Dubois County Soil & Water Conservation District

1486 Executive Blvd. Suite A • Jasper, IN 47546
812-482-1171 x3 • www.duboisswcd.org

Summer, 2020

The Conservation Conversation

VUJC LSI Update

Earthworms dramatically alter soil structure, water movement, nutrient dynamics, and plant growth. They are not essential to all healthy soil systems, but their presence is usually an indicator of a healthy system.

Earthworms perform several beneficial functions: a) they bury and shred plant residue which stimulates microbial activity; especially with material that has passed through its digestive tract, b) worms mix and aggregate soil ; in fact; they can turn over the top six inches of soil every ten to twenty years, c) the pores and channels that worms create increase infiltration (the soil's ability to absorb water from a heavy rain fall), d) they improve water-holding capacity by burrowing deeply and creating the channels that are lined with readily available nutrients, and e) the channels make it easier for roots to penetrate into the soil.

Picture of soil taken by Alan Smock on the VUJC LSI property.

Note the evidence of earthworms by the small channels holes.

Contents

Riparian Buffers

Farmers and landowners who want to increase pollinator habitat while also improving water quality should consider the benefits of saturated riparian buffers enhanced with native wildflowers. Establishing pollinator habitat with riparian zones, where the agricultural value is lower and where the conservation and wildlife benefits are likely high, can be a win-win.

"Landowners looking for the combined benefits of native habitat and water quality can capture both by establishing pollinator-friendly species on top of saturated buffers," said Dana Schweitzer, program coordinator with the Iowa Monarch Conservation Consortium at Iowa Sate University. As part of a four-year field demonstration, Schweitzer, Tom Isenhart, professor of natural resource ecology and management at Iowa State, and Steve Bradbury, professor of entomology at Iowa State, co-authored a new publication that helps landowners identify the best sites for buffers, the steps to establish a buffer with pollinator habitat, and programs available to help with funding and technical information.

Establishing and Managing Pollinator Habitat on Saturated Riparian Buffers **is a four-page publication available on the ISU Extension Store. The publication outlines the anticipated costs for establishing pollinator habitat over a buffer by comparing different types of site locations, seed and labor costs. Seeding a new or existing buffer with native perennials takes planning and Schweitzer said landowners should plan at least a year ahead of putting native seed in the soil. Some areas; such as, those that have been in a corn-soybean rotation for several years, typically have less weed pressure and are easier to transition. Other areas, including those with cool-season grasses, require more upfront weed management prior to planting a native seed mix. Schweitzer said plots are usually fairly small, ranging from 1-3 acres and require some maintenance every three to five years to sustain a diverse native plant community. The publication provides multiple resources including ISU extension and outreach's Questions and Answers about saturated buffers for the Midwest, and the U.S. Department of Agriculture's Working Lands for Monarch Butterflies fact sheet.**

Find more on the website at:

naturalresources.extension.iastate.edu/wildlife/contacts/wildlife-habitat-programs-and-consultation

Pollinator NACD News Clips

- ⇒ **Crop yields for apples and blueberries across the united States are being reduced by a lack of pollinators, according to new research.**
- ⇒ **Sowing strips of wildflowers along conventional cereal fields and increased density of flowers in organic farming encourage bumblebees; as well as, solitary wild bees and hoverflies. Bumblebee colonies benefit from flower strips along small fields while in organic farming, they benefit from large fields.**
- ⇒ **Planting woody plant species alongside crops could double the number of insect pollinators helping farmers produce food.**
- ⇒ **It turns out that soap bubbles (like the ones you might make with a kid's toy) can carry pollen as they float around, CNET reports. After mounting bubble makers onto the bottom of drones, scientists successfully pollinated a pear orchard, suggesting a possible way to grow crops should we fail to restore bee populations.**

USDA NRCS News

On Friday, July 31st, the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) Chief Matt Lohr announced in an online video that he will be leaving USDA this month in order to return to Virginia and farm full-time.

Calling the moment "bittersweet" in a Facebook post, Lohr stated, "I have been so blessed to lead this agency, and I will cherish the experience forever."

Lohr's last day was Friday, August 14th. NRCS Associate Chief Kevin Norton will serve as acting chief of NRCS.

"Matt has committed his entire life to the betterment of agriculture, and we are grateful for his service to USDA, " said U.S. Ag Secretary Sonny Perdue in a statement. "The knowledge and experience he brought to the table helped ensure our locally-led, science-based approach continues to offer farmer the conservation solutions needed to enhance their environment and commercial viability."

NRCS has been very fortunate to work with Lohr for the past two years, as he has been instrumental in helping champion the conservation mission while supporting the 3,000 NRCS field offices and their employees across the nation.

Invasive Species

Contact: Clair Ryan
Midwest Invasive Plant Network
(630) 719-5649
mipn@mortonarb.org

IPN.org
west Invasive Plant Network

WIGL
WOODY INVASIVES OF THE GREAT LAKES COLLABORATIVE

Many people tend to think of a lush tangle of shrubs and vines as a sign of good health.

"There is more to the picture, says Clair Ryan, coordinator of the Midwest Invasive Plant Network and the new Woody Invasives of the Great Lakes (WIGL) Collaborative. "Often, especially near urban and developed area, forests and other natural areas are clogged with invasive species that damage wildlife habitat, block trail access, and harbor larger populations of ticks that spread disease to human." says Ryan. "We developed the WIGL Collaborative website to help people learn to identify the woody invasive plants around them and to feel empowered to start controlling them on their own properties or in their favorite green places."

The website, woodyinvasives.org, contains a wealth of information about how to tell woody invasive species apart from similar beneficial plants, an interactive map showing how these species are regulated by Great Lakes jurisdictions, detailed management approaches, and non-invasive woody plant ideas for gardeners and landscape designers. Invasive species, shrubs, and woody vines pose a serious threat to natural areas in the Great Lakes region, out-competing native plants and damaging wildlife habitat. According to the U.S. Fish and Wildlife Service, the Great Lakes region is particularly vulnerable to invasive species due to its status as a global transportation hub. Species that live directly in the water like zebra mussels and common reed often get the most attention, which is understandable. However, Ryan says that it is important not to forget about land-based species.

"The Great lakes watershed, much of which is forested, provides water to the lakes. If the forests aren't healthy, it will be very difficult for the lakes to be healthy."

The current problem has actually been a long time in the making. Most of the region's most common invasive woodies; such as, buckthorn, autumn olive, and bush honeysuckle, were brought to North America hundreds of years ago, either as ornamental garden plants or for erosion control. The concept of species invasiveness was not developed until relatively recently, during the second half of the twentieth century. The majority of problem woody species, including those just mentioned, are spread by birds that eat the fruit. Over generations, seeds can reach even relatively pristine natural habitats. Their toughness and adaptability to less-than-ideal conditions often allow invasives to out-compete native species that would grown in similar habitats.

The majority of the woody invasive species explored by the WIGL Collaborative have fallen out of trade by nurseries and garden centers both due to regulation and to changes in green industry culture. However, there are some invasive species that are still popular in trade.

"Callery pear, also known by a number of trade names, Japanese barberry and winged burning bush are all still available from just about every big box store in states where they are legal to be sold, " laments, Ryan. "That's one thing everyone can do today to help: Don't plant species that are proving to be invasive in your area, and if you already have them, replace them. There are so many beautiful and non-invasive plants available, many of which are native and benefit pollinators."

Earth Team Volunteers

USDA's Natural Resources Conservation Service (NRCS) honored Indiana's Earth Team volunteers and celebrated their many contributions to natural resource protection during National Volunteer week in April, 2020. The Earth Team is a program that allows NRCS to stretch available resources by partnering volunteers with employees to provide a wide range of services to private landowners and the public. These activities can include conservation technical assistance, office support, and generating awareness about conservation through community projects.

"Whether Earth Team volunteers donate a year, a month, or a lifetime to help producers improve their natural resources, the impacts of volunteer efforts are felt far and wide," said Jerry Raynor, Indiana NRCS State Conservationist. "Last year, approximately 2,200 volunteers in Indiana donated more than 11,675 hours of service because they believe in our critical conservation work."

NRCS appreciates the important work these volunteers do. Their efforts help NRCS bring more conservation services to farmers throughout the state. In 2019, Indiana's Earth Team provided an economic benefit to customers and taxpayers totaling approximately $300,000."

Recently, the Indiana Conservation Partnership (ICP) won the national NRCS Partnership Award for their work with the spring and fall tillage transects. The NRCS Partnership Award is given to one volunteer group throughout the nation who demonstrates a strong cooperation with NRCS and has gone above and beyond in helping NRCS reach their goal of "helping people help the land."

The tillage transect is a bi-annual cropland survey conducted in all 92 Indiana counties by Earth Team volunteers and ICP personnel including the Indiana State Department of Agriculture, Soil and Water Conservation Districts, and Purdue Extension. Using a predetermined route, staff look at farm fields, collecting data on tillage methods, plant cover, and residue in order to tell the story of conservation efforts in Indiana. In 2019, Earth Team Volunteers assisted NRCS and ICP staff in inspecting over 11 million acres of farmland throughout Indiana. The tillage transect is the best way to measure and track adoption of total conservation cropping systems and could not be achieved without the help of Earth Team volunteers.

**Due to the Covid-19 pandemic,
the Dubois County Annual Soil Judging Invitational
has been cancelled.
The staff at the Dubois County SWCD
look forward to hosting their
county invitational soil judging contest next year.**

by Victor Shelton, August, 2020

According to the calendar and the weather, it's August but it seems odd with no state fair. I won't dwindle here but will state a familiar cliché that I look forward to being true; “this too shall pass.”

The last issue was a special edition and I want to thank all that emailed me afterwards. Your comments were greatly appreciated, and I have enjoyed them as they continue to trickle in.

Distribution of rain never seems fair, especially when you are on extreme ends of it. I greatly appreciate the rain that I've received and am pleased with good regrowth.

It certainly has been a good year for red clover and timothy. I thought I had a tremendous take where I had frost-seeded back in February, but fields not seeded were almost as good. The clover has rebounded after grazing events better than the grasses under the drier conditions. With even just spotty rains, forages, including the grasses, are slowly rebounding after grazing events, especially where cover and good residual live vegetation has been maintained. Having some warm season grasses to fall back on certainly has helped.

When it is dry like it is, you want to capture as much rain as you can during each precipitation event. You might think that since the field is covered with forages there is no erosion, but that is quite often not the case. You want water to infiltrate into the soil and soil profile. This water is then stored in the soil with some of it slowly moving downward to below ground aquifers to replenish our wells. What are a few of the factors that impact water infiltration? First of all, it needs something to slow the water down once the raindrop hits the surface. That could be a leaf, a stem, or residue on the soil surface; ideally that impact is not on bare soil. The more live plant cover and residue present, the less the impact of the raindrop. The average raindrop is about 3/16 inches in diameter and travels up to 20 miles per hour. That is good amount of impact when it hits the earth’s surface and if it hits bare soil, it will dislodge particles and move them.

Once the raindrop momentum has slowed for a moment, it should move downward into the soil. Residue on the soil surface helps to slow it down, then depending on the soil type, the water will start moving downward unless there is a non-permeable layer. A roof or road certainly is non-permeable and most or all the water will run off that surface. A soil that is compacted will also have increased water runoff. Organic matter content in the soil and the natural structure, or lack of, also influences infiltration. Percolation rates of soils can be measured. A good healthy soil should be able to take in at least two inches or more of rain per hour.

When the rainwater drop’s impact isn’t slowed by vegetation or residue and infiltration is poor, runoff is inevitable and it builds momentum as it travels down slopes, especially steep ones. As it travels it has more opportunity to pick up and move more soil particles. Where the runoff concentrates, ephemeral gullies start to form and if not improved, they will eventually form gullies. Not only did we lose precious water that is needed for forage growth, we have also lost soil and perhaps also an inconvenience to work around.

That was a long rabbit trail, but it certainly needed to be ran. The short of the long is this: we want more water to soak into the soil and less runoff to more efficiently use rainwater and reduce erosion. Easy, maintain good retardance with good live cover with deep growing roots and reduce any operations that might increase compaction.

Photo by Russ Wilson

The livestock have been very content with the forage consumed this season. I've noted before that forage quality, especially energy, is often better under good or slightly dry conditions rather than wet, especially extended wet conditions. Usually, higher sugar levels will exist under droughty conditions. Samples may also show higher neutral detergent fiber digestibility (NDFD). Higher sugars and NDFD will contribute to net energy for gain or lactation.

On the other side of that, where higher amounts of nitrogen have been added, nitrates can also be higher in some drought-stressed forages. They may also be higher in prussic acid, especially sorghum Sudan's, Sudangrass, and Johnsongrass. If in doubt or concerned, test before grazing. If it is wilted, it is probably safer to wait. Rains have been timely enough in most areas for this to not occur, but it is best to keep a watch on it.

Droughty conditions also usually tend to include higher temperatures and when you get a little shower, the humidity raises quickly. That certainly makes me want to sit under a tree in the shade with a nice cold drink. Shade becomes important once the heat index reaches 85 degrees or higher for most livestock.

The next important factor is daytime to nighttime temperature differences. If temperatures are close to 20-degrees cooler at night, this allows for a good cooling off period. When this doesn't happen and there is no break from the heat, heat stress starts showing up quickly. You will begin to notice increased water consumption, increased chance of wallowing, and reduced intake of forages. There are some who say that cattle will eventually adapt; I don't buy that. I think shade should be available in at least a third or half of the paddocks.

I've actually moved cattle to areas with no shade at night and then moved them back to areas with shade late morning. It takes a bit more work, but the cattle sure appreciate it. Good soil coverage also helps cool cattle. Heavy forage cover cools the soil; the cooler the soil, the more you will see cattle laying down in the middle of the field, even on hot days. It's not a bad idea to add some shade like portable structures or longer-term trees into the system. But plan ahead as they take some extra management because they become hot spots of nutrients quickly.

In short, shade is important, and so is the availability of close, cool water. The type of cattle and the amount of hair they have also makes a difference. Grazing endophyte infected tall fescue can add fuel to the fire because it can raise body temperature on its own. Think about where the livestock will be during hot weather and plan ahead. The best shade will always be obtained on the north or east side of a tree line or woods.

Okay, it's time to be thinking about some fall planted annuals. Oats, turnips, and cereal rye still remains my favorite combination. Fall oats are higher in water-soluble sugars and have a higher level of total digestible nutrients than spring grown oats and produce a lot of quality forage in a short time frame with sufficient moisture. The cereal rye can then take off and provide good cover and forage for early spring grazing. Being able to get off pastures for a while in the late summer or early fall allows for those pastures to rest and grow more forage for use later; a perfect situation for some stockpiling.

Remember, it's not about maximizing a grazing event, but maximizing a grazing season! Keep on grazing!

Past issues of Grazing Bites are available at https://www.nrcs.usda.gov/wps/portal/nrcs/in/technical/landuse/pasture/

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Rental Equipment Available at Dubois County SWCD

No-Till Drill—*Rental fee is $8/acre or minimum of $50.*
Great Plains No-Till drill has a seeding width of 7 feet, and can be used to plant soybeans, wheat, legumes, grasses, etc. It can also be used to plant native or warm season grasses.

Stapler/Staples—*$10/Rental fee, $50/box of 1,000 staples.*
This stapler is for erosion control blankets The plunger simply pushes the staples into the ground.

Spinning Jenny—*No Rental Fees.*
Use to install high-tensile wire fences. Load with wire and set on the ground. Walk away pulling the end of the wire and it will spin, preventing your wire from tangling. Slow down gradually before stopping to prevent over-spinning and tangling. Can also be used to rewind wire in the field.

Tile Flags—*$7.00/bundle of 100.*
Flags on 36" wire staff can be used to mark underground power lines or surveying jobs.