



# Pennsylvania Soil Quality Assessment

*“Soil quality is the capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.”*

*Soil Science Society of America*

**Instructions:** Fill out the field information for predominant soil types at right. Draw field boundaries on the printout from a soil survey Web site ([soilmap.psu.edu](http://soilmap.psu.edu) or [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov)) or copy of County Soil Survey and mark special areas for further attention. Use the worksheet on the other side to guide your assessment of the soil quality in this field. Note the best time for making each assessment. A shovel will be useful in making some of the assessments. Check the appropriate rating or insert a score and note any observations that might help interpret the results. If you have other indicators, be sure to include them. Evaluate the ratings for each indicator based on the properties of the soil from the soil survey and the management information below. Determine where changes can be made to improve your soil management. A recommended use of this worksheet is to periodically assess soil quality in your fields to determine if it is getting better or worse and adjust management accordingly.









Field ID \_\_\_\_\_ Acres \_\_\_\_\_

From soil survey ( <a href="http://soilmap.psu.edu">soilmap.psu.edu</a> or <a href="http://websoilsurvey.nrcs.usda.gov">websoilsurvey.nrcs.usda.gov</a> )	Soil 1	Soil 2
Soil series		
Stoniness		
Farm class		
Drainage class		
Slope range		
Capability class		
Bedrock depth		
Seasonal water table		
Flooding potential		
Profile permeability		
Inherent soil constraints (e.g., depth to fragipan, seasonally high water table, high rock fragment content, shallow depth to bedrock, seasonal flooding)		

Crop rotation	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Crops in rotation (underline current)				
Cover crop				
Crop residue left on soil				
Tillage				
Lime applied				
Fertilizer applied				
Manure applied				
Pesticides applied that may have a negative effect on soil quality				
Yield				
Observations/Notes/ Recommendations				

# Soil Quality Assessment Worksheet *(See instructions on the other side of this sheet.)*

Field ID \_\_\_\_\_ Date \_\_\_\_\_

INDICATOR	DESCRIPTIONS			RATINGS			COMMENTS
	Excellent (8–10)	Fair (4–7)	Poor (1–3)	1st Year	2nd Year	3rd Year	
<b>Surface cover</b> 	Year-round surface cover from living crop or dead mulch; cover 50–100% after planting	Surface cover from living crop or dead mulch only part of the year; cover 30–50% after planting	Surface cover from living crop or dead mulch absent part of the year; cover <30% after planting				
<b>Soil structure</b> (0–3 inches) 	Soil aggregates crumb, don't disintegrate in water; soil tilth excellent; good weight-bearing capacity; no crusting and sealing	Soil aggregates cloddy, disintegrate somewhat in water; soil tilth moderate; weight not supported well; some crusting and sealing	Soil aggregates pulverized, disintegrate completely in water; soil tilth poor; weight poorly supported; severe crusting and sealing				
<b>Organic matter</b> (0–3 inches) 	Soil dark color; visible organic matter at surface; organic matter content high (>4% in top 2 inches); approaching level under native vegetation	Soil somewhat dark color; little visible organic matter at surface; organic matter content moderate (3–4% in top 2 inches); lower than under native vegetation	Soil brightly/dull colored; no visible organic matter at surface; organic matter content low (<3% in top 2 inches); much lower than under native vegetation				
<b>Soil erosion</b> 	No visual evidence of rills or soil movement and deposition in the field; few to no rock fragments visible at surface	Some visual evidence of small rills and soil movement and deposition in parts of the field; possibly some rocks visible at surface	Much visual evidence of rills and some gullies; possibly significant evidence of soil movement and deposition in parts of the field				
<b>Soil compaction</b> 	Soil not very resistant to penetration with soil compaction tester; no evidence of plow pan; low penetration resistance in subsoil	Soil somewhat resistant to penetration with soil compaction tester; no evidence of plow pan; moderate penetration resistance in subsoil	Soil highly resistant to penetration with soil compaction tester; high penetration resistance at bottom of plow layer; high penetration resistance in subsoil				
<b>Water infiltration</b> 	Water drains well after heavy rain; ponding largely absent; low runoff	Water drains slowly with some ponding; moderate runoff	Water drains slowly; ponding evident after rain; high runoff				
<b>Soil biodiversity</b> 	Much evidence of earthworm activity; many nightcrawler mounds; spiders and ground beetles visible under residue	Some evidence of earthworm activity; some nightcrawler mounds; spiders and ground beetles scarce	No or little evidence of earthworm activity; no nightcrawler mounds; spiders and ground beetles absent				
<b>Plant and root growth</b> 	Seedling emergence even and fast; plant growth vigorous and even; plants resist drought stress; root growth vigorous; roots fibrous; roots explore soil profile	Seedlings emerge somewhat even and a little slow; plant growth not exceptional; plants don't resist drought well; root growth moderate	Seedlings emergence uneven and problematic; plant growth poor and uneven; drought stress is quick; roots grow poorly; roots not fibrous; roots follow seed trench or take abrupt 90-degree turns				

