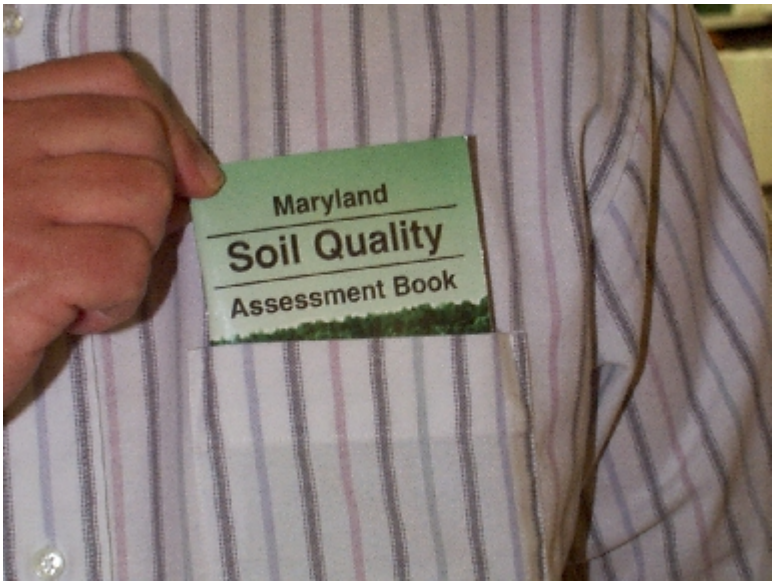
Maryland Soil Quality Assessment Book

The Maryland Soil Quality Assessment Book is a pocket size (6.25” x 3.5”) booklet, which includes user instructions, multiple soil assessment and field note sheets, a table of descriptive terms for each farmer-selected soil quality indicator, and an assessment calendar. Also included (and not featured in the sample presented here) are a section for personal notes, a two-year calendar, and a phone/address list.



About the Book

This soil quality assessment book is a locally adapted field tool designed by the University of Maryland in collaboration with the USDA-NRCS Soil Quality Institute and 17 Maryland farmers. It was developed to help users evaluate changes in soil quality as affected by field management. Regular use will allow you to record long-term changes in soil quality among different fields and various farming systems. The book is designed for farmers, but can also be used by agricultural support professionals such as soil conservationists, soil scientists, Cooperative Extension agents, and agriculture industry representatives.

How to Use the Card

Tools Required

- A shovel and a wire flag.

Soil Quality Assessment

- Select a field for evaluation and record the field and/or farm ID on an ***Assessment Sheet***. Use the ***Field Notes/Inputs Sheet*** to enter any other significant information such as inputs, crops, weather, soil moisture, or field conditions.

- Turn over a shovelful of soil about 6”- 8” deep. On the ***Assessment Sheet*****,** rate each indicator by marking an X or shading out to the box that best represents the value for that indicator. If you need more specific guidelines, refer to the ***Indicator Table*** for information on how to rate each indicator and to the ***Assessment Guide*** for the best time to do evaluations.

Notes

- This card is most effective when filled out by the same user over time and under similar soil moisture levels.

- The card is a **qualitative** assessment tool; therefore, evaluation scores do not represent any absolute measure.

- Using the card in more than one spot per field will provide a more accurate assessment.

Indicator Table

Indicator	Poor	Medium	Good
Earthworms	0-1 worms in shovelful of top foot of soil. No casts or holes.	2-10 in shovelful. Few casts, holes, or worms.	10+ in top foot of soil. Lots of casts and holes in tilled clods. Birds behind tillage.
Organic Matter Color	Topsoil color similar to subsoil color.	Surface color closer to subsoil color.	Topsoil clearly defined, darker than subsoil.
Organic Matter Roots/Residue	No visible residue or roots	Some residue few roots	Noticeable roots and residue
Subsurface Compaction	Wire breaks or bends when inserting flag.	Have to push hard, need fist to push flag in.	Flag goes in easily with fingers to twice the depth of plow layer.
Soil Tilth Mellowness Friability	Looks dead. Like brick or concrete, cloddy. Either blows apart or hard to pull drill through.	Somewhat cloddy, balls up, rough pulling seedbed.	Soil crumbles well, can slice through, like cutting butter. Spongy when you walk on it.
Erosion	Large gullies over 2 inches deep joined to others, thin or no topsoil, rapid run-off the color of soil.	Few rills or gullies, gullies up to two inches deep. Some swift runoff, colored water.	No gullies or rills, clear or no runoff.
Water Holding Capacity	Plant stress two days after a good rain.	Water runs out after a week or so.	Holds water for a long period of time without puddling.
Drainage, Infiltration	Water lays for a long time, evaporates more than drains, always very wet ground.	Water lays for short period of time, eventually drains.	No ponding, no runoff, water moves through soil steadily. Soil not too wet, not too dry.
Crop Condition (How well it grows)	Problem growing throughout season, poor growth, yellow or purple color.	Fair growth, spots in field different, medium green color.	Normal healthy dark green color, excellent growth all season, across field.
pH	Hard to correct for desired crop.	Easily correctable.	Proper pH for crop.
Nutrient Holding Capacity	Soil tests dropping with more fertilizer applied than crops used.	Little change or slow down trend.	Soil tests trending up in relation to fertilizer applied and crop harvested.

Assessment Guide

Indicator	Best Assessed
Earthworms	Spring/Fall Good soil moisture
Organic Matter Color	Moist soil
Organic Matter Roots/Residue	Anytime
Subsurface Compaction	Best pre-tillage or post harvest. Good soil moisture
Soil Tilth Mellowness Friability	Good soil moisture
Erosion	After heavy rainfall
Water Holding Capacity	After rainfall During growing season
Drainage, Infiltration	After rainfall
Crop Condition	Growing season Good soil moisture
pH	Anytime, but at same time of year each time
Nutrient Holding Capacity	Over a five year period, always at same time of year.

Assessment Sheet

Date_____ Crop_____

Farm/Field ID _____

Soil Quality	Poor			Medium			Good		
INDICATORS	1	2	3	4	5	6	7	8	9
Earthworms									
Organic Matter Color									
Organic Matter Roots/Residue									
Subsurface Compaction									
Tilth/Friability Mellowness									
Erosion									
Water Holding Capacity									
Drainage infiltration									
Crop Condition									
pH									
Nutrient Holding Capacity									
Other (write in)									
Other (write in)									

Field Notes/Inputs

Farm I.D. _____

Field I.D. _____ Date _____

Crop _____ Acres _____

Inputs

	Type	*Quantity*	*Price*
Fertilizer			
Lime			
Manure			
Cover Crops			
Pesticides			
Other			
Equipment			
Used			

Problems, Comments, Weather Conditions

_____

_____

_____

Yields

Amount _____

Units _____

Moisture _____

Price _____