

Soil Health: Improving Land, Water, and Producer Profitability

Conservation leaders are working together to assist farmers to build soil organic matter and enhance soil health, to reduce soil erosion, nutrient and pesticide loss, stormwater runoff, and erosion to local streams draining to the Chesapeake Bay, through a NRCS Regional Conservation Partnership Program agreement.

Conservation farming practices that reduce tillage intensity, responsibly incorporate manure, establish cover crops, and rely on Integrated Pest Management may improve soil health and reduce water pollution. Cover crops can reduce nutrient leaching from farm fields, increase soil organic matter, improve soil structure, reduce soil erosion, and facilitate more comprehensive pest management. Stable forms of organic nitrogen may decrease fertilizer usage and costs, and in turn, reduce nutrient loading to the waterways. Soil health also promotes strong natural communities of microbes, fungi and insects that can contribute to pest control. Improving soil health can further enhance water quality by increasing infiltration, to effectively retain moisture more during times of drought, and to reduce stormwater runoff and associated soil erosion during heavy rains, retaining soil and nutrients in the agricultural fields, rather than degrading local streams.

Participating farms in Clinton, Centre and Lycoming Counties will establish innovative conservation practices on 4,250 acres enrolled in the Conservation Stewardship Program, and address additional resource concerns on these farms through the Environmental Quality Incentives Program, from September 2017 through September 2022. **Partners and their roles include:**

- ◆ **Chesapeake Bay Foundation** administers the partnership agreement, assists with outreach, and contracts with **R&R Engineering** for technical assistance on farms.
- ◆ **Clinton, Lycoming and Centre County Conservation Districts** provide technical assistance, education, and outreach, building on local relationships.
- ◆ **Penn State College of Agricultural Sciences** conducts educational programs to assist farmers in improving conservation management, with expertise of soil scientists, agronomists, weed scientists, entomologists, dairy scientists, and field and forage crop management extension educators. Research trials on two case study farms will examine how specific conservation practices may improve soil health and water quality.
- ◆ **PA No-Till Alliance** provides technical assistance, mentoring and outreach through the practical experience of its farmer members.



The Clinton County Conservation District, PA No-Till Alliance, and NRCS discussed soil health issues during three Farmer Breakfasts at Porter Township Community Center.



A water infiltration test demonstrated one of the benefits of improved soil health at a Lycoming County Cover Crop meeting.

- ◆ **Pennsylvania Association for Sustainable Agriculture's** diverse network of farmers conducts innovative educational programs to regenerate soil resources.
- ◆ **USDA NRCS** administers CSP and EQIP to assist farms in conservation system adoption. More points are allocated in ranking criteria for multiple practices to address organic matter depletion or compaction in CSP, and prescribed grazing and forested riparian buffers in EQIP.
- ◆ **Farms** in Clinton, Centre and Lycoming Counties who adopt conservation practices, host field days and on-farm research. Six RCPP contracts were finalized in 2017 on 2,437 acres, on farms ranging from 20 to 1,100 acres, with no-till cultivation, multi-species cover crops, pollinator habitat, precision pesticide and nutrient application. In 2018, 14 applications were submitted for both CSP and EQIP.