



Conservation Crier

Newsletter of the LANCASTER COUNTY CONSERVATION DISTRICT

ADMINISTRATOR'S CORNER

"M2E the New Low Tech/High Tech Acronym"

Manure to Energy projects have become known via the acronym M2E. I have noted within the title that M2E represents both high tech and low tech innovation. Buffalo chips (dried manure) were used as a fuel source by native Indians for hundreds of years across the Great Plains and may have been the first recycled fuel source in what would become the United States of America. This low technology has been re-discovered by a few farmers in a dual effort to reduce heating costs and reduce direct land application of poultry manure. Of course we refer to this as high technology. Is there a difference or is it just word-smithing at its best? Let's look a little deeper at M2E.

On-farm poultry M2E technologies may be used to heat poultry houses or generate electricity for the grid. These projects are capital intensive and take considerably more time to operate and maintain than traditional propane-fueled systems. Depending on the design, poultry litter will need to be added to the fuel feed hopper ranging from once a day to once a week. Also, capital costs are high compared to propane heating systems. Some growers will prefer the convenience of propane heating systems. Poultry litter is not the easiest fuel to work with, but there are vendors with technologies that can use poultry litter as a fuel. In most cases, these vendors have invested significant time and capital developing their technologies to be compatible with poultry litter. These early-phase deployments are serving as valuable opportunities for vendors to build knowledge necessary for second-generation installations. Vendors are expanding their expertise in areas such as: poultry house heating, connecting to the grid and controlling emissions. So what makes an M2E technology system truly high tech? What appears to be developing during the early stages of this effort is the separation between systems that use low-tech concepts of just burning the litter vs. the high-tech system which moves the process into the world of gasification through the incorporation of additional air (oxygen). Simply put, the low-tech system is like a naturally aspirated engine while the high-tech system is turbo-charged. By turbo-charging the system we move from just burning something to a level of sophisticated air induction that results in a thermochemical process which is truly a high technology using a gasification process. The results are a cleaner burning flame and a less hazardous ash product.

So where do we go from here? Several governmental agencies are looking at M2E technologies to be supported through typical cost share programs. The primary reason to look into these technologies is an effort to assist in the reduction of nutrients that escape from agriculture and are caught in the watershed that supports the Chesapeake Bay. Farmers are asking the tough questions about the return on investment and the integrator is still seeking a comfort level with the consumers.

In summary, it appears we are beginning a new chapter in the book of energy independence. Yet, we are challenged to define it as old low technology revisited or new high technology recently discovered. Whichever chapter it belongs in, one thing is for sure: we learn from the past in order to prepare for the future.

-Don McNutt, Administrator



The Homeowner's Guide to Stormwater

How to develop and implement a stormwater management plan for your property



New Homeowner's Guide to Stormwater Available

A new publication has recently been created by the Little Conestoga Partnership Project that may be of interest to those dealing with stormwater runoff on their properties. This new publication walks a landowner through the basic steps of creating a stormwater management plan for his or her property; from calculating the impervious surfaces on the property to explaining why stormwater runoff is a problem. In addition to creating a stormwater management plan for a property, the guide goes even further by suggesting seven simple best management practices that a landowner might be able to install to reduce a property's stormwater footprint. Easy to read lawn care maintenance techniques for improving water quality round out the guide. If you would like to receive a copy of the guide please visit the Lancaster County Conservation District website, www.lancasterconservation.org, or call the Conservation District at (717) 299-5361 ext 5.

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THE CONEWAGO CREEK INITIATIVE SUMMARY

The Conewago Creek Initiative, a local partnership working to improve the water quality of the Conewago Creek in Lebanon, Lancaster, and Dauphin counties, was started through a grant by the National Fish and Wildlife Foundation. Over the past 5 years, the partnership has been working hard to get practices on the ground that will reduce the amount of nutrients and sediment reaching the Conewago Creek. Terraces, riparian buffers, fencing and stream crossings, cover crops, no-till, and crop rotation are several of the practices that have been installed/adopted at an accelerated rate due to the efforts of agricultural partners and willing landowners. Over two dozen workshops, events and activities were provided to watershed residents, including rain barrel workshops that provided attendees with a rain barrel to help reduce the impact of stormwater to the creek. Additionally, through an innovative stormwater incentives program, several rain gardens and native meadows have been planted. While it takes many years to see an improving trend in water quality, there seems to be an improvement in fish populations since the start of the Initiative. Partners are committed to continuing to monitor the water quality and the Initiative is hopeful that the results will eventually reflect the work that has been accomplished. Visible signs of improvement are definitely noticeable at several locations where large projects were completed.

This year is the 5th and final year that the grant will be helping to fund outreach to residents, installation of best management practices, monitoring activities, and other tasks that help improve the health of the Conewago Creek. This does not mean, however, that work will stop. The grant helped kick-start a partnership that will continue into the future. Over 25 organizations and numerous individuals have recognized the importance of working together to leverage resources, knowledge, and time. New partnerships are being made regularly, new landowners are becoming interested in practices, and the number of people volunteering to install practices is growing. Significant progress was made during the past 5 years, but the goal is to continue the momentum and make even more progress in the Conewago watershed and beyond in the years to come.

For more information on the Conewago Creek Initiative visit www.conewagoinitiative.net or find us on Facebook.

11th Annual Lancaster/Lebanon County WATERSHED FORUM

Join watershed volunteers, public water suppliers, municipal officials, teachers, students and everyday citizens as they once again gather for the 11th Annual Lancaster/Lebanon County Watershed Forum on Saturday, October 26th, from 9AM to noon, at the Acorn Farms Reception and Conference Center. This FREE event will have engaging speakers from the Stroud Water Research Center, Montgomery County, Maryland, and the Conewago Initiative Project in Lancaster, Lebanon and Dauphin Counties. In addition, countless informational displays will be setup, numerous networking opportunities will be available, several door prizes will be handed out, and FREE breakfast will be served to those that register. If you are interested in finding out more visit the Lancaster County Watershed website (www.lancasterwatersheds.org) or register with Matt Kofroth at (717) 299-5361 ext 124 or by email at mattkofroth@lancasterconservation.org.



TIME TO CHECK TREES

University Park, PA - With invasive pests and diseases threatening the diversity of Pennsylvania's woods, it's incumbent on landowners and the general public alike to keep watch over the trees that contribute to our state's beauty. It's the right time to get out into the woods and watch for signs of diseased and dying trees.

In Pennsylvania, we already see the impacts of Emerald Ash Borer (EAB) and the dead and dying ash trees throughout the state (EAB has been confirmed in 39 counties, but the entire state remains under quarantine and the insect is expected to spread throughout); Hemlock Woolly Adelgid (HWA) and the dead and dying hemlocks on mountainsides and along streams, soon to impact water quality and temperature; and the native forest tent caterpillar and non-native gypsy moth, which have been and continue to be part of Pennsylvania's forest ecosystem. And while there are practices, chemical, and biological control methods that can help mitigate the spread of these insects, the task is daunting. It's a sad time for our forests.

Now with two more threatening insects, one with an associated fungus, on our borders or in isolated areas of the state, it is imperative that we all become more vigilant about dead and dying trees.

The Asian Longhorned Beetle (ALB), *Anoplophora glabripennis*, is a non-native insect first discovered in Brooklyn, New York in 1996 and detected in Chicago in 1998. In the 2000s, it was found in New Jersey, Massachusetts, and most recently discovered in southeastern Ohio. While not yet found in Pennsylvania, ALB is one of the more aggressive invasive insects that could easily make its way here. ALB kills trees as the larvae feed in the branches and stems. ALB grows, reproduces in, and kills up to thirteen genera of trees, including maple, birch, horse chestnut and buckeye, poplar, willow, elm, ash, and alder.

Asian Longhorned Beetles are large, shiny, black insects with random white spots. They measure 1 to 1 1/2 inches long, with black and white banded antennae as long as (females) or twice as long as (males) their bodies. Adults are active from mid-May until early August. The females scrape a small notch in the bark to lay eggs. The larvae bore in to the branches and trunk to feed in the wood and cambial layer of the tree. Mature larvae pupate within the galleries they have made, and adults chew their way out leaving round, dime-sized exit holes. August is a peak emergence time for the adult beetles and a time when landowners and members of the public can help to check trees for the beetles.

In 2011 Thousand Cankers Disease, a disease complex that

attacks black walnut (*Juglans nigra*) made up of a native (western species) walnut twig beetle (*Pityophthorus juglandis*) and a native fungus (*Geosmithia morbida*), was found in Bucks County, Pennsylvania. Until recently this disease primarily affected eastern black walnut planted outside its native range in Western States. In the summer of 2010, it was first noticed in Knoxville, Tennessee, well within the native range of black walnut and it has begun to spread. In 2012 the walnut twig beetle and the fungus were identified in southeastern Ohio.

To kill the tree, as the beetle feeds on black walnut branches, it creates numerous galleries beneath the bark. The adult beetles carry the fungal spores and introduce them into the phloem when they construct the galleries. Small cankers develop around the galleries, which then enlarge and coalesce to completely girdle the branches. Trees die as a result of the canker infestations at the thousands of beetle attack sites. Usually the first sign of infestation is thinning crowns in the black walnuts, yellowing or wilted leaves on limbs, and then branch death.

The most important thing you can do to protect your trees is to check them regularly and encourage others to do so too. Learn about other symptoms and signs of infestation and disease. Early detection is crucial to maintaining Penn's Woods. For more information on these and other insects, visit the DCNR Bureau of Forestry's Forest Pest Insects and Disease website, at: <http://www.dcnr.state.pa.us/forestry/insectsdisease/index.htm>.

To report possible infested trees in Pennsylvania, contact the Pennsylvania Department of Agriculture at 1-866-253-7189, the DCNR Bureau of Forestry, Division of Pest Management at: 717-948-3941 or email: Badbug@pa.gov.

The Pennsylvania Forest Stewardship Program provides publications on a variety of topics related to woodland management. For a list of free publications, call 800 234 9473 (toll free), send an email to RNRExt@psu.edu, or write to Forest Stewardship Program, Natural Resources Extension, The Pennsylvania State University, 416 Forest Resources Building, University Park, PA 16802. The Pennsylvania DCNR Bureau of Forestry and USDA Forest Service, in Partnership with Penn State's Department of Ecosystem Science and Management, sponsor the Forest Stewardship Program in Pennsylvania.

-Forest Stewardship News, Penn State University



Mark your calendars!
NEXT TREE SALE APRIL 15, 2014



THE KEYS TO SOIL QUALITY: CUD, CHEW ON THAT ONCE!

In the debate of 'to till or not to till', I hear all kinds of apples to oranges comparisons. One farmer brags that his plowed corn is taller than his neighbor's no-till corn. Another farmer says, "Big whoop." He manages his no-till grain corn for maximum grain, and the stalk is meant to be a shorter variety than his no-till silage corn. This is so the longer season grain corn will be more likely to stay standing through a hurricane before the later harvest.

No-till farming must be part of a big picture approach to soil and water conservation. Many farms in Lancaster County include moderately sloped ground, where structural practices such as terraces, diversions and grassed waterways are recommended. The additional benefits of no-till farming extend the lifespan of these structural practices, allowing longer times between the need to remove excess silt. Tree buffers are recommended along all streams, whether they run through a pasture, crop field or barnyard. Grass buffers are better than nothing, but they don't have the real water quality workhorses (native trees) that provide shade and the leaf litter that provides food for beneficial insects in the stream.

There is another crucial piece of the big picture. When I hear of a farmer going back to plowing after trying no-till for a few years, I almost always also hear that there was not a cover crop planted after the corn grain and fodder was removed, or it was too late to plant a cover crop after harvesting soybeans, and then they felt the need to use vertical tillage, and then some disking was done to smooth ruts or clods. Unfortunately, for too many years the use of cover crops was not stressed as an integral part of a complete no-till and soil and water conservation system. I offer the following suggestions as the keys to soil quality, which will help to improve the infiltration and profitability of your soil:

1.) COVER - Cover the soil, always, preferably with a living root and not just corn fodder or scant soybean fodder. This may require planting shorter season beans and corn. The top layer of no-till soil with no cover crop could seal with the first major rainstorm, leading to more runoff, which could lead to the false conclusion that no-till increases compaction and runoff. Barley and wheat make good cover, but a true cover crop is not harvested and adds organic matter to the soil. No-tilling without cover crops is not a compatible system. An added bonus is that there will be fewer weeds in the field due to the heavy mat of mulch from the cover crop. The mat of mulch will also help to lower the soil temperature and hold more moisture. This will lead to increased crop yields.

2.) UNDISTURB - Soil with limited disturbance deals much better with heavy rains. Disturbances include vertical tillage (ripping) and disking. Ripping and disking have no place in a true no-till system. Those implements destroy the benefits that a true no-till system provides, such as increased infiltration and erosion control. Additionally, undisturbed soil has more beneficial bacteria under the surface.

3.) DIVERSITY - Increase diversity, both above and below the soil surface, by planting mixed cover crops, preferably including cool and warm season grasses and broadleaves. This could be a mix such as rye, Sudan grass, radish or clover, and buckwheat. Planting date is key to effective species selection. Planting too late would be a waste of certain seeds. Depending on the type of mixed cover crop

planted, it could also add nitrogen and other nutrients to the soil. A diverse cover crop 'confuses' insects that prefer one type of plant. All of these benefits could save on fertilizer and herbicide costs.

Those three keys to soil quality create the acronym CUD. Chew on that once! Cover, Undisturb, Diversity. Be patient and committed to a true no-till and mixed cover crop system. Mixed cover crops may seem expensive at \$35 to \$40 per acre, but how much would it cost to replace the topsoil? Dedicated no-till and mixed cover crop farmers have reported reduced overall fertilizer and herbicide use, and actually got a yield increase also. With some rental rates at or above \$500/acre, who can afford to leave money lying on the ground by not planting a cover crop? A cover crop pays for itself plus the bonus of healthy soil for the future. Why take my word for it? Ask a farmer who has adopted a true no-till and cover crop system and he'll share the benefits he's found with the program. Chances are there is a farmer like that living in your area, or call our office and we'll connect you with one.

In conclusion, the keys to soil health and more profitable farming are increasing soil organic matter with the use of cover crops, preferably diverse cover crops, and also limiting soil disturbance with true no-till. In the book *Flames Beyond Gettysburg*, by local author Scott Mingus, set during the Civil War, a Lancaster newspaper urged every citizen to take up arms 'in defense of our soil.' I wonder if they meant that literally, if they knew even back then how very productive the Lancaster County soils were, and still are! In the "Pennsylvania Agricultural Statistics 2011-2012" crop and yield charts by county, Lancaster County consistently had the highest yields of any county in Pennsylvania, and I would even argue, the world. Our soils give the most bang for the buck; let's take great care of them so that they are still here for generations to come.

-Wendy Coons, NRCS Soil Conservation Technician

2013-2014 Plain Sect Outreach Focus

During the past year, it has become apparent to me that many farmers overlook some of the small things they can do to improve the environment as well as their bottom line. These small things are major management decisions that cost only a few dollars. Fixing an Animal Concentration Area close to a stream may require some time, grass seed, polywire, and some fiberglass fence posts. This list of items could make a big positive difference in the public's perception of the local farmer and agriculture in general.

My theme for Plain Sect Outreach this coming meeting season will center on helping farmers realize there are small, inexpensive Best Management Practices out there that are often overlooked, which can make a big difference in their operation. This will be accomplished through PowerPoint presentations and literature. Helping farmers fulfill their Manure Management obligations will again be a focus for the coming year.

-Dennis Eby, Plain Sect Outreach

Native Pollinators: Beyond the Hive



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Historically, a large portion of vegetable and fruit crops have depended on pollination from traveling honey bee colonies. However, recently, honey bee colonies have suffered a population collapse. The collapse clearly causes major problems for the honey industry, but it is also felt in other areas of food supply, particularly the fruit and vegetable industry. Currently, honey bees are much more difficult to come by, and when they are available, they are substantially more expensive than they once were. However, honey bees are not the only pollinators out there. Native pollinators including native bees, butterflies, moths, wasps, beetles, true bugs, and even birds, bats and rodents can get the job done.

The key to benefitting from the natives is to assure they have a safe place to call home near the crops to be pollinated. This could be as simple as adapting the current land-use to avoid causing harm to existing natives. Native pollinators need food throughout spring, summer, and fall, so assuring that food is consistently available is important. An easy way to help accomplish this is to allow existing plants in the rotation such as lettuces or brassicas to bolt. They also need safe shelter. Many native pollinators live in the soil, so any reduction in soil disturbance including tillage will help the

©LCCD, Dennis Eby



natives establish healthy nests. Native pollinators are also susceptible to insecticides. Therefore, choosing chemicals, selecting application methods, and timing applications to avoid impacts on native pollinators will benefit the population of native pollinators. Reducing or eliminating reliance on insecticides will also be helpful. Where native habitat is scarce, providing additional habitat in the form of wildflower plantings and artificial nests can benefit native pollinators and ultimately fruit and vegetable harvests as well.

Establishment and maintenance of native pollinator habitat plantings can be a complicated process. However, the Natural Resource Conservation Service (NRCS) offers educational resources and cost incentive programs for the establishment of native pollinator habitat. Other excellent resources include Penn State Extension and the Xerces Society for Invertebrate Conservation. For more information about local programs contact the NRCS Lancaster Field Office or the Lancaster County Conservation District at 717-299-5361.

—Kate Bresaw, Ag Conservation Technician

Lancaster County Agriculture Council Updates

The Lancaster County Agriculture Council was formed in 2010. The Council's Board of Directors represents producers, agri-businesses, and local agencies, businesses and organizations that support agriculture. The Board consists of 33 members; two-thirds voting and one-third with an advisory role.

The Ag Council strives to

- Serve as a voice for the agricultural community to improve communication and understanding among all those involved in Lancaster County agriculture.
- Lead and advocate for education and communication about farming practices and the value of the agricultural industry to the public and broader business community.
- Join forces with schools and organizations to develop activities and programs that strengthen the future of agriculture in Lancaster County.
- Advocate for agriculture in matters involving legislation and/or regulations.
- Maintain direct involvement in broader Lancaster County planning issues, including farm preservation and economic development plans.
- Provide leadership and support to address emerging challenges and opportunities in environmental and renewable energy topics.

The Ag Council has sponsored and hosted numerous educational events for farmers, municipal and elected leaders over the past few years, including

- Current-topic summits
- Ag Night at the Barnstormers
- Legislative events
- Oregon Dairy Family Farm Days.

The Ag Council enjoys a connectedness with the local delegation of state Senators and Representatives. This is critical for providing input to legislators regarding proposed legislation that affects agricultural producers and agri-businesses.

The Ag Council is sponsoring an Ag Summit on Thursday, November 21, at the Lancaster Farm and Home Center. Producers, agri-business representatives, elected officials and the general public are invited to attend. This day-long event will highlight results from recent studies:

- Updating the impact of agriculture's "multiplier effect" on the local and state economies
- Creating a "foodshed model" within a 100 mile radius of Lancaster County
- Putting a value on "intangibles" that result by having agriculturally preserved farmland in the county.

For additional information on the Lancaster County Agriculture Council, please contact Shelly Dehoff at 717-880-0848 or shelly.dehoff@gmail.com.

—Shelly Dehoff, Ag Public Liaison

Erosion Control Matting.... Stabilizing Soil One Roll at a Time

Not all erosion control matting is created equal. If you've ever walked different construction sites, you probably have noticed different types of erosion control matting and differences in their quality and use. Common types of erosion control products are supplied by companies like North American Green, East Coast, American Excelsior Company, and other companies not listed here. Each company usually has their own equivalent to the competitors' brand. Some of those products may be a good equivalent, while some may not be a recommended substitute. This article will provide you with some easy to remember tips on choosing a matting type and how to install the selected product.

Say you're a contractor and you're getting ready to order your erosion control matting for your job site. The Erosion and Sedimentation (E&S) plans specify a specific product from a specific company, but your supplier carries a different product. What should you do? The first thing you should do is ask your supplier for the specifications and technical information sheets on the product they carry, if you indeed want to use their product. If they cannot supply that information, you may have to do your own research and find that on the web or contact the manufacturer. Before you order the material, you should then contact your local County Conservation District or PA Department of Environmental Protection (DEP) office (whomever approved your E&S plan) to discuss a plan change. You will need approval from the reviewing agency to use a product other than that specified on the approved plans. Conservation Districts and DEP are usually familiar with the "heavy hitters" of erosion control industry, like North American Green, East Coast, and Excelsior. Other companies may require a little more time and consideration. Of course, your other option is to find a supplier that carries the products specified on the plans.

Keep in mind when you're looking at your E&S plans, the details for the installation of the matting. If your erosion control blankets are being used for channels there will be a specific detail for matting direction and staple patterns. If installing the blanket on slopes, an entirely different detail will be needed. As you begin to prepare for installation of the matting, time should be taken to ensure the ground is prepared properly. The soil should be free of large rocks, roots or other debris that will prohibit the matting from having solid ground contact with the soil. Proper ground preparation and installation are the keys to the success of the product and ultimately the stabilization of your site. Failure to remove debris or properly grade the soil can result in erosion, channel erosion or matting failure and that may mean spending more money to repair faulty installations.

Finally, as a contractor, you should be aware of the different matting types offered by the manufacturers. There are matting types for low-grade/low-velocity channels, matting for channels that will carry high flows or that have steeper grades and matting types for slope stabilization, and mattings with permanent or bio-degradable materials. The E&S plan designer recommended a specific matting type for a reason, even if that product may be on the expensive side. Proper matting use can achieve good results and less money spent on additional seeding and mulching.

—Rebecca Buchanan, E&S Program Manager



Incorrect Installation of Matting In a Swale



Correct Installation of Matting In a Swale
©LCCD, Rebecca Buchanan



©LCCD, Sallie Gregory

Philippe Cousteau Documentary Comes to Lancaster County

Jacques Cousteau's grandson, Philippe Cousteau, president of the EarthEcho International Foundation, has carried the Cousteau conservation minded spirit into a new project, *EarthEcho Expedition Chesapeake: Into the Dead Zone*, highlighting student service learning and actions that cause positive changes in your local watershed eventually affecting our global watersheds.

The Lancaster County Youth Conservation School a program of the Lancaster County Conservation District partnering with the Federated Sportsmen of Lancaster County was excited to be selected to be part of the web based film project. Twenty five students, ages 14-16, participated in the Conservation School held July 21-27 at the Northern Lancaster Game and Fish Protective Association. They were filmed while moving rocks and logs building a log deflector in Middle Creek during a day focused on water quality.

Recently, Philippe Cousteau visited the stream site and farm to interview several students about the stream project. Students admitted to being a bit star-struck when they met Cousteau. He talked with the students over a picnic lunch and they soon realized he's just a regular person. They walked into the stream and toured the project. He interviewed the students while the cameras rolled discussing the impact of a stream miles away from the Chesapeake Bay.

Next, the cameras turned to the farm that surrounds the stream section. The Fox Family farm was awarded the District's Outstanding Cooperator Award in 2012 recognizing the conservation practices implemented on the farm. Cousteau interviewed Robert Fox and Kevin Lutz, District Ag Conservation Technician, about manure management, no till, cover crops, and the benefits of stream buffers.

October 10, the six part documentary launches at www.earthecho.org. The curriculum enhancement program will go out to an international audience empowering youth to make a positive difference for a sustainable future.

—Sallie Gregory, Education Coordinator