



Field Day Held on Beaver Springs Farm Promoting Soil Health, Cover Crops

Soil Health Toolbox



FIELD DAY

The Snyder County Conservation District (SCCD) held a Soil Health Toolbox Field Day event on BDS Farms, 282 Troup Road, Beaver Springs on November 10, 2021. Thirty-nine (39) farmers, consultants, and conservationists attended this field day.

Farmers learned about:

- How their farm's "soil herd" can work for them.
- Improved soil health can minimize soil and nutrient losses.
- Various cover crop mixes and establishment practices.
- How better soil health can improve soil water infiltration and resistance to erosion.



A rainfall simulator, supplied by the Chesapeake Bay Foundation (CBF), showed farmers how different soil conditions, tillage histories, and cover cropping/crop residue, effect soil runoff and soil infiltration during a 1 inch per 5 minute rain event..

The five scenarios (as shown in the left photo, from left to right) shown were:

- Cover crops after corn silage
- Crop residue after corn grain being harvested
- Grass from a pasture
- Cover crops after summer harvested wheat
- Fall tilled soil



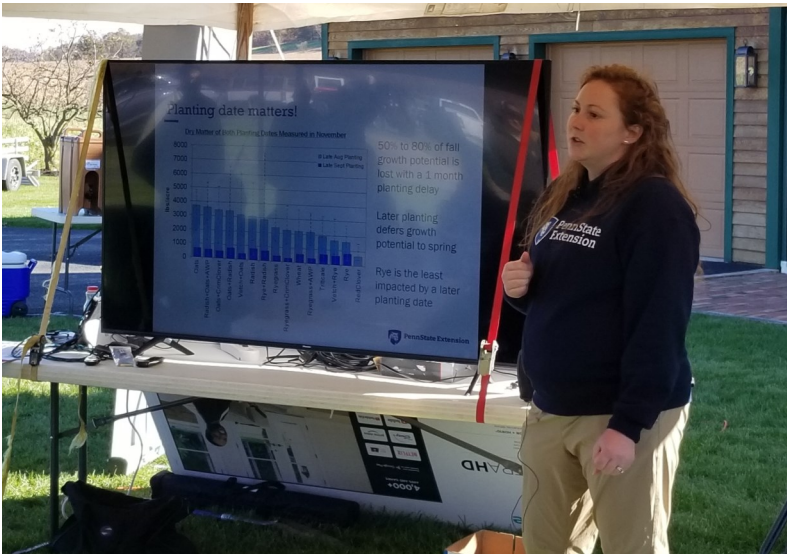
Bottom Right Photo: Rainfall simulator demonstration running.

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Top Left Photo: Bill Chain, CBF PA Ag. Program Manager & Associate Director, points out the differences in water runoff and infiltration among the five soil trays.

Notice the water container pointed by the yellow arrow holding the sediment filled (and potentially phosphorus laden) water that ran off the fall tilled tray. The remaining four water runoff containers hardly have any water, let alone sediment laden water, that ran off the cover cropped, or corn residue covered, or pasture paddock trays. These plants and residues allow less water to runoff, protect topsoil from erosion, more water to infiltrate, and enable the soil to hold water longer during many dry events.



Penn State Extension's Anna Hodgson, Field & Forage Crops Educator—Mifflinburg Office (bottom left photo), gives a presentation on research conducted regarding cover crop management . Specifically , she went over items such as planting dates, number of species planting, reasons a farmer may choose one species over another, method of establishment, termination method and costs.

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Barry Spangler, SCCD Ag. Conservation Technician, gave a presentation (above left) on how to better manage farm soils and conducts a soil health demonstration comparing neighboring similar soils with different tillage & vegetation managements.

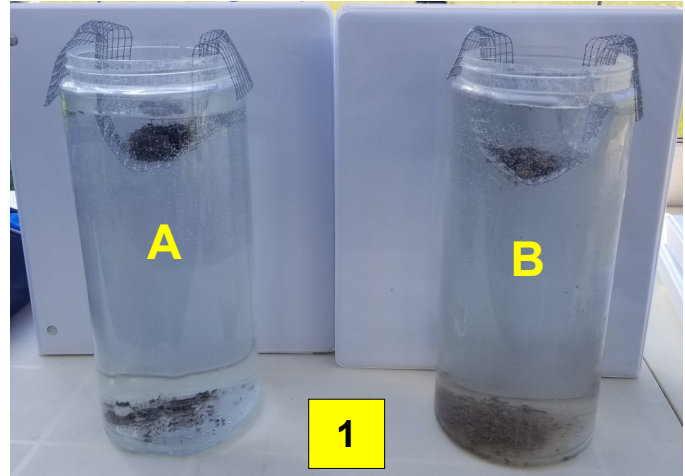


Photo "1" shows results from a soil health slake test demonstration conducted 1.5 hours before these photos were taken. It compares no-tilled soil ("A," not tilled for at least 20 years and currently in permanent grass hay for at least 5 years) and continuously

conventionally tilled soil ("B," currently with no overwintering cover crop after annual small grain). Both neighboring soils were identified as the same soil type as per "Custom Soil Resource Report" created by USDA's Web Soil Survey.

In Photo "1," notice that "A's" soil clump on the wire mesh on top is still holding together due to the soil organic matter allowed to accumulate over time. In "B," the soil clump has almost disintegrated at the wire mesh on top due to lower organic matter content. The jar at left with the "A" soil shows that it is more resistant to degradation by water.

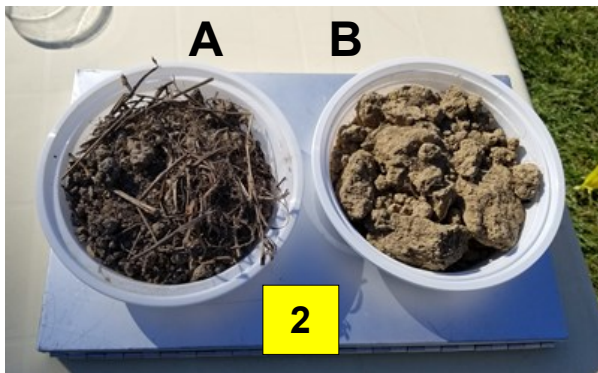
Notice on Photo "2" the corresponding dry soils on how each are structured different due to management (not due to different soil types) and the difference in color between the two. "A" is much darker due to a higher organic matter compared to "B."

Tillage allows the oxygen to burn the organic matter, The lost carbon is released into the air instead of binding the soil and becoming a source of plant nutrients and other soil organisms' feedstuff. Tillage also hinders the creation of stable organic matter that help keep the soil more intact and allow more water to be infiltrated into the soil instead of runoff off potentially causing soil erosion and stream sedimentation.

Recent research is showing that by eliminating tillage, this allows certain fungal species to cooperate with plants to reach and collect plant nutrients more efficiently. Also, farmers are noticing that cover crops can extend the period where green plants can convert sunlight into energy that feeds beneficial soil organisms and help supply nutrients for future crops.

Thanks goes out to USDA-NRCS Field Team #3 staff (covering Juniata, Mifflin, Snyder & Union Counties) for allowing the Conservation District to borrow its soil health demonstration equipment.

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Lisa Blazure (far right, top right photo), Soil Health Coordinator, Stroud Water Research Center, and Coordinator, PA Soil Health Coalition, gave a presentation about, until recently, the mostly unrecognized soil biology (or “soil herd” i.e.: fungi, bacteria, protozoa, earthworms) that works cooperatively with plants to extract soil nutrients and soil water more effectively. In essence, our soils and its biology can be compared to the “bugs” inside a cow’s rumen.



Lisa also indicated that research is showing that by:

- Eliminating tillage,
- Increasing the timeframes a living plant grows on a crop field (i.e.: cover crops sowed after a harvested crop, permanent pastures), and
- Adding additional plants into a crop rotation to diversify the soil “herd” (i.e.: expanding more than corn and beans, adding additional species to a cover crop),

This will enable the soil to work more with the farmer instead of against the farmer with increased soil organic matter and increased soil water holding capacity.



Participants walk to a 7-cover crop mix planted (bottom photo) after sweet corn and receive insight from Lisa Blazure (second from left), Anna Hodgson (not shown), and John Flanders, (third from right) Crop Consultant, West Branch Crop Management Association. John’s organization has been working with BDS Farms LLC for at least two decades. Photos were also passed around of other cover crop fields planted at various locations within the operation.

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Participants also visited a test pit dug in a recently harvested corn field. Kevin Shadle (in trench, below left photo), Resource Soil Scientist, USDA-Natural Resources Conservation Service (NRCS) led the discussion on soil formation and visual clues that the fields have been improving due to no-tilling and adding more

cover cropping in the rotation. He also found proof of increased earthworm activity by observing their burrow openings (as circled in the below right photo.)



While BDS Farms LLC raises crops, pullets and swine, they are also experimenting raising lavender for various products.



Information about soil health can be gathered from your local conservation district, NRCS Field Office, or through websites through the PA Soil Health Coalition. For more information about his event, contact Barry Spangler, SCCD, at 570-837-3000, x5 or agtech@snydercd.org.

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November 17, 2021