox"/>
29. How quickly water drains in one foot deep hole during the growing season.	Water stays in hole and doesn't drain after 15 minutes. <input type="checkbox"/>	Water drains, but less than one inch in 15 minutes. <input type="checkbox"/>	Water enters soil quickly and moves down more than one inch in 15 min. <input type="checkbox"/>
30. How does moist soil feel (texture) -- <i>Use Guide to Soil Texture by Feel Handbook.</i>	Sand, loamy sand, sandy clay, silty clay, or clay. <input type="checkbox"/>	Clay loam, silty clay loam, or sandy clay loam. <input type="checkbox"/>	Sandy loam, loam, or silt loam. <input type="checkbox"/>
31. How moist soil particles hold together.	Soil is hard and very difficult to break with fingers. <input type="checkbox"/>	Soil breaks apart with some difficulty with fingers. <input type="checkbox"/>	Soil crumbles easily with fingers. <input type="checkbox"/>
32. Roots in the top 12 inches of soil.	None. <input type="checkbox"/>	Some, roots grow mostly across the soil, not down. <input type="checkbox"/>	Many, roots grow mostly down into the soil, not across. <input type="checkbox"/>
33. Worms and other bugs in the soil.	None. <input type="checkbox"/>	A few. <input type="checkbox"/>	Many. <input type="checkbox"/>
34. Stones or rocks in the soil.	Too many. <input type="checkbox"/>	Some. <input type="checkbox"/>	None. <input type="checkbox"/>
35. Debris in the soil (bricks, construction materials, glass, concrete, etc.)	Too much to dig around. <input type="checkbox"/>	A little bit, doesn't interfere with digging. <input type="checkbox"/>	None. <input type="checkbox"/>
36. Rotten stumps, old trees in the soil.	Lots of stumps and trees. <input type="checkbox"/>	A few small pieces. <input type="checkbox"/>	None. <input type="checkbox"/>

SITE INDICATOR SCORECARD

for Connecticut Community Gardeners



USDA, Natural Resources Conservation Service

Date: _____

Site Name: _____

Form Completed By: _____

applicable box

Site Indicator	Poor	Tolerable	Best
Accessibility			
1. Walking distance to site.	10+ minutes. <input type="checkbox"/>	5-10 minutes. <input type="checkbox"/>	0-5 minutes. <input type="checkbox"/>
2. Availability of parking.	None. <input type="checkbox"/>	Difficult. <input type="checkbox"/>	No problem. <input type="checkbox"/>
3. Visibility from street.	Can't see site, or it is very visible. <input type="checkbox"/>	<input type="checkbox"/>	Somewhat visible. <input type="checkbox"/>
4. Hilliness of site.	Very hilly. <input type="checkbox"/>	Some slope. <input type="checkbox"/>	Level or nearly level. <input type="checkbox"/>
Topography			
5. Direction the slope faces.	North. <input type="checkbox"/>	East, West. <input type="checkbox"/>	South. <input type="checkbox"/>
6. Bedrock, ledge, or large boulders on site.	Too many to work around. <input type="checkbox"/>	Some, but can work around them. <input type="checkbox"/>	None. <input type="checkbox"/>
Location/Distance to Water			
7. Water access -- city water, pond, or river for irrigation.	No water available on the site, and no access to bring it to site. <input type="checkbox"/>	Have to connect to city water or bring water to site. <input type="checkbox"/>	Water available easily. <input type="checkbox"/>
8. Water quality tested.	Bad quality, can't use. <input type="checkbox"/>	Fair quality. <input type="checkbox"/>	Good quality. <input type="checkbox"/>
9. Runoff.	After rainfall, a lot of soil washes from site. <input type="checkbox"/>	After rainfall, a little soil washes from site. <input type="checkbox"/>	After rainfall, no soil is seen to wash from site. <input type="checkbox"/>
10. Water on surface during the growing season (spring, summer, fall).	After a moderate rainfall, water stays on surface for a few days. <input type="checkbox"/>	After heavy rainfall, water stays on surface for a short time. <input type="checkbox"/>	After rainfall, no water is observed on the soil surface. <input type="checkbox"/>
11. Sun exposure through the day.	Shady, very little exposure. <input type="checkbox"/>	Sun is blocked some of the time. <input type="checkbox"/>	Mostly sunny. <input type="checkbox"/>
12. Amount of existing pavement on site.	Too much pavement, will interfere with plans for the site. <input type="checkbox"/>	Some, but can work around. <input type="checkbox"/>	None. <input type="checkbox"/>
13. Debris (construction materials, bricks, concrete, etc.)	A lot on the surface. <input type="checkbox"/>	Occasional. <input type="checkbox"/>	None. <input type="checkbox"/>
14. Shortcuts through site.	Lots. <input type="checkbox"/>	Some. <input type="checkbox"/>	None. <input type="checkbox"/>
15. Neighborhood pets.	Site used heavily by animals. <input type="checkbox"/>	Some use. <input type="checkbox"/>	No pet evidence observed. <input type="checkbox"/>
16. Human activity on site.	Lots of evidence of people on site. <input type="checkbox"/>	Some people use site. <input type="checkbox"/>	Very little or no evidence of people on site. <input type="checkbox"/>
17. What's growing on the site now?	Lots of unwanted trees or brush. <input type="checkbox"/>	Some unwanted trees and brush. <input type="checkbox"/>	Plants will not interfere with site plans. <input type="checkbox"/>
History of Site			
18. History of site.	Not known. <input type="checkbox"/>	Some stories may be true. <input type="checkbox"/>	Definitely known. <input type="checkbox"/>



USDA, Natural Resources Conservation Service

UNIVERSITY OF CONNECTICUT DEPARTMENT OF PLANT SCIENCE

Soil Nutrient Analysis Laboratory, 6 Sherman Place, Box U-5102, Storrs, CT 06269-5102
(860) 486-4274 (phone) * (860) 486-4562 (fax)

Connecticut Environmental Laboratories That Perform Lead Testing on Soil

Northeast Laboratories, Inc. - Berlin
(860) 828-9787
\$35/sample

Spectrum Analytical - Bloomfield
(860) 242-6294
\$15/sample

Premier Laboratory, LLC - Brooklyn
(860) 774-6814 or (860) 334-0103
\$30/one sample; \$22/two or more samples*

Phoenix Environmental Laboratories, Inc. - Manchester
(860) 645-1102
\$21/sample

Connecticut Testing Laboratories - Meriden
(203) 634-3731
\$25/sample

Analytical Consulting Technology, Inc. - Middlebury
(203) 598-0040
\$10.50/sample

Environmental Science Corporation - Middletown
(860) 632-0600
\$20/sample

Baron Consulting Company - Milford
(203) 874-5678
\$20/sample

EnviroAnalytical, Inc. - Monroe
(203) 459-1800
\$20/sample

Hydro-Technologies - New Milford
(860) 355-8773
\$20/sample

Brooks Laboratories, Inc. - Norwalk
(203) 853-9792 or (800) 843-1631
\$25/sample

Eco-Science Laboratory - Norwich
(860) 889-8104
\$25/sample

Severn Trent Laboratories - Shelton
(203) 929-8140
\$20/sample

Environmental Analysis Corp. - Stamford
(203) 324-3811
\$25/sample

Complete Environmental Testing - Stratford
(203) 377-9984
\$12/sample

EAS Laboratories - Watertown
(860) 274-5461
\$12/sample

York Analytical Laboratories, Inc. - Stamford
(203) 325-1371
\$10/sample

**many labs have discount prices on multiple samples*



USDA, Natural Resources Conservation Service

How to Use the Site Indicator Scorecards

Equipment Required:

- pen or pencil

General Instructions:

- Go to the site you want to rate and look around the entire site.
- Concentrate on the specific area(s) on the site that you want to use.
- Complete the field notes section below.
- Rate each indicator on the back side of this card by marking an **X** in the appropriate box.
- Complete soil assessment scorecard.

Field Notes:

Date: _____

Name of Site _____

Location _____

Weather Conditions _____

Current Use of the Site _____

Future Plans for the Site _____

Site Drawing:



How to Use the Soil Indicator Scorecards

Equipment Required:

- Shovel
- Wire coat hanger
- Pen or pencil
- Tape measure or ruler
- 1 gallon water for each soil scorecard

General Instructions:

- Go to the site you want to rate and look around the entire site.
- Select a typical spot and dig a hole approximately one to two feet deep. This hole will be used for the soil examination.
- Dig another hole five inches deep nearby. This hole will be used to see how fast water moves through the soil.
- Complete the field notes section below.
- Rate each indicator on the back side of this card by marking an **X** in the appropriate box.
- Complete additional soil scorecards for other locations on your site.
- Complete site assessment scorecard.

Field Notes:

Date: _____

Name of Site _____

Location _____

Weather Conditions _____

Current Use of the Site _____

Future Plans for the Site _____

Site Drawing:

Management Options

For Site Indicators Rated Poor:

Accessibility

1. Consider creating wide, easy paths to the site.
2. If the users do not have to drive to the site, parking may not be an issue.
3. Consider the safety and the potential for vandalism at the site.
4. Create winding access paths to the site across the slopes to decrease erosion potential on the paths.

Topography

5. As the slope increases, the direction of the slope becomes more important. If you have a steep north-facing slope, consider growing plants that need less sun and have a shorter growing season. **Slope aspect** is the direction toward which the surface of the soil faces. Slope aspect may affect soil temperature, evapotranspiration, winds received, and snow accumulation.
6. Consider designs that work around or incorporate the rock.
- 7., 8. Consider using rainfall and/or collecting rainfall for irrigation. Grow plants that don't need much water.
9. Reduce surface runoff by keeping soil surface covered with plants and/or mulch. Avoid planting in runoff collection areas.
10. If wet spots persist, avoid these areas or consider artificially draining the site or adding fill (if possible and permitted).

Sun Exposure

11. Most vegetables need a minimum of 4 hours of sun. Consider cutting down trees or limbs that block the sun or growing shade tolerant plants.

Current Use

12. Consider removing unwanted pavement or incorporate existing paved areas into site design.
13. Note the kind of debris. If the debris is in the soil, get a soil test done to see if the site is contaminated.
14. Consider keeping gardens out of established shortcut paths. Incorporate existing paths into the site design.
15. If this is a problem, consider creating dog walk areas or fence in gardens.
16. Can the current use of the site be accommodated or eliminated? Incorporate current land uses into the site if possible.

Existing Vegetation

17. If excessive, cut brush and consider cutting trees that obscure the sun or use shade tolerant plants.

History of Site

18. Depends on date of buildings, date of demolition, materials used, type of industry, etc. Complete soil test to see if site is contaminated.

For Soil Indicators Rated Poor:

19. If you need to bring soil to the site, you can rate the purchased soil using indicators #22, 27, 30-36.

Surface of Soil

20. Add sandy soil to the surface and plow it into the topsoil.
21. Have a soil nutrient analysis test completed. Add recommended nutrients.

Soil Examinations

22. Seek professional environmental guidance for site if soil smells strange or soil test indicates contamination.
- 23., 24. What is stopping the digging or coat hanger? Is it hard bedrock, debris, water, or just hard soil? **Compaction** occurs when soil particles are pressed together, reducing the pore space between them. This often occurs due to heavy traffic, especially when the soil is wet. If compaction is a problem, consider constructing raised beds, or add compost or organic matter to soil and rototill or plow. If bedrock is a problem, see **Management Options #6 and #25**. If wetness is a problem, see **Management Option #23**. If debris is present, see **Management Option #35**.
25. Grow short rooted plants or consider constructing raised beds.
26. Add compost or organic matter to the topsoil. **Organic matter** is that fraction of the soil composed of everything that once lived. It includes plant and animal remains in various stages of decomposition, cells and tissues of soil organisms, and substances from plant roots and soil microbes.
27. At least four inches of good quality topsoil, with compost or organic matter. See **Purchasing Topsoil handout**.
28. **Available water capacity** is the amount of water that a soil can store that is available for use by plants. Increase the available water capacity by adding compost or organic matter and rototill. If the soil is dry, irrigate the site. If the soil is too wet, consider properly draining the area of the excess water (if practical and permitted).
29. Observe the movement of the water in the hole after rainfall or after adding a bucket of water to the hole. If wetness is a problem, see **Management Option #28**, or grow plants that can grow in wet conditions.
30. If the soil is too sandy, add organic matter and loamy material, and if the soil is too clayey, add sandy soil. Plow or rototill the soil surface to incorporate the added soil.
31. Plow or rototill soil after adding organic matter or compost. Or consider raised beds.
32. The number and type of roots may depend on what plants are growing on the site. If the roots are horizontal or deformed, something in the soil is stopping the plants from rooting properly. Check the wetness and firmness of the soil. To improve the chance for roots to grow, add compost or organic matter and rototill the soil.
33. Increase the number of worms and bugs by adding compost or organic matter to the soil.
34. If there are a lot of stones or rocks, use them as part of the landscaping (such as a stone wall).
35. Complete a soil test to see if the site is contaminated. If soil test indicates contamination is not a problem, remove the debris by hand or screen it out.
36. Remove large stumps, if possible. Consider building raised beds or using another location.

Guide to Texture by Feel

Begin at the place marked *Start* and follow the chart by answering the questions until you determine your soil's texture.

