

Healthy Soil, Healthy Water



Fall 2020

I don't know about you, but this year sure feels odd. On one hand it feels like it flew by yet, March Break and planting plans seem ages ago! SCRCA staff hope you and your loved ones remain safe and happy and enjoy as much time as you can outdoors and in nature. Nature is great for improving one's mental health.

Now that most of this season's crops are off or will be shortly, we can recharge and ponder plans for next #Plant2021. If you haven't tried planting cover crops, maybe you can incorporate a simple mix of oats and radish into your rotation. Cover crops don't have to be fancy, nor expensive. We have a grant available for up to \$500 or 50% of the seed cost if you planted a cover crop this fall. Call or email me today to apply!

This newsletter focuses on utilizing bio strips as a means of providing year round ground cover to keep your soil and nutrients where you need them most. We highlight how 3 Ontario farmers have incorporated bio strips into their farming systems. While this newsletter is only one source of information, we encourage you to research online as there are so many resources (and farmers!) available to answer any questions you may have on bio strips and other conservation farming practices.

Yours in Conservation, Jessica Van Zwol and The Healthy Watersheds Team at St. Clair Conservation

Why Bio Strips?



There's a lot of buzz about bio strips in agriculture these days. Bio strips are a combination of cover crops and strip tillage. Bio strips are rows of vegetation in a farm field planted alongside the main crop rows to reduce the amount of bare soil in a field especially in the winter and spring seasons when we have the most precipitation. Bio strip plant roots hold on to the soil, reducing erosion and keeping valuable soil and nutrients where next year's crops need them. Bio strips can also scavenge nutrients for the following crop, tackle soil compaction and provide a food source for the millions of soil microorganisms that help crops grow.

Bio Strips - Thoughts to consider when incorporating into your farming system

It's always important to have a game plan and know what you hope to achieve by adding a layer to your farm practices. Things to think about when incorporating bio strips and the species to grow:

- What nutrients do your future crops need and/or what nutrients are lacking in your field?
- What nutrients can the species in the bio strip scavenge and/or provide?
- How will you plant your bio strips? Drill seeded, broadcast or applied when side dressing?
- How can you use and/or tweak your existing equipment to make bio strips work?
- What is the termination plan? Will the bio strips winterkill?
- Will you plant pre- or post-termination?

Practical ways Ontario farmers are making bio strips work

Doug Rogers, Lambton Shores: Doug has grown cover crops for 10 years and moved towards bio strips 5 years ago. With no-till farming, it can be hard to no-till into winter wheat. Strip tillage did not work too well either with his twin-row cropping system. He calls bio strips a “poor man’s strip till machine”. In the crop planting row, daikon radish, oats, and yellow peas will winterkill and provide good ground for spring planting. In the non-planting rows, where wheel traffic moves, Doug grows cereal rye, crimson clover, sunflowers, buckwheat and flax. By keeping his farm equipment on the green bio strips, he’s mitigating his soil compaction risk. In his bio strips, Doug chooses species like flax, buckwheat and sunflowers to provide food sources for local pollinators.

Due to his proximity to Lake Huron, Doug chose bio strips to reduce wind and water erosion of his light Brisbane loam soils. Bio strips help hold down the soil year round, keeping the soil and nutrients where he needs them. Doug suggests that if you are starting cover crops or bio strips, talk to farmers who have been working with them and don’t plant too thick! For more about Doug’s practices: <https://www.youtube.com/watch?v=JcGBTywhs-g>.



Dustin Mulock, Woodville: Dustin uses bio strips in his no-till twin row corn, wheat, and soybean rotation. Early on, Dustin noticed that rye was a best friend to his crops because it provided an early spring food source for slugs. The slugs weren’t aware of the emerging corn and remained on the rye.

In the planting row, Dustin plants a mix of winterkill cover crops, choosing species with tillage capabilities and able to break up compaction: sunflower, rapeseed, legumes such as peas, faba beans, phacelia, kale, oats, barley and tillage radish. When the ground freezes, the cover crop roots freeze and heave as one, accomplishing

the same outcome as tillage, but without the use of equipment, nor risk of compaction.

In the bio strips, Dustin plants oats, barley, rye, and his favourite: hairy vetch – a “nitrogen and biomass producing monster”, that “melts” in the spring. He finds this mix, along with clovers, provides a yield bump for soybeans or white beans. The benefit of incorporating rye into a bio strip is two-fold: rye is allelopathic, which means it naturally suppresses weed growth and rye acts as a cross-season nutrient holder. Rye soaks up nutrients that can be utilized by the following crop. This action also helps with weed suppression. Dustin’s goal is to have the rye draw down nitrogen in the soil to prevent weed growth, but terminate the rye in time to release nitrogen to the corn when it is most needed. He emphasizes that not all the nutrients are immediately given to the corn, rather some of the nutrients are utilized by soil microorganisms and released later. Dustin plants corn 2-3 days before the rye and vetch are terminated, preventing the rye from drying out and becoming rope-like, which is nearly impossible to manage.

Like Doug, Dustin’s bio strips serve as controlled traffic lanes for farm equipment. The roots of the rye help disperse vehicle weight. Dustin adopted Glencoe-farmer, Dave McEachren’s adage: “drive on the green and plant in between”. For more about Dustin’s practices, check out his Twitter: Dustin Mulock Kawartha Covers (@Stripper16)

Nick Stokman, Adelaide-Metcalf: This is Nick’s first year using bio strips. As a no-till farmer, planting corn into wheat stubble can be a struggle. Farming on heavier clay soils, Nick has tried to “get a little bit of black dirt in the spring to plant into, whether that be with vertical tillage in the fall or strip till in the fall”. He doesn’t own strip tillage equipment so in the past, he hired someone for fall tillage. For the plot sizes he was experimenting with, that cost didn’t outweigh the benefits, even if he expanded strip tillage to all his fields. Nick firmly believes in the benefits of “having roots without having soil disturbance, mycorrhiza,... reducing erosion, [and] maintaining the living soil biome”. With these principles in mind, Nick researched what he could do with the equipment he has and settled on bio strips. Using RTK and Autosteer, Nick adjusted a 12-foot drill to plant strips of radish where he plans to plant corn next year and red clover in his non-planting rows. Red clover is known to double its root mass in October, so Nick planned to wait as late as he could to terminate the red clover with glyphosate and Dicamba. He chose radish for the planting row to reduce erosion, build soil, and suppress weeds, but also because it winterkills with little residue left at corn-planting time. This way, the spring sunshine can warm the soil of the planting row and he can plant corn in conditions conducive to seed germination and plant growth. For more about Nick’s practices: <https://www.youtube.com/watch?v=8Djg8qkRU6E>



Monitoring the health of the watershed

In the summer, the SCRCA Biology crew conducts an intensive field-monitoring program throughout the watershed. Monitoring helps staff understand the physical and biological health of the watershed. The 2020 field season presented unique challenges with a pandemic and subsequently, a shortened monitoring season due to lockdown restrictions. Nonetheless, the weather (and water!) cooperated and all monitoring was completed.



Northern Riffleshell male (top) & female (bottom)

In June, we run a turtle head-starting program, with turtle nests identified and monitored. Staff collect eggs from nests in danger from predation and destruction. In collaboration with Upper Thames River Conservation Authority and Salthaven Wildlife Centre, 799 eggs of Eastern Spiny Softshell and Common Snapping Turtle were incubated until hatching. The turtle team released 682 hatchlings in late August.

The Biology crew also monitored for mussels. To find mussels, staff “raccoon” on all fours, pawing through the river bottom. The study identified 1,688 live mussels of which, 79 were from at risk populations, including species like the Northern Riffleshell, Rainbow, and Snuffbox. Although rarely encountered, mussels play an integral role in healthy aquatic ecosystems. Mussels are filtering powerhouses: a single mussel can filter **40L of water per day removing algae, organic matter, and nutrients from the water**, reducing turbidity (cloudiness) and

nutrient load of the water and improving water quality for all aquatic organisms. This means that the mussels collected this summer filter a 6,752L/ day!

This year, staff completed a study of the movements of the invasive Round Goby in the Sydenham River. Maybe you have caught some fishing in Lake Huron? The

data will be compared to 3 previous studies conducted since 2002. Round Goby are a non-native fish that arrived in the Great Lakes from the Caspian Sea in the ballast water of large shipping vessels. In Ontario, Goby can reduce native sportfish populations through the predation of eggs and young and competition for food. Mapping where these invaders reside is essential for understanding how to conserve native biodiversity.

Physical health attributes, like water quality are monitored year round, especially during storm events. If you’ve ever wondered about the shed at Kinnaird Road and Thompson Line—it collects water samples during storm events of Shashawandah Creek.



Searching the sediment for live mussels



Round Goby



Municipal Drain Conservation Practices

Municipal Drains are vital for transporting water off the land to improve farmability and benefit yield. When combined with other BMPs, these systems can transport high-quality water to Lake Huron. A major theme of this newsletter is to keep productive soil and nutrients on the land where it is needed most. Projects like buffer strips, grassed waterways and windbreaks can be the first line of defense on your property.

For any works conducted in or adjacent to a drain (e.g. maintenance or improvements), proper sediment and erosion control is essential to prevent transport of sediment downstream. Control measures can include: silt fencing, turbidity curtains, straw bale check-dams, temporary erosion control blankets, and sediment traps. Discuss the work plan with your Drainage Engineer or Superintendent; they can recommend appropriate control measures as requirements can vary by site. Ensure work is conducted during dry, low or no-flow periods. Complete the work outside of spring freshets or significant precipitation events, as this is when water is at its highest levels and fastest velocity. Make sure that every reasonable effort was made to remain in compliance with applicable legislation and the terms and conditions associated with any permits, approvals or authorizations issued for the project. Your local Conservation Authority and other regulatory agencies may also be involved in the project. Finally, ensure that all disturbed areas are re-vegetated with enough time to germinate before removing any temporary control measures.

St. Clair Conservation Healthy Watersheds Program



Are you looking for financial assistance to retain soil & nutrients on your land?

We secure funding for landowners for Nutrient Retention Infrastructure:

In-field berms, grassed waterways, riparian buffers, wetlands, and windbreaks

- We connect landowners with resources and financial incentives to help implement Best Management Practices and stewardship projects.
- Landowners can meet with SCRCA staff on site to discuss project design and implementation. Staff can offer advice and answer questions about the process of implementing projects.
- Grant availability depends on what funding sources are available and the guidelines and deadlines outlined by the funding sources, such as the project location and size.
- Projects are reviewed against the funding criteria before a grant is awarded.
- Typically, grants of 50% are provided to landowners for eligible projects (to a maximum of \$10,000). In some cases, up to 100% of the project sub-total may be approved for some types of projects.
- The Healthy Watersheds Program main stewardship goals are:
 - Improving water quality and quantity
 - Improving fish and wildlife habitat, with a focus on aquatic species at risk habitat

If you are interested in setting up a site visit, call 519-245-3710 or email:

- Jessica Van Zwol, Healthy Watershed Specialist, jvanzwol@scrca.on.ca (x241)
- Steve Shaw, Manager of Conservation Services, sshaw@scrca.on.ca (x213)
- Jeff Sharp, Conservation Services Specialist, jsharp@scrca.on.ca (x217)



This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada

