



Washtenaw County Conservation District

JUNE 2019

Switchgrass: The Wonder Plant

By Hannah Bradshaw

Last year during my internship at the Conservation District, I was reading a watershed management plan in order to research a potential grant application. I came across one very interesting sentence. It said that native grasses, like switchgrass, could be used as biofuel material, and that they would produce more biomass per hectare than corn. This sent me on a deep internet research dive into switchgrass. I obsessed over how we could use it somewhere! I researched the idea along with Hannah Boettcher, a fellow student, and we brought our thoughts to state legislators on several occasions.

Native to Michigan, Switchgrass is a wonder plant. It requires little water, no fertilization, and can thrive in almost any type of soil. It needs only to be planted once every ten to eight years. In addition, it can be easily used as a biomass in several capacities. Biofuel using switchgrass is possible. It first came to the public eye during President George W. Bush's 2006 State of the Union address, in which he mentioned switchgrass in an unplanned tangent on reducing foreign oil dependence. Switchgrass enjoyed a short time in the spotlight because of this but processing facilities for this type of ethanol are sparse. As such, switchgrass production on a large scale has not taken off, though perhaps it could and should.

Switchgrass is a promising filter strip crop, a strip of land on the border of a farm field or between two sections of field that prevents some runoff and offers wildlife habitat. As it is native to Michigan, switchgrass filter strips would likely provide quality habitat for native wildlife and insects. Switchgrass could perhaps even be a winter cover crop, a crop planted in winter to prevent soil erosion and runoff. Cover crops have also been known to increase crop yields the season following their use.

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Though sometimes difficult to incentivize, Michigan's coal plants provide a unique way to create a market for switchgrass, and by doing so, encourage the use of it in various conservation practices.

Michigan's coal plants are all scheduled to be closed by 2040, to be replaced by mostly natural gas plants. That still leaves over two decades of carbon emissions, of which coal processing makes 35.8% of total carbon emissions in the State of Michigan. A reduction of almost 30% of greenhouse gas emissions can be achieved by retrofitting Michigan's remaining coal plants to adapt them to co-fire switchgrass with coal. At a ratio of 20% switchgrass biomass to 80% coal, it would only cost said coal plants \$50,000-\$400,000 to adapt to process switchgrass biomass, with an average cost of \$200,000 for the average coal plant.

Not only does Switchgrass offer opportunities for reducing greenhouse gas emissions with coal, it also provides some ways to reduce the economic disparities between Michigan's Upper and Lower Peninsulas. The Upper Peninsula is not only home to most of Michigan's coal plants, and therefore bears the brunt of the pollution from them, but it also one of the most economically disadvantaged areas of the country. Renewables have not taken hold in the area because of prohibitive costs and reliability issues. This means that the area lags behind the rest of the state in terms of renewable energy and that energy costs will eventually skyrocket as the amount of coal



Switchgrass or *Panicum virgatum*

and oil is finite.

Switchgrass can also be grown in the Upper Peninsula, where crop options are differ greatly from downstate. With most coal plants located in Northern Michigan, the area's farmers could also grow most of the switchgrass needed by coal plants for co-firing, thus furthering the economic benefits of switchgrass for the area all while reducing soil erosion, irrigation needs, and fertilizer runoff.

Co-firing switchgrass with coal is both cost-effective and reliable, and would provide a more environmentally friendly source of energy for the UP without raising prices to consumers. Growing switchgrass is by no means a comprehensive solution to the area's energy crisis, but it offers a meaningful transition to renewable energy, one that is certainly needed.

Conservation Farmer Spotlight: Koenn Family Farm



Board Chair Matt Koenn's family has been farming for many years. His grandfather, Herman, didn't grow up on a farm, but had relatives in Ohio who did. Eventually, his grandfather started out on his own, south of Ann Arbor, and rented land on Jerusalem Road in the 1950's. In 1959, the family purchased its current farm in Sylvan Township. The family raised a small herd of dairy cattle up until 1995 as well as a rotation of corn, soy and wheat.

The Koenn family has been a large part of the leadership with the Conservation District for many years. Charlie Koenn, Matt's father, was a board director and hired long-time District Manager Dennis Rice in the 1980s. Matt remembers working the tree sale as a teenager, when the seedlings offered were much smaller with far less variety. Matt was elected to the Conservation District's Board of Directors in 2003 and has been the board Chairman since 2015.

Before running the family farm, Matt spent time in Kentucky but moved back in 2003. When asked why he came back, Matt asserted, "Always in my blood to be farming I guess." After taking over the family farm, Matt raised heifers for Horning Farms in Manchester until mid-2016. Now, he raises Angus cattle, with their first calf being born just this spring!

Matt has had a longstanding commitment to conservation practices on the farm, including almost exclusively no-till practices. Matt also manages his cattle to be mainly grass-fed.

The Herman L. Koenn Preserve was created through the Washtenaw County Parks and Recreation Commission and sits adjacent to the DNR managed Goose Lake Recreation Area. The Koenn's farm property is also protected in a conservation easement adjacent to the nature preserve.

When he's not farming or helping out at the district, Matt enjoys snowmobiles, golfing, hunting and fishing. His son, Ryan, is a nurse at the University of Michigan Health System and his wife, Kim, works at the St. Joseph Mercy Health System in Chelsea.



Backyard Conservationist Brainstorming Meeting: June 20th

The Conservation District is looking to expand programming to meet the needs of our community and we'd love to hear from you! If you have attended conservation workshops or other related workshops in Washtenaw County we are especially interested in your feedback on what type of educational programming is needed in Washtenaw. The meeting will take place on Thursday, June 20th from 5:30-7:00 p.m. at our office (7203 Jackson Rd, Ann Arbor).

Food will be provided with vegetarian options available. We would really appreciate your input and we hope you can attend! Please RSVP by calling the office at (734) 761-6721 ext. 5 or by emailing megan.deleeuw@macd.org.

Heavy Rain, Vegetation Pain

By Hannah Bradshaw

With heavy rain comes rapid growth of existing vegetation, including invasive plants. Japanese stiltgrass does especially well in wet environments and is particularly persistent, so watch out for a relatively short grass whose leaves can be discerned from native grasses by identifying a shiny white colored line down the middle of each grass piece.

Visit <https://jlcwisma.weebly.com/> for more



information on how to identify and manage the presence of the species.

Additionally, with heavy rain comes increased grass and other vegetation growth by the side of the road or by the edges of driveways. If your property lies on an intersection of roads, be careful to watch that the vegetation does not block turning visibility. The County Road Commission may manage this if you live on or near a county road, however this is often left up to landowners.

The Washtenaw County Road Commission has provided notice of their annual roadside herbicide spraying along the roadside right-of-way in the Webster, Dexter, Lyndon, Sylvan and Lima Townships. Webster however, has decided to opt-out of the program township wide. Individuals may opt-out of the program spraying on their property by filling out "No Treatment Zone" request found here:

www.wcroads.org/wp-content/uploads/2019/05/2019-WCRC-Herbicide-Spraying-Opt-Out-Fillable-Application.pdf by

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July 15th.

The spraying will occur between August 1st and mid-September. It will occur on roadside overgrowth at a distance of 14 feet into the roadside right-of-way. It will **not** occur in subdivisions, on mowed areas, on areas adjacent to bodies of water, or on areas designated as “Natural Beauty Roads”. The

Road Commission states that it is safe to utilize the sprayed areas directly after application, though it does state that pets should have their feet washed after contact. There is some debate in the county over the exact safety and necessity of the program, and the exact herbicides sprayed are not known.



MAEAP June Update By Nick Machinski

Algal Blooms and Lake Erie

A series looking at the system of factors leading to algal blooms in the Western Lake Erie Basin (WLEB)

Part 1: It's Complicated

I'm going to try something a little different. It has been raining, seemingly every other day for the past few months and I've been watching forecasts on how this year's algal bloom in Lake Erie will be one of the largest on record. While, I have no doubt that this year will be a big one for harmful algal blooms (HABs), I wonder how many people understand the process in how they form or all the factors that are involved in making one. It is much more complex than manure entering a ditch, flowing through a river and reaching the lake. So, for the foreseeable future, I'm going to take you on a journey through how nutrients (primarily phosphorus) reach Lake Erie, where these sources come from and why these blooms keep happening. I will do my best to refer you to scientific articles and sources if I point out facts and figures. If there are questions or someone has some insight into some of the research, my contact information is in this newsletter, call me and

we can chat. With all that said, let's get started with farm fields.

Phosphorus is naturally in the soil. Just how much depends on parent material and amendments. Farmers (and gardeners) can add phosphorus through fertilizer, manure, compost, etc. Even dead plants and animals will release phosphorus as they decay. Phosphorus is typically attached to the soil and moves with it. If a soil particle gets carried by water or wind, the phosphorus comes along for the ride. This is called Particulate Phosphorus (PP).

Preventing PP from reaching the ditch, river or lake revolves around keeping the soil in place or preventing erosion. Farmers, some but not all, employ a variety of techniques to accomplish this: no-till or minimum tillage, applying nutrients at the right time, not over-applying nutrients, planting cover crops, filter strips, buffer strips or grassed waterways. This all helps to prevent soil and PP from reaching Lake Erie. The effects of PP reaching the lake can be seen through aerial

imagery on Coast Watch's: [MODIS](#), a satellite system that takes images of the great lakes several times a day. For this article, I've posted an image from early June labeled, by me, with some of the various water bodies. As you can see, at the mouth of the Maumee River is a cloud of particulate matter spewing into the lake. This also occurs to, to a lesser point through the Sandusky River (OH) and the River Raisin (MI). It should be noted that the Maumee River is a very large river and watershed that contains quite a bit of agricultural land. In fact, 85-88% of the phosphorus is from non-point sources (farm fields and agriculture).^{1,2}



MODIS Imagery of the Western Lake Erie Basin (WLEB). Taken 6/3/19

As much as I like to pick on Ohio, there is more to the story, much more. Yes, the River Raisin looks good compared to the Maumee, but we need to talk about dissolved reactive phosphorus (DRP). DRP does not attach to the soil but (as its name suggests) dissolves and is carried by water. This stuff is readily available for algae to consume, unlike PP, and it is becoming a major problem. Some of the practices used for controlling erosion such as no-till actually allow Phosphorus to build-up in the soil.³ If we get heavy rains, some of that Phosphorus is carried through the soil and is now DRP. It makes its way to the ditch, to the river and then to the lake. You can't see DRP like you can with PP as it is not attached to soil particles. o, though the River Raisin has improved in reducing PP, there has been an increase in DRP.^{4,5}

1. State of Ohio's Domestic Action Plan 1.1, August 2018. <https://www.lakeerie.ohio.gov/Portals/0/Ohio%20DAP/DAP%201-1%20FINAL%202018-08-27.pdf>
2. <http://www.glc.org/wp-content/uploads/HABS-Sources-of-Nutrients-20171009.pdf>
3. Fertilizer Application Patterns and Trends and Their Implications for Water Quality in the Western Lake Erie Basin, February 2018. https://legacyfiles.ijc.org/tiny_mce/uploaded/Publications/IJC_FertReport.pdf
4. State of Michigan Draft Domestic Action Plan (DAP) for Lake Erie, June 2017. https://www.michigan.gov/documents/deq/Michigan_Domestic_Action_Plan_-_June_2_2017_575524_7.pdf
5. <http://www.glc.org/wp-content/uploads/HABS-Sources-of-Nutrients-20171009.pdf>

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I know many farmers who just couldn't make it into their fields this spring because of all the rain we received. They weren't able to till or apply nutrients to their fields. Instead, some fields will have a cover crop put on them. So, shouldn't that mean we have a smaller algal bloom this year, because there are less inputs on the fields? No!

There is the factor called Legacy Phosphorus. All the phosphorus entering Lake Erie this spring and summer isn't all from this year's planting. Some Phosphorus has been stored in buffer strips, wetlands, ditches, drain/tiles for years and only now will come out of hiding. All this extra rain helps in moving this Legacy Phosphorus. Basically, the system is delayed. Some of the Phosphorus applied from 10 years ago (sometimes longer) is only now reaching the lake.⁶

All this is to say that: It's Complicated. Adopting environmental practices such as no-till and installing filter strips prevent erosion, keep soil in the fields and (overall) are good for the environment. However, even these practices are complex and are not as simple as one might think. Farmers could be doing many things right, but at times (like this spring), those things could still contribute to the phosphorus heading to Lake Erie.

Next time, we will step out of the farm field and into the city. We will look at the Detroit River, the urban contribution of phosphorus and discuss a source of phosphorus that has only just now come to light.

6. Fertilizer Application Patterns and Trends and Their Implications for Water Quality in the Western Lake Erie Basin, February 2018. https://legacyfiles.ijc.org/tiny_mce/uploaded/Publications/IJC_FertReport.pdf

Seeking Nominations for our 2019 Conservation Awards!

Please consider nominating someone who you think is deserving of one of the following: 2019 Small or Beginning Farmer of the Year (celebrating the efforts of small farmers with ten acres or less and/or beginning farmers in their first ten years of farming), 2019 Tree Conservationist of the Year (recognizing excellent tree planting efforts over many years), or 2019 Conservation Farmer of the Year (recognizing farmers that have prioritized conservation practices). Nominations are due by August 30th.

Upcoming Events:

July 25th Water Catchment Workshop, from 6pm to 8pm with Celeste Allen Novak FAIA, LEED, AP BD+C, at Scio Township Hall Cost is \$10 per person.

October 11th: Fall Tree Sale, orders can be placed on our website or in the office. Pick-up is at the Washtenaw Farm Council Grounds from 2pm to 6pm.

Native Plant Expo and Marketplace Thank You!!!

A big thank you to all who helped our first Native Plant Expo and Marketplace a success! Our many volunteers and partners were vital to ensuring the event went smoothly. Happy planting to everyone who purchased plants!

