Agricultural BMP Guide

LANCASTER COUNTY CONSERVATION DISTRICT

Original publication produced by Snyder County Conservation District, April 2016
and funded through a grant from
PA Association of Conservation Districts, Inc.
and in cooperation with
USDA-Natural Resources Conservation Service-Middleburg Field Office

Table of Contents

LANCASTER COUNTY
CONSERVATION DISTRICT

Conserving Natural Resources for Our Future

Dear Reader,

This publication shows many different types of agricultural best management practices (BMPs) available to famers to correct manure, soil, and water quality concerns on farms in Pennsylvania. These BMPs prevent sediment and nutrient pollution from entering our local streams, groundwater, and the Chesapeake Bay. Thank you to the Snyder County Conservation District for the original design of this publication, and for permission to adapt it.

Your local County Conservation District and USDA Natural Resources Conservation Service (NRCS) or private sector consultants can provide technical assistance for written plans, and structural designs. They can offer construction oversight and inspections. If you are interested, they may be able to offer cost share assistance for BMPs as well.

Pennsylvanians that generate or import animal manure must have a written manure management plan (MMP) or nutrient management plan (NMP) depending on the density of animals per acres for spreading manure.

Cropland and pasture requires a written and implemented Agricultural Erosion & Sedimentation plan (Ag E&S Plan) or a conservation plan that meets PA regulations. Air emissions, odor reduction and tougher permitting procedures are also becoming a reality.

Each farm has unique challenges to prevent sediment and nutrient pollution of surface and groundwater. There are no “one size fits all” solutions regarding agricultural BMPs. Many farmers have complied with the regulations for decades, and the improvements in local and regional water quality can be shown. For any farmers who have yet to comply with or document their compliance with long-standing agricultural laws, the time to ACT is NOW. This guide shows many, many options available to reduce or eliminate soil, water or manure runoff concerns. Contact your local County Conservation District, NRCS or private sector consultant for assistance now.

Sincerely,

Directors and Staff,
Lancaster County Conservation District

LANCASTER COUNTY
CONSERVATION DISTRICT

www.lancasterconservation.org

1383 Arcadia Road Room 200 Lancaster, PA 17601 717-299-5361

Manure & Composting Facilities

Manure storages help farmers manage their manure by allowing them to apply nutrients when conditions are favorable, and when crops most need the nutrients. When designing a manure storage, items considered include: location; type and number of animals; liquid, solid or semi-solid handling needs; bedding; and spreading equipment available.

Winter spreading of manure is discouraged. But spring and fall manure spreading can still lead to problems if careful spreading, setbacks and proper amounts are not adhered to. All manure storages require careful management.

Liquid manure storage concrete tank constructed to receive manure and milkhouse wastewater from a pipe (above, red arrow) or collected barnyard water from a pipe (right, yellow arrow).

Liquid manure storages can be designed and built to allow farmers to scrape manure from barnyards into the storage, through push-off ramps with tractor guards. (left and below).

Liquid manure storages may have pads where portable manure pumps can be placed (left). Farmers have also installed liquid manure storages made of metal (right).

In-ground liquid manure storage tank with slatted floors for a heifer raising facility (left). Similar structures have been built for swine and certain poultry facilities. Barn will be built on top.

Roofed manure storage stacking structures with concrete walls to store dry, stackable manure.

Manure can enter the roofed stacking area by gutter cleaner from the stanchion barn (above) or through a tractor push-off ramp (with tractor guard) from the barnyard (left).

All structures to store liquid and semi-liquid manure need to be designed by a professional engineer. All structures built since January 2000 also have to be approved by a professional engineer. If a manure storage built before January 2000 needs repairs, a professional engineer must certify the proposed and finished repair.

Roofed manure storages with concrete walls.

Top left: Dairy stackable manure from a gutter cleaner and a nearby barnyard.

Below: Semi-solid dairy manure scraped from alleyways regularly into a roofed storage to limit additional rainwater.

Roof installed over existing concrete manure stacking area for a beef barnyard.

An unroofed manure stacking area with concrete walls serving a concrete cattle barnyard and lot. (left)

All structures shown on this page have a poured concrete floor.

Keeping rain and stormwater away from poultry manure allows farmers to apply this highly concentrated nutrient source at a low rate per acre for crop growth.

Roofed poultry manure stacking structures can be built with treated wood and concrete curbing; or poured concrete walls; or precast concrete wall sections.

Roofed poultry manure storages can vary from farm to farm.

A storage can have an access pad and loading dock attached (above left); a ceiling that prevents starlings from roosting in the building (left); accommodate gutter cleaners (above right) or have a mortality composter attached to one side (right).

Depending on the cost-share program, these examples may not be eligible for financial assistance.

Properly managing and disposing of dead farm animals is a basic legal responsibility for animal management and environmental protection. Acceptable disposal methods include mortality composting, rendering, incineration and burial. Landfilling is a form of burial. When properly managed, mortality composting is convenient, affordable and requires minimal labor.

Composting can be done in:

1) Constructed, covered structures (especially for smaller animals with frequent mortalities)
2) Static piles (for minimal number of larger animals)
3) Windrows (best shape for internal air flow)
4) Enclosed vessels (speeds up the process for larger animals, when experiencing frequent mortalities)

Stand alone poultry mortality composter structure constructed with treated lumber (right).

Stand alone poultry mortality composter structures constructed with treated lumber (left) and concrete walls (below).

Mortality composting bins as part of roofed poultry manure stacking structures (above and right), using walls of treated lumber or concrete walls.

Mortality composting facility for a swine finishing operation (left).

Having the correct ratio of nitrogen (manure and dead animals) to carbon (straw or wood chips) and moisture are key requirements for operating a functional mortality composter.

Barnyard/Concentrated Area Improvements

Barnyards have the potential to be a pollution source when not managed properly. Any place where livestock gather to eat, drink and deposit manure needs to be addressed. These areas are sometimes referred to as barnyards, animal heavy use areas (AHUAs), heavy use area protections (HUAPs) or animal concentrated areas (ACAs).

Improved and properly functioning barnyards and concentrated areas allow farmers to collect manure, apply it immediately or store it. When improving a barnyard, your technical designer will consider its location related to streams and manure storage; type and number of animals; how to treat nutrient laden barnyard water due to precipitation. Other supporting BMPs, such as roof gutters and vegetative filter areas may also be needed. Many improved barnyards and ACAs work hand in hand with manure storages.

A newly installed improved barnyard allowing the farmer to feed and transfer the dairy cows while giving space for them to move around. The concrete floor allows the farmer to scrape the manure on a regular basis.

Roof gutters and downspouts keep rain water clean and away from the barnyards. Dirty barnyard water can either be diverted to a manure storage or filtered and transferred to a vegetative filter area where the vegetation can treat the water and use the manure nutrients for growth.

Another angle of the above photo. Notice the roof gutters and downspouts that keep roof water from reaching the barnyard.

Hidden from view is the screen box that filters manure solids and allows barnyard water to flow into an underground concrete septic tank where it will be later pumped to a vegetative filter area.

This is an improvement to an existing barnyard. This allows a dairy farmer to feed his cattle and transfer manure directly into a manure spreader with an existing gutter cleaner or a newly installed push off ramp (green arrow). The farmer below connected a newly improved barnyard with a liquid manure storage via push off ramp (yellow arrow).

A farmer can utilize a manure storage stacking area connected to an improved barnyard. This beef farmer has a manure storage stacking area with 4 ft. concrete walls and floor (left).

A screen box filters manure solids that flow from an improved barnyard during a rain event. The first screen (left) prevents heavy solids from entering the screen box. The second and third screens have smaller spaces that filter smaller solids. Notice the water flowing from the final screen marked with a red arrow (left). This water flows into a concrete septic tank where the water settles, then is siphoned or pumped to a vegetative filter area. **Regular cleanout maintenance is needed for this BMP to work to its fullest capacity.**

Two photos (right, and bottom, next page) show how a properly designed, improved barnyard should work during a rainstorm. The water laying within the barnyard is sloped towards the screen box (green arrow) and the concrete curbs contain and hold the stormwater and allow it to slowly leave the site, after filtering out the solids.

Horse farms need to comply with agricultural regulations as well. These 2 photos show improvements at equine operations. Above is a reinforced gravel pad to collect manure in the barnyard. The owner at left, reduced the size of his gravel barnyard and seeded and mulched a grass filter area to catch manure runoff prior to entering a nearby road ditch. Roof runoff controls (not shown in either photo) limit extra water from entering these 2 barnyards.

Roofed barnyards/ACAs in this guide show the need to limit stormwater to these areas, yet allow farmers to feed their livestock, collect and, depending on the situation, store a limited amount of manure. As a rule, conservation agencies and non-government organizations do not assist farmers in designing and installing new barns and animal production facilities.

Depending on the program, these examples may not be eligible for any financial assistance.

A combination of an open and roofed barnyard/ACA. Includes gutters and downspouts to control clean water.

An improved barnyard correctly retaining stormwater, until it can slowly seep out into a treatment area.

Barnyard improvements should take into account how the farmer feeds and waters the livestock.

The barnyard shown below utilizes a concrete settling basin (outlined in red) to filter manure laden water before it is screened and pumped to a filter area in a nearby pasture.

Two separate roofed barnyards/ACAs. Although not visible in these photos, roof runoff controls, underground outlets, and other BMPs were needed to complete the projects.

More stand-alone roofed barnyards/ACAs structures or barnyard/ACA with a roof extended from the main barn.

Although not funded by any public financial assistance grants, this farmer installed netting and a type of mono-slope roof that prevents starlings from roosting in his roofed ACA (left and above).

Wastewater Treatment Systems

This section covers two types of wastewater: milkhouse wastewater and barnyard water.

Milkhouse wastewater contains small amounts of milk and detergents used to clean milk handling equipment. The end product, if it enters streams, can cause fish kills and other aquatic habitat damage. Bacteria break down the wastewater using dissolved oxygen in the stream that would normally be used for aquatic life.

Milkhouse wastewater can be taken directly to a liquid manure storage, stored temporarily for later land application, or treated by a vegetative filter area.

Barnyard water contains animal manure. This water must either be diverted to a liquid manure storage or filtered and treated by a vegetative area.

Concrete septic tanks being installed to intercept milkhouse wastewater at a dairy farm (right). The outlet goes to a vegetative filter area.

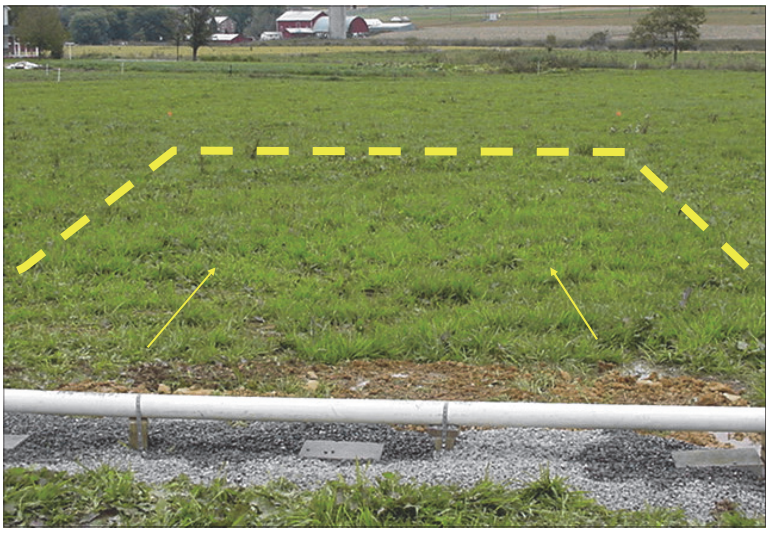
Milkhouse wastewater can be either pumped or siphoned from the concrete tank. Electric and pneumatic pumps are used to pump wastewater uphill or greater distances. Siphons can only be used when filter areas are located below the concrete tank.

Irrigation provides another method of distributing wastewater in a vegetative area. The wastewater is pumped to the vegetative filter area where it irrigates the site through a spray nozzle. Wastewater can be sprayed on permanent pasture if it maintains lush vegetation.

On many dairy farms, both milkhouse wastewater and barnyard water flow into a manure storage or into a vegetative filter area. The screen box shown above allows the screens to collect the solids, then the dirty water flows into a concrete tank prior to being pumped to a vegetative filter area. The photo (above, right) shows another screening option, but metal screens are more desirable for durability and longevity.

A concrete septic tank being installed to handle barnyard water and/or milkhouse wastewater (right). Sometimes the septic tank has two compartments; one for settling and the other holds the pump.

Living vegetation makes a good treatment system by reducing nutrient, sediment, pathogen and waste flowing into surface and ground waters. When treating milkhouse wastewater and barnyard water, these filters should be in permanent pastures or hay fields.



In a vegetative filter area:
1) the grass uses the wastewater nutrients
2) the vegetation traps the sediment before it can reach surface waters
3) the soil binds and filters the wastes and detergents before they enter the ground water.

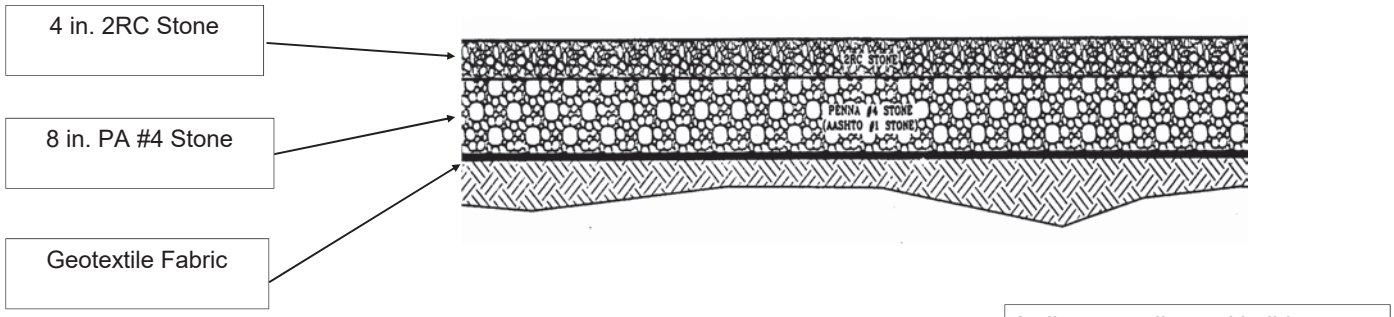
The picture at the left shows a manifold distribution system for milkhouse wastewater. The yellow dashes represent the filter area while the yellow arrows represent the gradual downward slope of the land away from the milkhouse wastewater manifold distribution pipe.

Bottom right: A milkhouse wastewater & barnyard water distribution line in action at the top of a vegetative filter area.

Streambank Crossings & Fencing

Cattle need water. Traditionally streams have supplied water to livestock. However, unlimited access to streams degrades streambanks, harms stream water quality, and can cause livestock health issues, such as hoof problems and mastitis. Beneficial BMPs include streambank crossings and streambank fencing.

Fencing is not required for pastures, but using fencing as a BMP is an option to meet some of the regulatory requirements. Fencing livestock out of streams is good for livestock health and good for local stream quality.



A vibratory roller and bulldozer may be required for stream crossings.

Stream crossings may be designed to handle farm equipment as well as livestock.

Cattle crossings may be constructed with “seconds” or clean, used concrete pig slats (left).

Stream crossings require a permit through the PA Department of Environmental Protection (DEP). Ask your local County Conservation District for details.

Research shows that the larger the grass and tree buffer area is between the fencing and the streambank itself, the greater the nutrient filtration and sediment trapping ability.

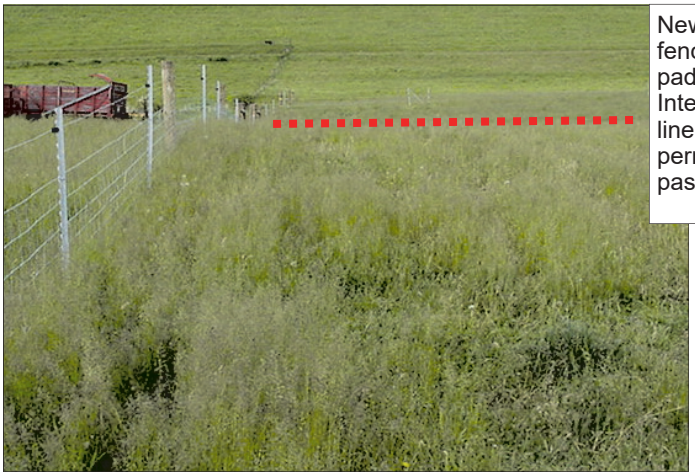
These photos show a grassy area, protected from cattle access, along the stream. Whether planted with trees, or lush vegetation, it is called a riparian buffer.

Pasture Management Improvements

When cattle have access to one large paddock, the cattle selectively choose to eat certain vegetation. Before the more palatable vegetation has a chance to rest, the cattle eat that vegetation again. Over time, the palatable vegetation may die off. Bare spots may be created, thus exposing the soil to erosion and degrading the quality of the pasture.

A properly managed pasture is divided into smaller paddocks. The cattle have access to only a small portion of pasture at one time. After a brief time (depending on the number and species of livestock) the cattle are moved to another paddock. The small paddock forces the cattle to be not as selective while grazing.

Also, when the cattle leave the paddock, this gives the vegetation time to rest in order to replenish root reserves and grow lush vegetation for the next time. This type of grazing allows the farmer to utilize a valuable resource while keeping the soil covered with vegetation. If managed correctly, a farmer can increase the amount of pasture forage being fed to the livestock. Watering systems, cattle walkways, stream crossings, and streambank fencing may complement and improve the management of pastures..



Newly installed pasture fence with interior fencing to sub-divide pasture into smaller paddocks for a beef and sheep farm (left). Interior fence is right above the red dashed line in photo. The interior fencing may be permeant or temporary, depending on the pasture management strategy.

According to PA Department of Environmental Protection (DEP) Manure Management rules, farmers with pastures must either:

a.) follow a NRCS-developed “Prescribed Grazing” plan, or

b.) maintain dense vegetation (average height at least 3 inches) throughout the growing season.

Pastures need to be flexible for operator and livestock. This includes flexibility of fencing, gates, watering systems, ability to harvest hay in paddocks, and desirable vegetation in the pastures.

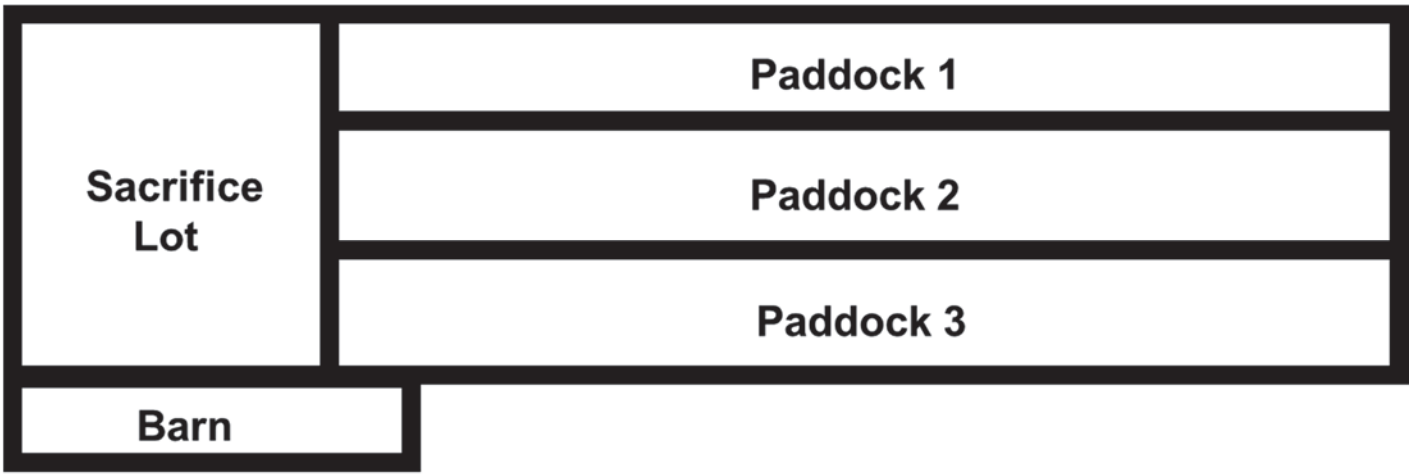
Equine species naturally graze vegetation below 3 inches. This can be challenging in order to meet DEP manure management rules regarding pastures.

Reinforced gravel ACAs, sacrifice lots, barnyards, stream crossings, cattle walkways and access roads typically consist of a geotextile fabric on the bottom, a coarser rock above the geotextile (near right) and a finer stone mix to top (far right).

Excavation and compaction are necessary to complete the project. A finer stone layer for the top layer may be is often desired for animal comfort.

Reinforced gravel cattle walkways and pads around pasture waterers, water troughs and hay feeders will help prevent turning some pasture sections into large bare spots and mud holes.

A sacrifice area is a place near or in a pasture where animals may be confined when pastures are not suitable for grazing due to low vegetation height, wet conditions, mud, etc. These areas should not be near any waterbodies or locations where water runoff can transport pollution to waterbodies. On some operations, creating a reinforced gravel ACA, barnyard or sacrifice lot is desirable. Above, reinforced gravel is being placed at an equine operation.

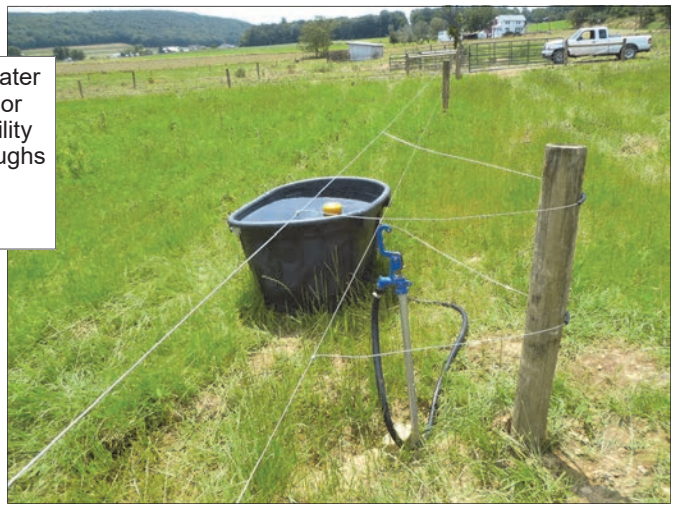


(Above) Option for sacrifice lot management: allow controlled access to paddocks when they are heavily vegetated and not too wet.

Concrete spring development, with geotextile fabric installed, covered by a base layer of stone to provide a stable base to withstand animal traffic.

Reinforced gravel pads placed around newly installed water troughs and waterers at various beef and equine operations.

Example of portable water troughs in pastures. For some operators, flexibility with locating water troughs is necessary for their management styles.



A frost free hydrant located in a pasture (right). At left, a quick disconnect for a water line where water trough portability is preferred.

Farmstead Stormwater Controls

When farmers think of agricultural BMPs, they may not think about roof gutters and downspouts. This simple practice keeps the clean roof water from reaching manure covered barnyards, pastures and manure stacking areas. The less water that reaches a potential nutrient or sediment source, the less contaminated water that has to be treated by a filter area or placed in a storage. Roof runoff controls usually work with underground pipes and outlets and help other BMPs, such as improved barnyards and roofed manure storages function more efficiently.

Roof runoff being diverted away from a concrete barnyard on two separate dairy farms and a different horse pasture.

Example of roof gutters and downspouts installed on a roofed ACA (left) and a composter attached to a poultry manure storage (below).

Underground outlets carrying roof runoff water can daylight the water into a rock lined basin (top center), or in an area lined with rock that does not cause scouring (top left). An animal guard at a pipe outlet (top right) prevents curious animals from entering the pipe but allows potential debris to exit.

A rock lined inlet diverting water away from poultry facility (left). An outlet pipe taking stormwater to a drop box (above).

Sometimes, diversions and waterways have to be constructed to divert water away from farm buildings and structural BMPs (such as manure storages and barnyards).

Cropland Conservation Management & Practices

Certain BMPs keep the soil in place. They include crop rotation, contour strips, cover crops and no-till planting. The more crop residue or vegetation that exists on the soil surface, the less soil is exposed to rainfall and other precipitation.

Cover crops keep the soil covered during harsh winter weather. Historically, farmers plowed under the cover crop as a “green manure” for the future field crop. While the cover crop kept the soil covered during winter, the soil became exposed to spring showers until the new crop established a canopy. Modern agriculture provides additional options, including killing the cover crop with a herbicide or harvesting it as a forage. This allows the cover crops to continue their soil saving mission through their residue. The dead stems and roots keep the soil intact long enough for the new crop to establish a canopy.

No-till planting works on a similar principal by covering the soil from rain and other precipitation. Research has shown that tillage turns soil organic matter into carbon dioxide (CO_2).

Continuous no-tilling combined with cover crops and diversity in the crop rotation can keep the existing soil organic matter available for future crops. This combination increases soil organic matter and improves soil structure.

Corn no-tilled into a field that was in alfalfa/grass prior to corn. (above). The farmer sprayed a herbicide to kill the alfalfa and grass the previous year.

No-till corn planted in a field that had soybeans the previous year, and corn the year before (above right).

At right, an established cover crop during the winter protects from runoff due to melting snow.

For Plain Sect farmers, using a modified no-till transplanter is gaining in popularity (left). The above photo shows what residue it is capable of planting into. Specialty no-till transplanters can be used for tobacco, cauliflower, broccoli, cabbage, pumpkins and other similar crops.

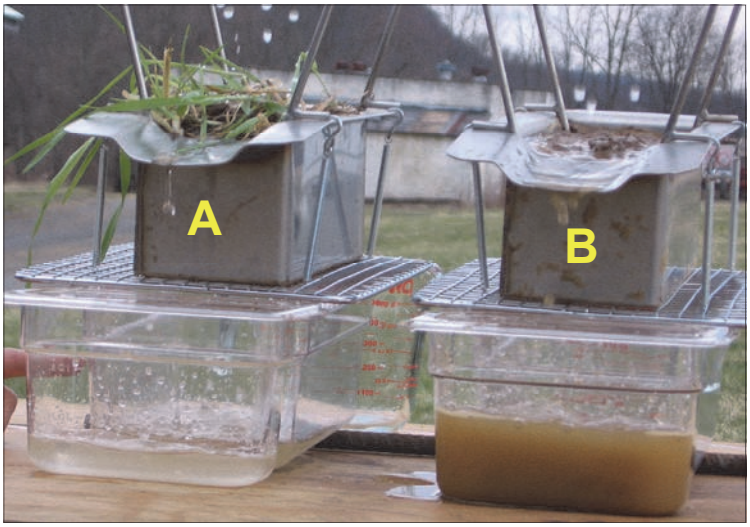
Farmers and researchers have been experimenting planting a cover crop between crop rows (such as field corn or sweet corn) while the crop is approximately “knee high.” An interseeder (above), is a no-till drill designed to plant between row crops spaced 30 inches apart. It is still experimental in many areas because the amount of sunlight needed for successful establishment, and herbicide usage after establishment are being studied.

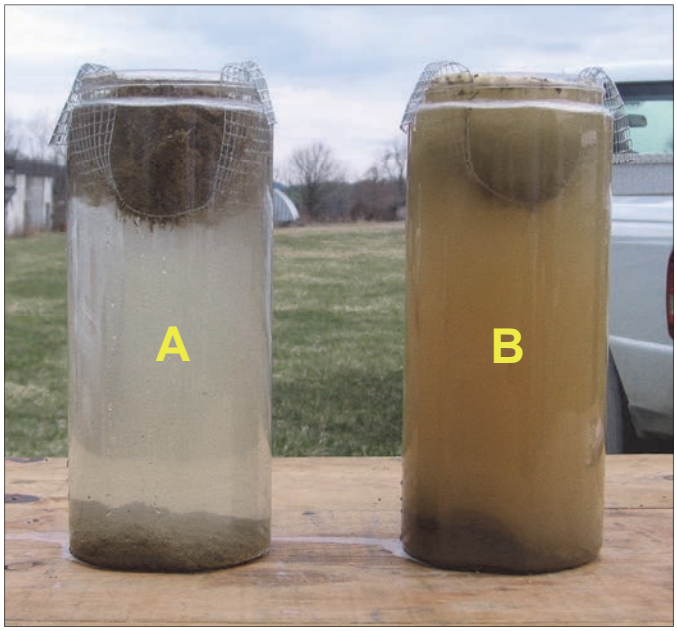
A small grain cover crop species planted after harvested corn silage (left and right). The photo at right was taken in early spring while the left photo was taken in late fall.

A tillage radish (above) planted to improve water infiltration. Typically, tillage radish is planted with other cover crop species for a more thorough living cover.

Three different cover crop mix test plots. Photos taken in late fall.

Some farmers and researches believe the more diverse the cover crop mixture, the better the soil health (e.g., water holding capacity, organic matter). Pest control, nutrient retention for future crops, and nitrogen fixing ability are also some potential benefits.





What is planted, and how it is planted, makes a huge difference for soil health. Soil A is no-till soil. Soil B shows conventionally tilled soil.

The above, left photo mimics a rainfall event over no-tilled soil with a cover (A) and a continuously, conventionally tilled soil without cover (B). This demonstrates the amount of water which flows off the soil surface, its condition and how much is absorbed. The runoff from Soil A is much cleaner than from Soil B. There is significantly less runoff collected in the plastic bin from Soil A than Soil B, meaning more water infiltrates in the no-tilled soil.

In the upper right photo, A's soil clump in the wire mesh on top holds together due to soil organic matter allowed to accumulate over time. In B, the soil clump does not stay together in the wire mesh, due to lower organic matter content. Tillage allows oxygen to burn the organic matter, carbon is lost to the atmosphere instead of binding soil and becoming a source of plant nutrients and other soil organisms' feedstuff. The cloudy water in Jar B indicates water easily degraded the soil clump. The clearer water in Jar A shows that soil is more resistant to degradation by water.

In no-tilled soil, earthworms work the soil. After consuming soil, along with the crop residue, earthworms produce a "glue" that helps keep soil together. Tillage destroys the work done by earthworms, or doesn't allow it to happen at all.

Continuous no-till and cover crops are good for soil health. These practices work best with contour strips and crop rotation. These practices limit sheet erosion on cropland. Additional practices preventing sheet erosion are vegetative field strips, riparian buffers with trees, and permanent grass along streams and field borders.

Vegetative contour field buffer strip (yellow arrow) in crop field. This strip will prevent sediment from traveling a longer distance to a road ditch below that flows into a stream.

At right, a field buffer of permanent grass replaces row crops. Edges of fields tend to encourage erosion (sheet, rill and gully) due to up/down hill direction of end rows, and lower crop residue from lower production. Once established, field borders reduce erosion and potentially provide a hay crop.

Even with continuous no-till and cover crops, other practices are needed to prevent gully erosion where water concentrates. Once water moves downhill in a concentrated flow, the velocity erodes large amounts of valuable topsoil from fields. Assorted BMPs can be designed and installed to minimize or eliminate gully erosion.

BEFORE and AFTER: Severe gully erosion in pasture was corrected using rock to slow the water and a wide, well-vegetated waterway. The cattle do not have access to the waterway.

This farmer started using erosion control blanket on a newly constructed waterway, but didn't get it all secured before a heavy rain. You can see the amazing difference that the fabric makes.

Well maintained waterway.

Over time, waterways, terraces, diversions and other practices may need to be reshaped and/or reseeded in order to properly transport cropfield stormwater.

When terraces, diversions and waterways are constructed, a combination of straw, seed and erosion control fabric/blankets are needed to prevent erosion during storm events until vegetation is firmly established.

Series of terraces in crop field.

Rocks are placed at waterway inlets and in the waterway itself to prevent water scouring due to the water's high velocity from culvert pipes or topography.

In the bottom photo, an above ground inlet (yellow arrow) takes water from a grass waterway and outlets the water to another location.

Nutrient & Manure Management

Manure is a valuable nutrient, not a waste product. Knowing the nutrient value of the manure, and knowing how much to spread on crops allows farmers to efficiently use their manure. A Nutrient Management Plan (written by a certified specialist) or Manure Management Plan (written by the farmer or a certified specialist) provides specific details for how and where to best utilize it. Farmers need to calibrate each manure spreader and sample the manure regularly to have accurate, individual results.

All farming applications that land apply manure or ag process wastewater, whether they generate or import the manure, **must** have a written Manure Management Plan. All farming operations that include an Animal Concentration Area (ACA) or a pasture **must** have a written Manure Management Plan. Farms defined as a Concentrated Animal Operation (CAO) or Concentrated Animal Feeding Operation (CAFO) are required to develop more detailed written plans, called Nutrient Management Plans. Contact the Conservation District for specific details.

Farmers will be held accountable for any manure runoff the enters waters of the Commonwealth even if they are spreading at rates and times outlined in their Manure Management Plans or Nutrient Management Plans.

A poultry farmer loading a dry manure spreader (above). Since poultry manure is nutrient rich compared to some other drier manures, farmers have to land apply it at lesser amounts. Some farmers may have to decrease their manure application rates on certain fields due to high phosphorus levels or proximity to streams.

Not more than 9,000 gallons of liquid manure (e.g., dairy, swine, veal) may be applied per acre at one time. In winter, that rate is reduced to 5,000 gallons/ac.

Responsible manure spreading includes respecting statewide manure application setbacks. For instance, manure cannot be spread mechanically within 100 ft. of any waterbody (stream, pond) unless there is a 35 ft. permanent vegetative buffer. In winter, the setback is 100 ft. even if there is a buffer. Manure cannot be applied within 100 ft. of a private drinking well. For a complete list of manure application setbacks, contact your County Conservation District.

Calibrating your manure spreader is vital. Guessing how much is applied is not sufficient. Record keeping is more accurate and crop-nutrient needs are best met when you know how much manure is actually applied.

Combining this knowledge with manure samples and soil tests will enable farmers to make better use of the operation's resources.

Miscellaneous Practices

Seed & Mulch Excavated Areas

When any type of BMP project is almost completed, from grassed waterways (left) to improved barnyards (below), establishing vegetation to keep the soil in place is critical. Mulching with straw or similar material, protects the seed and maintains soil moisture during early vegetation growth.

Vegetation established around recently completed BMP project sites where earth was disturbed during construction.

A written and implemented Erosion and Sedimentation (E&S) Plan is required if earth disturbance is greater than 5000 sq. ft.

A permit is required if a construction project disturbs, at minimum, 1.0 acre of earth, over the life of the project. Check with your County Conservation District for more details.

Farmstead Access & Farm Roads

You may not think of farmstead traffic as causing problems. However, heavily used and un-stabilized roads around the farmstead or in fields often develop wheel ruts or bare areas. They can also convey stormwater, causing heavy washing. Besides being a muddy mess, sediment can leave the farm. BMPs that reinforce farm lanes or access roads are advised.

The bottom three photos show conveyor belt water bars for a forest access road to limit road washouts. These water bars can also be used on farm access and farmstead lanes and roads.

Chemical Handling Facilities

Most farmers handle and store pesticides, herbicides and other chemicals. Care must be taken to properly store and secure the chemicals from children, pets, and weather.

Pesticide containment areas can be built to contain chemicals in case of a leak or spill during loading. Store chemicals in original containers, and in leak-containment pans or tubs if possible.

Always wear proper protective gear when handling chemicals. If there is a leak or an accident, containment of the spill or treatment of the person must be handled immediately.

Many photos in this guide were taken by Snyder County Conservation District and USDA-Natural Resources Conservation Service, Middleburg Field Office staff. Additional photos were provided by the Lancaster County Conservation District staff.

PENNSYLVANIA
AGRICULTURAL
OMBUDSMAN
PROGRAM
Building Bridges

Special Assistance provided by PA Agricultural Ombudsman Program for the June 2016 version of this publication.

Original publication received financial and other support for this project provided by the Pennsylvania Association of Conservation Districts, Inc. through a grant from the Pennsylvania Department of Environmental Protection under Section 319 of the Clean Water Act, administered by the U.S. Environmental Protection Agency.

LANCASTER COUNTY
CONSERVATION DISTRICT

"Promoting the conservation and good stewardship of Lancaster County's natural resources"