Up the Creek

Not long after I first met John Eron, he took me for a ride around his farm to show me some of the methods he was practicing - including buffer strips, cover crops, irrigating crops utilizing runoff water and no-till planting. Then he described and pointed out strips of pollinator plants along a previously bare fence-line. To say the least, I was amazed to see firsthand his farming conservation practices in place and working well.

I remember tales from our father’s generation of spectacular pheasant hunting around Marshfield back in the 1950s and 1960s. During the fall of 1982, good friend Mike and I traveled west to Eau Claire County to hunt pheasants with friend Dan. Pheasant hunting was our main focus, but it was several large coveys of wild bobwhite quail that stole the show. Following birddogs along fence line hedgerows was the ticket to success back in the day.

In the 1970s and 1980s in our home county of Portage, we found quail, Hungarian partridge and prairie chickens in large numbers on the Buena Vista grasslands. Back in the good old days, more woody vegetation – dogwood, willow and aspen – was allowed to grow and prosper. Woody vegetation and hedgerows were still common. Quail and partridge disappeared. Prairie chicken numbers have fallen dramatically, even with intense management on state owned lands.

continued on page 16
# Council Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Eron</td>
<td>715-498-5222</td>
</tr>
<tr>
<td>Kyle Altmann</td>
<td>715-498-0024</td>
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<tr>
<td>Mike Berdan</td>
<td>715-486-6190</td>
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<tr>
<td>Tyler Bulgrin</td>
<td>715-897-1242</td>
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<tr>
<td>Jim Coenen</td>
<td>715-213-4450</td>
</tr>
<tr>
<td>Abraham Guzman</td>
<td>715-347-4607</td>
</tr>
<tr>
<td>Brian Otto</td>
<td>715-204-0521</td>
</tr>
<tr>
<td>Pat Slattery</td>
<td>715-570-3596</td>
</tr>
<tr>
<td>Jeff Wiernik</td>
<td>715-630-8836</td>
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<tr>
<td>Ken Schroeder</td>
<td></td>
</tr>
</tbody>
</table>

# FMCWC Conservation 2020 Incentives

The funding for these incentives comes from a Wisconsin Department of Agriculture, Trade and Consumer Protection 2020 Producer-Led Watershed Protection Grant. Funding is limited and will be first-come, first-served.

This project continues to evolve. We’d appreciate any feedback you might have about other incentives you would be interested in.

**Single Species Cover Crops** (DATCP grant)

- **NEW 2020 $35 per acre if interseeded into V4-V8 Corn (DATCP Grant)**
- **NEW 2020 $25 per acre for cover crops as pollinator planting**
  - $25 per acre if planted before Sept 10.
  - $20 per acre if planted after Sept 10 but before Oct 10.
  - $15 per acre if planted after October 10.

Potential exists for additional cost-share money from County Land and Water Conservation Dept. funds and Mill Creek 9-Key Element grant funds Portage Co. 715-346-1334 or Wood Co. 715-421-8475.

- **$25 per acre** (DATCP grant) to plant multi-species cover crops.

- **$15 per acre** (DATCP grant) to try no-till planting. **The intent is to encourage no-till on new parcels. Potential exists for additional cost-share money from County Land and Water Conservation Dept. funds and Mill Creek 9-Key Element grant funds Portage Co. 715-346-1334 or Wood Co. 715-421-8475. There is a no-till drill available to rent from Wood County Land and Water 715-421-8475.**

- **NEW 2020 $15 per sample** to run Pre-plant Soil Nitrate Tests (PPNT) prior to planting corn and **$10 per sample** to run Pre-sidedress Soil Nitrate Tests (PSNT) prior to sidedressing corn. Call Ken 715-346-1318.

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See Page 10 for NEW Cost-Sharing Available for the Mill Creek Watershed
New This Year!!! Funding Available to Run Pre-Plant Soil Nitrate and Pre-Sidedress Soil Nitrate Tests

by: Ken Schroeder, Extension Agricultural Agent

Soil nitrate testing estimates the amount of plant-available nitrate-nitrogen in the root zone. This allows nitrogen (N) fertilizer recommendations to be adjusted for field-specific conditions that can influence crop N needs.

What are the possible sources of root-zone nitrate-nitrogen?

- Carryover from fertilizer applications in 2019.
- A preceding legume crop.
- Manure applications.

Two tests are available, the pre-plant nitrate test (PPNT) and the pre-sidedress soil nitrate-nitrogen test (PSNT).

- PPNT involves deep soil sampling to a depth of 2 feet before planting the crop. This test should be used when you suspect significant nitrate carryover such as when previous growing season and overwinter precipitation was normal or below, or if previous crop N application was in excess of crop need as in the case of poorer than expected yields. Some nitrate carryover occurs in most years.

- PSNT consists of shallower soil sampling to a depth of 1 foot when corn is 6 to 12 inches tall. This test is intended to predict the amount of plant-available N that will be released from organic sources during the growing season. It is most useful for confirming legume, manure, and cover crop N credits and providing a site-specific estimate of soil N availability.

What are the benefits of testing?

- If the amount of soil nitrate-nitrogen is significant, subsequent N applications can be reduced or, in some cases, eliminated!
- Lower costs by avoiding N applications in excess of crop needs.
- Help the environment by lowering the potential for nitrate movement to groundwater by avoiding over-application of nitrogen.

NOTE: Soil nitrate testing is not reliable on coarse-textured sand or loamy sand soils because their nitrate content can change rapidly.

For more details on the PPNT and PSNT procedures, see the University of Wisconsin-Madison Division of Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin pages 46-50. The publication is available for viewing and downloading at the Extension Learning Store https://learningstore.extension.wisc.edu/, under soils in the agriculture dropdown menu or enter A2809 in the search box.

Call me at 715-346-1318 or email ken.schroeder@wisc.edu with questions on sampling procedures or for assistance.
Debating cover crops, but short on time? Interseeding could be the answer.

by: Rachael Whitehair, UW-Madison Extension, Natural Resource Educator

There’s no question, cover crops can offer farmers numerous benefits when it comes to soil health, plant growth, and field accessibility. The issue for many is getting that cover crop on post-harvest before it’s too late in the year for a good establishment.

I sat down with Jason Cavadini, the Assistant Super Intendentant and Agronomist at the Marshfield Agricultural Research Station. With four years of interseeding trials under his belt, he shared a wealth of knowledge as to how farmers can make interseeding work to their advantage. “Every year we’ve tweaked it a little more.” says Cavadini. “We’re learning a little more about equipment, a little more about how just minor tweaks to our corn planting and our cover crop species selection improve results.

Why interseed your cover crops? Does it work with corn?

“Cover crops, especially in our area, was a hard sell even eight years ago when I started. People thought we already have too short a window for a growing season. We just can’t count on being able to get all our acres covered after harvest. It's pretty risky to count on that.” Jason explained that interseeding is basically planting a crop into an already established crop. “This method of planting has definitely gained a lot of popularity in corn, for multiple reasons. There’s a little bit wider spacing there, so it's a little easier to do, but also, it's very necessary. Corn is not a foolproof system environmentally, so we need to figure out ways to improve it. It’s been hard to sell cover crops on economics alone so we have to become convinced of the other things like obtaining a fully functioning system. Interseeding is a method that we absolutely need to make work in order to get cover crops on a lot of ground in this part of the state. I think if we buy into the fact that the land needs to be covered, then we have to embrace interseeding.”

When is the time to start thinking about interseeding?

“By the time that corn gets to V3 or once it's six or eight inches tall, you’re going to start thinking about interseeding. We learned we’ve got to get 50 percent or more of our nitrogen out there at planting time. The idea is that you want to get all your work done early. When we started, we thought maybe V5 or V6 because that's when everyone would side dress corn, but we found out that didn’t work well. At V6, you’re just a couple weeks from being canopied and it's going to take sometimes up to a week for that cover crop to germinate. There are people pushing it even earlier than V3. Basically, if you can see the rows of plants, go out and interseed. The point is to interseed early to allow that cover crop to take off. It all boils down to competition because you're purposely planting one seed amongst already developed seeds. You're trying to figure out how to leverage competition to work in your favor. You want to get the cover crop interseeded fast so you can avoid competition while it's getting established. After that, you’re taking advantage of competition to keep that cover crop from taking off and competing with the corn, so timing is really important.”

What cover crop species would you recommend?

Jason stated that he’s seen good success with perennial red clover but overall, he has had the greatest success with an annual mix. The seven way mix he normally plants is a foundation of annual rye grass, with a few pounds of crimson clover, a pound each of a couple brassicas, rape, turnip, and cow pea.
“You want to come up with a mix that's complementary of each other, and that's why the annual rye grass works really well because it fills in all the holes. You basically have a nice matte of annual ryegrass and clover and then your brassicas are kind of mixed in with that. The annual mix gives you a lot more cover during the season. We lean a little more toward the crops that grow vigorously right away, whereas a perennial doesn’t grow above ground a lot because it's focusing on making it through the winter. So, it's putting more below ground, which is good, but if we want biomass above ground, then it's those annuals that give us the most bang for our buck.”

What equipment and services are available?

I asked Jason what Ag service providers are intentionally doing this work and he says Ag suppliers are onboard. “I know Shortlane AG Supply has a pull type unit that looks like a pull type sprayer they bought with the intention of renting it out to farmers. They also have a highboy broadcaster and they'll mix fertilizer with the seed and broadcast it.” He also mentioned the planter shop in Colby has a no-till drill and Eberly Ag Service has a highboy applicator that they take all over to basically blow seed between cornrows. There are also a lot of land conservation departments that have a no-till drill available for farmers to rent. “This has been a practice that's taken off faster than the industry can adjust to, so you have a lot of people fabricating their own equipment or modifying equipment to be able to do this. That works just fine, in fact, a lot of times I think that's the best option because it's cost effective and it doesn't take a whole lot. Basically, you can take a drill and pull units off it and have an interseeder or you can take an old cultivator and get a seed box for it and build it into an interseeder. That's what most farmers are doing.”

What’s your take on drilling vs. broadcasting the seed?

“They both have their challenges. I would say drilling has a little bit of an edge on broadcasting just because we're talking about such a short amount of time to get this cover crop established before the corn goes to canopy so we need to give the seed an advantage from the start and deliver it right to the soil.

You’re ensuring seed to soil contact and often, you'll get germination of that crop much quicker. The thing you have to be careful of with drilling is if you put it too deep, it defeats the purpose because it could take three to five days longer to get out of the soil depending on how deep you plant it.

So, with broadcasting, you avoid the risk of planting it too deep, but you also have the risk of not having enough moisture there. You really want to try to time a broadcast with rain, so it'll incorporate it.”

Questions about incorporating interseeding into your operation?

Contact:

Jason Cavadini at jason.cavadini@wisc.edu

Ken Schroeder at ken.schroeder@wisc.edu

Rachael Whitehair at rachael.whitehair@wisc.edu
Farmers Making a Pledge

by: Dan O’Connell, Portage Land & Water Conservation Department

As you may recall, Land and Water Conservation staff have been presenting in numerous classrooms in Wood and Portage Counties on prairies and pollinators since 2016.

This is a cooperative effort between the Farmers of Mill Creek Watershed, the County Land and Water Conservation Departments and the Friends of Mill Creek Watershed to promote agricultural education.

With the help of both Mill Creek groups, Land and Water staff developed a program educating students on how Mill Creek farmers incorporate conservation into their farm operations. This program allows County staff to talk about the different crops, and the soils they are planted in, how they are pollinated, and the benefits of different grassland habitats found throughout the watershed. It also allows each student to get their hands in the soil and plant either some native prairie seed or a started prairie plant.

The Prairies and Pollinators program has really grown in the past two years and now the farmers are making good on a pledge many of them made in 2018, when the number of schools participating seemed to plateau. At that time, there were four schools involved and some of the farmers thought that a “POLLINATOR PLEDGE” would help get more schools involved. So, they agreed that for each NEW class that takes part in the program, a farmer in the Mill Creek Watershed would plant some pollinator habitat.

Area farmers felt they had some marginal areas that, more often than not over the last few years, had been left fallow. Many of these fallow areas become home to hard to control invasive weeds. The farmers knew, with all the rain the last few years, it didn’t pay to keep trying to grow an unproductive crop when they could plant different wild flowers, some of which could be brought home, put a smile on the face of the Mrs. and make the dinner table look nice. But, the main reason for the “PLEDGE” and planting pollinator habitats, is to encourage more schools to get involved in the Prairies and Pollinators program provided by the Land and Water Departments.

These areas will also be part of the seasonal tours put on by the farmers. They have hosted numerous events and tours, generally covering the benefits of cover crops. Now, each of these pollinator habitat areas will serve as demonstration sites and be promoted as part of the tours. With the increased interest of area high schools in these hands on, in field tours, the areas will provide another great opportunity to broaden the educational experience.

This spring and summer, farmers will be making good on their “PLEDGE” by planting pollinator areas. So, this summer when you are out and about the Mill Creek country side, look for one of the farmer led signs promoting one of the newly planted pollinator habitat areas. You can also discuss with your children whether their class is involved, or what they know about pollinators. Better yet, encourage their school to get involved.

That way more areas will continue to be “PLEDGED”. Remember, for each new class involved, another pollinator habitat area gets planted for future generations of students and pollinators to use.

How can I get involved? Just like with all the other tours and work the Friends and Farmers of Mill Creek groups do, your participation is encouraged. This is a community wide project which all Mill Creek landowners are a part of. So, if you have land or an area on your property that you would like to use as part of this pollinator pledge, please call either the Portage or Wood County Land and Water Conservation Department. They will work with you to find the types of plants suitable for your site and then coordinate with the Farmer Led group to get the site prepared and planted.
Students Work with Farmers to Enhance Pollinator Habitat

Pollinators like monarch butterflies, wild bees, and honeybees are key for crop pollination, but their numbers are dropping due to decreasing wildflower habitat near crop land.

Nearly fifteen years ago, researchers from Iowa State University began trials of prairie STRIPS at the Neal Smith Wildlife Refuge in Prairie City, Iowa. STRIPS stands for Science-Based Trials of Rowcrops Integrated with Prairie Strips. The Prairie Strips Project Team at Iowa State University developed this on-farm conservation practice to meet both ecosystem improvement and profitability goals for Midwest farmland.

Agriculture and science students are becoming part of the solution within their communities through the Pollinator Habitat Grant Program offered by the Sand County Foundation, a national nonprofit conservation organization. Selected student groups across Wisconsin, Minnesota, and Iowa partner with a local farmer or landowner for access to a planting site and in return, the site host receives enhanced pollinator habitat near their farmland and an enriching opportunity working with local youth.

The Pollinator Habitat Grant Program provides selected schools with a curriculum guide, native wildflower seedlings, a training webinar and consultation, and a $1,000 grant for the school district or FFA chapter to help cover project expenses. The program offers the hands-on learning experience of raising approximately 600 seedlings of milkweed, prairie blazing star, wild bergamot, and other native forb species in a greenhouse. Students then work with their partnering property to transplant the wildflowers in the spring as well as manage and monitor the planting site throughout the year.

“For transplanting, we encourage that applicants partner with landowners to find nooks and crannies within the working landscape. This could be a farm field, open space owned by an agricultural or rural electric cooperative, or other uncultivated areas” explained Craig Ficenec, Sand County Foundation program director.

Beginning in 2017, the program has awarded 36 grants to high schools across Minnesota and Wisconsin, engaging more than 40 teachers and 700 students to plant over 10,000 wildflower plugs in rural areas.

Be part of the learning experience! Reach out to your local science teachers and FFA advisers to see if they are participating in the program and in need of hosting properties.

To learn more about the Pollinator Habitat Program or share the opportunity with your local educators, visit: https://sandcountyfoundation.org/news/2019/pollinator-grants-offered-to-high-schools

Photo by: Rachel Whitehair

Photo by: Rachel Whitehair
Soil Compaction is Not Easily Reversed.

by: Jamie Patton, Extension Nutrient and Pest Management Senior Outreach Specialist

THE 2019 growing season is behind us, but the challenges it created will plague us into the near future.

One of those challenges is widespread soil compaction. While soil compaction can be created in the “blink of an eye” with a single, ill-timed pass across the field, the time required to reduce its impact on crop yield and water infiltration and drainage can be considerable. Rebuilding soil aggregates and restoring soil function takes Mother Nature’s help, good agronomic decisions, and time . . . often months to years, depending on the level of compaction and soil properties.

The amount and severity of compaction created within a field are dependent on many factors, including, but not limited to, soil moisture content during field operations, equipment axle load, and type and inflation of tires. As one might guess, compaction is typically not uniform across a field, with heavily trafficked areas, such as headlands, often experiencing more severe compaction and at a greater depth than areas experiencing less traffic.

While the previous statement is often true, it is not absolute. After examining several fields this fall, I can confidently say we must field-truth our compaction assumptions. While surface observations of compaction/rutting are quick and easy, they often don’t accurately reflect compaction with depth.

I found many fields with significant aggregate destruction within the surface top 2 or 3 inches, but with little compaction deeper in the profile. This was true both in the headlands and when shallow ruts or tracks were present. On the other hand, I also found fields that looked only moderately compacted from the top but were severely compacted at depth.

Knowing where compaction is — or is not — within a field and within the soil profile is imperative to targeting agronomic practices to remediate its impact on yield. A soil penetrometer can be used to gauge the extent, seriousness, and depth of compaction.

Often available for loan from agronomists or local land conservation, Natural Resources Conservation Service (NRCS), or extension offices, penetrometers can be used to quickly evaluate many points across a field, generating a more accurate and complete picture of compaction levels and distribution than surface observations alone.

A quick video on how to properly use a penetrometer can be found on hoards.com/penetrometer.

Tillage is only one tool.

With a better understanding of compaction distribution throughout a field, we can begin to target approaches to rebuild soil aggregation over time. While tillage is often the first go-to “fix,” it isn’t a long-term compaction solution. Rather, tillage is a tool to fracture soil crusts and tillage pans, level rutted fields, and temporarily improve soil conditions.

Long-term compaction remediation requires the formation of stable soil aggregates, which is accomplished through freeze/thaw and wet/dry cycles, elevated soil biological activity (microbes and roots), addition of organics and the judicious use and/or elimination of soil disturbance.

For many of our soils, tillage will provide little to no benefit or may even increase soil compaction. However, there are some exceptions. When fields are heavily rutted, targeted tillage operations are required to level the field.

continued on page 9
If subsoil compaction is severe enough to significantly limit crop yield, deep tillage can be considered, but should be targeted to those areas of the fields where it is justified.

All tillage passes require dry soil conditions and proper equipment selection, adjustment, and operation to be effective. To optimize the impact, quickly follow tillage with the planting of a crop or cover crop to fill the newly created fracture planes with roots. Root growth can help keep tillage fractures “propped open,” allowing for continued root growth and water and air movement throughout the soil profile.

**Look for long-term solutions**

To reduce soil compaction, consider the long-term reduction or elimination of tillage where possible, as well as the use of cropping practices to promote diverse and continuous root growth. Root growth, through physical, chemical, and biological processes, reduces compaction with the long-term formation and stabilization of soil aggregates and accumulation of soil organic matter. Soil enhancing agronomic practices include planting cover crops, adding organics such as manures or composts, and altering crop rotations to provide year-round plant growth.

While cover crops are commonly used to maintain living cover and roots throughout the year ([on.hoards.com/covercrops](on.hoards.com/covercrops)), the same concept can be extended to our crop rotations.

If forage is needed on the farm, a potential crop rotation could include planting a short-season corn silage hybrid; a warm-season grass or grass mix, such as sorghum-sudangrass or forage sorghum; or a spring cereal and legume mix. This should be followed immediately after harvest with:

- A winter rye or winter triticale cover crop for spring forage harvest
- A winter wheat crop for late summer grain or grain and straw harvest
- A multispecies cover crop for grazing or for soil building, ideally with an overwintering cover crop species
- Summer seeding alfalfa

These options keep living roots in the soil all year round and create options for planting of shorter season cash or forage crops followed by another forage or cover crop in 2021. The above rotation changes also potentially improve the number of application windows for manure and/or shift the manure applications throughout the season to allow for greater flexibility in nutrient use timing.

If forage isn’t needed on the farm, potential rotations to maximize living roots could include shorter season grain varieties, followed by a winter cereal for grain or an overwintering cover crop or cover crop mix. Interseeding or overseeding cover crops into the standing cash grain crop is also an option.

**Make good decisions**

While change looks easy on paper, choosing the right soil aggregate building tools for your farm likely involve conversations with your agronomist as well as nutritionist. Impacts on feed quantity and quality, capacity for feed storage, soil fertility and manure management, crop species and hybrid selection, herbicide applications and restrictions, windows for field operations, and labor and equipment requirements are just a few of the potential factors to discuss before committing to a new practice.

Rebuilding soil aggregation and reducing compaction takes time. However, we can enhance the process by choosing agronomic practices that reduce soil disturbance, manage equipment and traffic impacts, support root and microbial activity, and build soil organic matter. And lastly, even though it’s easier said than done, all field operations should only be completed when the soil is suitably dry. Building soil aggregates starts by first protecting what we have!

Wood County’s No-Till Drill

The Wood County Land and Water Conservation Department has a no-till drill available for rent. This is to encourage no-till practices, pasture improvement through interseeding, and habitat improvement.

The Great Plains drill is 10’ wide and requires a 70 hp tractor. The operating agreement can be found by going to the Wood County Website: www.co.wood.wi.us. Find the Land and Water Conservation webpage, and click on Soil Health Information. Or call 715-421-8475.

Cost: $60 + $6/acre

NEW Cost-Sharing Available for the Mill Creek Watershed

Contour Cropping $9/acre
Strip Cropping $13.50/acre
Field Strip Cropping $7.50/acre

Up to 4 year cost-sharing
No-Till $18.50/acre
Cover Crop $25/acre
Nutrient Management $40/acre

Hard Practices
*Hard practices are cost-shared at 70%
Grade Stabilization
Manure Storage Closure
Manure Storage Systems
Milking Center Waste Control Systems
Prescribed Grazing
Riparian Buffers
Roof Runoff Systems
Barnyard Runoff Control Systems
Waste Transfer System
Wastewater Treatment Strips
Water and Sediment Control Basins
Waterway Systems
Wetland Restoration
Stream Crossings including Fencing
Streambank/Shoreline Fencing
Streambank/Shoreline Rip-rapping
Streambank/Shoreline Shaping & Seeding
Diversions
Feed Storage Leachate

Land & Water Conservation Offices
Portage County ~ 715-346-1334
Wood County ~ 715-421-8475

Prairie STRIPS to reduce phosphorus loss while providing pollinator habitat

Air seeder planting cover crop into corn

No-till corn into corn
by Dr. Dan Undersander, Forage Agronomist  
Department of Agronomy, University of Wisconsin

PDF Version

First, we should put things into perspective by stating that alfalfa is still the best choice, in most cases, for long term production of high quality, high tonnage harvested forage. We also expect to see increased use of corn silage, where topography and farm plans permit in dairy rations, in the alfalfa-based rations.

While grasses can produce high quality forage well in grazing systems, they tend to be high in fiber when allowed to grow to higher yields for harvest as hay or haylage. The high fiber will restrict animal intake in dairy rations. Other legumes, while providing good forage quality, tend to be lower yielding than alfalfa.

The alternatives available for harvested forage tend to be annual crops (table 1). The first portion of the table, covering small grains, is listed in order according to when the crops would normally be harvested for forage. Yield and quality values are intended to represent average occurrences to allow comparisons among forages. It should be recognized that yields on individual farms may be more or less than shown depending on management and weather conditions. All yields are expressed as dry matter tons/acre. When intending use is for silage divide dry matter yields by 0.35 to convert to tons silage at 65% moisture. Yields are estimated for southern Wisconsin under high management and should be adjusted accordingly for other regions. Crude Protein is expressed on a dry matter basis. For crops where more than one harvest is likely, only the date of the first harvest is listed.

Small grains should be harvested at boot stage (head beginning to emerge from leaf whirl) for milking dairy cattle and at early heading for other categories of animals. The same is true for small grains seeded with peas. Small grains are definitely cool season crops and have greatly reduced yields when planted later in the spring or over summer. Fall plantings,
(except for oats) tend to produce little forage in the seeding year. We would not recommend late summer seeding alfalfa with small grains as the cover crop will slow down development of alfalfa and increase risk of winterkill.

Seeding a mixture of spring oats and winter wheat in the fall will allow for forage harvest in October (primarily oats) and again in the spring (winter wheat).

Small grain-field pea mixtures have gained popularity as an emergency crop. Primary benefit of peas mixed with small grains is to improve quality and palatability; yield effects are variable ranging from 0 to 0.5 t/a increases. Peas may be mixed with oats, triticale, or barley. The top yielding varieties of each species perform better than the poorer-yielding varieties of all other small grain species. Small grain-pea mixtures have wider harvest window. Increased forage quality has been observed with higher pea seeding rates up to 100 lb/A. However, diminishing returns and cost of peas suggest that the optimum seeding rate is 20 to 30 lb peas per acre.

Corn should be harvested for silage at beginning at 65% moisture (which may be close to half milk line). Forage sorghum should be harvested for silage at milk stage.

Forage sorghum, sudangrasses, and sorghum/sudangrass hybrids are better adapted than most species to drought, high temperature, water logging, and low soil pH than corn, but will yield less in seasons with cool August and September. Sudangrass and sorghum/sudangrass hybrids should be harvested at 3 feet of height (two to three cuttings for season). Harvesting at later maturity may increase yield but will result in very low forage quality.

Soybeans should be harvested at R7 stage (when first pods are beginning to turn color). The idea is to harvest just before beans have begun to form. Soybeans do not ensile well because of high oil content and should be mixed with a grass (e.g. corn, sorghum, sudangrass) at chopping to improve ensiling characteristics.

*Spring Oats 8 Weeks Growth*
Table 1. Forage Planting Date, Harvest Date, Yield and Quality of Annual Forage Crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>Planting Date</th>
<th>Maturity Date</th>
<th>Yield (t/a)</th>
<th>Crude Protein</th>
<th>RFV</th>
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<td>Winter Rye</td>
<td>September</td>
<td>mid May</td>
<td>3-3.5</td>
<td>12-13</td>
<td>85-90</td>
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<tr>
<td>Winter Wheat</td>
<td>September</td>
<td>late May</td>
<td>3-3.5</td>
<td>11-12</td>
<td>85-90</td>
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<tr>
<td>Winter Triticale</td>
<td>September</td>
<td>early June</td>
<td>3-3.5</td>
<td>11-12</td>
<td>85-90</td>
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<td>Barley</td>
<td>mid April</td>
<td>mid June</td>
<td>2.5-3</td>
<td>12-13</td>
<td>100-110</td>
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<tr>
<td>Barley &amp; peas</td>
<td>mid April</td>
<td>mid June</td>
<td>2.5-3</td>
<td>15-16</td>
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<td>Oats</td>
<td>mid April</td>
<td>late June</td>
<td>2.5-3</td>
<td>12-13</td>
<td>115-120</td>
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<tr>
<td>Oats &amp; peas</td>
<td>mid April</td>
<td>late June</td>
<td>2.5-3</td>
<td>15-16</td>
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<tr>
<td>Wheat (spring)</td>
<td>mid April</td>
<td>early July</td>
<td>2.5-3</td>
<td>11-12</td>
<td>100-110</td>
</tr>
<tr>
<td>Triticale (spring)</td>
<td>mid April</td>
<td>mid July</td>
<td>2.5-3</td>
<td>13-14</td>
<td>100-110</td>
</tr>
<tr>
<td>Sp. triticale &amp; pea</td>
<td>mid April</td>
<td>mid July</td>
<td>2.5-3</td>
<td>15-16</td>
<td>115-120</td>
</tr>
<tr>
<td>Corn (silage)</td>
<td>May 1</td>
<td>mid Sept</td>
<td>7-8</td>
<td>9-10</td>
<td>95-105</td>
</tr>
<tr>
<td>Corn (silage)</td>
<td>June 1</td>
<td>mid Sept</td>
<td>5-6</td>
<td>9-10</td>
<td>95-105</td>
</tr>
<tr>
<td>Corn (silage)</td>
<td>July 1</td>
<td>late Sept</td>
<td>2-3</td>
<td>9-10</td>
<td>95-105</td>
</tr>
<tr>
<td>Forage sorghum1</td>
<td>June 1</td>
<td>mid Sept</td>
<td>6-9</td>
<td>10-11</td>
<td>90-100</td>
</tr>
<tr>
<td>Forage sorghum</td>
<td>July 1</td>
<td>mid Sept</td>
<td>2-4</td>
<td>10-11</td>
<td>90-100</td>
</tr>
<tr>
<td>Sudangrass1</td>
<td>June 1</td>
<td>mid July</td>
<td>3-5</td>
<td>11-13</td>
<td>90-100</td>
</tr>
<tr>
<td>Sudangrass</td>
<td>July 1</td>
<td>mid August</td>
<td>2-4</td>
<td>11-13</td>
<td>90-100</td>
</tr>
<tr>
<td>Sorghum-sudangrass hybrid1</td>
<td>June 1</td>
<td>mid July</td>
<td>4-6</td>
<td>12-14</td>
<td>90-100</td>
</tr>
<tr>
<td>Sorghum-sudangrass hybrid</td>
<td>July 1</td>
<td>mid August</td>
<td>3-5</td>
<td>12-14</td>
<td>90-100</td>
</tr>
<tr>
<td>Soybeans</td>
<td>May 15</td>
<td>July 1</td>
<td>1-1.5</td>
<td>20-21</td>
<td>120-140</td>
</tr>
<tr>
<td>Soybeans</td>
<td>May 15</td>
<td>August 1</td>
<td>1.5-2.5</td>
<td>18-20</td>
<td>120-140</td>
</tr>
<tr>
<td>Soybeans</td>
<td>May 15</td>
<td>Sept 15</td>
<td>3-4</td>
<td>18-20</td>
<td>120-140</td>
</tr>
<tr>
<td>Soybeans</td>
<td>June 1</td>
<td>Aug - Sept</td>
<td>2-3</td>
<td>18-20</td>
<td>120-140</td>
</tr>
<tr>
<td>Soybeans</td>
<td>July 1</td>
<td>September</td>
<td>1-2</td>
<td>18-20</td>
<td>120-140</td>
</tr>
<tr>
<td>Grain sorghum &amp; soybean</td>
<td>June 1</td>
<td>September</td>
<td>6-7</td>
<td>11-12</td>
<td>95-110</td>
</tr>
<tr>
<td>Forage sorghum &amp; soybean</td>
<td>June 1</td>
<td>September</td>
<td>6-9</td>
<td>10-11</td>
<td>90-105</td>
</tr>
<tr>
<td>Rape</td>
<td>mid June</td>
<td>September</td>
<td>2-3</td>
<td>20-25</td>
<td>150-250</td>
</tr>
<tr>
<td>Turnip - tops</td>
<td>mid-June to Aug 1</td>
<td>September</td>
<td>2-3</td>
<td>20-25</td>
<td>150-250</td>
</tr>
<tr>
<td>Turnip - beet</td>
<td>-----------</td>
<td>October</td>
<td>0.5</td>
<td>10-20</td>
<td>-------</td>
</tr>
<tr>
<td>Oats (spring)</td>
<td>August</td>
<td>October</td>
<td>1-2</td>
<td>10-11</td>
<td>140-150</td>
</tr>
<tr>
<td>Barley (spring)</td>
<td>August</td>
<td>October</td>
<td>1-2</td>
<td>10-11</td>
<td>110-130</td>
</tr>
<tr>
<td>Triticale (spring)</td>
<td>August</td>
<td>October</td>
<td>0.5-1</td>
<td>13-14</td>
<td>130-140</td>
</tr>
<tr>
<td>Wheat (winter)</td>
<td>August</td>
<td>October</td>
<td>0.5-1</td>
<td>12-13</td>
<td>150-160</td>
</tr>
<tr>
<td>Mix (winter wheat &amp; oats)</td>
<td>August</td>
<td>Oct &amp; May</td>
<td>3-5</td>
<td>10-13</td>
<td>100-120</td>
</tr>
</tbody>
</table>

1 BMR Forage Sorghum and Sudangrass recommended for higher quality

December 1996, Revised 2013
Cover Crops at Work: Increasing Infiltration

An overview of cover crop impacts on water infiltration to the soil

Cover Crops and Infiltration

Cover crops can successfully increase the infiltration of water into the soil layer. They do this by covering the ground with their biomass and by improving soil structure with their roots. Some specific mechanisms include:

- Preventing soil surface sealing (where the soil becomes impermeable after rainfall)
- Improving soil structure with increased soil aggregate stability, soil porosity and water storage capacity

Different types of cover crops may have different effects on infiltration because of their unique biomass growth and composition, and results vary based on how long the cover crop is grown.

- Non-legume cover crops, including bromegrass and rye, increased infiltration by 8% to 462%, based on a range of studies.
- Legume cover crops, including crimson clover, hairy vetch and strawberry clover, increased infiltration by 39% to 528%.
- Soil surface cover by residue alone increased infiltration by up to 180% in field trials.

Management Decisions Matter

Management that encourages continuous ground coverage by residues and cover crops will be best suited to positively impact the infiltration of water to the soil surface. Tillage practices are another important management decision for water infiltration.

- No-till management has been found to increase rainfall infiltration.
- One study reported that runoff from no-till fields was two to four times less than from conventional-till plots.

A Far-Reaching Solution

When water is able to enter the soil profile, rather than running off the soil surface, there is less risk of displacing soil particles through erosion. Increased infiltration also signals possible benefits to the water conditions within the soil profile. By keeping the soil in place and improving soil conditions, cover crops are mitigating pollution risk while also boosting the productive capacity of the soil.

Unless otherwise cited, all data comes from a bibliography compiled by SARE and the University of Missouri.

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2020 Portage County Agricultural Clean Sweep
Collection and Disposal of Agricultural Hazardous Waste

When: Thursday, June 11th, 12 PM—4 PM
Where: Portage County Transfer Facility. 650 Moore Rd. Plover, WI 54467

If you are an active farmer, owner of agricultural land, nursery, orchard or greenhouse in Portage County, come dispose of unused/unwanted hazardous waste. Must pre-register with an appointment. If submitting forms via mail/email, we will contact you to schedule a time for drop-off. No heavy-equipment available to unload material.

**WILL Accept**

For a Fee ($0.75/lbs.)
- Unwanted, unused, expired, or discontinued agricultural chemicals. (Pesticides, herbicides, insecticides, fungicides)
- Other agricultural chemicals including: teat wash, oil-based paint, solvents, degreasers, fuels
- Any mercury or mercury containing devices will be $3.00/lbs.

**No Charge**
- Used Anti-freeze (2.5 gal containers or less)
- Motor oil (2.5 gal. containers or less)
- Brake/transmission fluid (2.5 gal containers or less)

**WILL NOT Accept**
- Empty agricultural chemical containers
- Explosives, radioactive materials
- Compressed gas cylinders
- Infectious or biological wastes
- Medications

Pre-register by June 4th to help us prepare for the event. To pre-register, fill out form or call Abby Lichtscheidl, Portage County Solid Waste, at (715) 346-1931. Forms may be submitted via email at solidwaste@co.portage.wi.us, in person or mailed to Portage County Solid Waste (600 Moore Rd. Plover, WI 54467) If submitting via mail/email, we will contact you to schedule a drop-off time.

Name: ____________________________ Email: _______________________________________
Address: __________________________________________ Phone: ________________________

<table>
<thead>
<tr>
<th>Description of Waste (pesticide, herbicide, fuel, solvents, unknown)</th>
<th>Number of containers</th>
<th>Container Size</th>
<th>Total in pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Back in the 1960s, DNR wildlife biologists C. Kabat and D. R. Thompson told us “the statewide population of bobwhite quail declined from an estimated high of 1 bird per acre in the 1850’s to a low of less than 1 bird per 40 acres in 1960”...and was “directly correlated to the loss of hedgerow cover.” As hedgerows, grasses and wildflowers along cultivated fields disappeared, so did gamebirds, songbirds and pollinating insects.

In a 1941 issue of Wisconsin Agriculturist and Farmer, Aldo Leopold wrote, “Summer without bobwhites whistling in the fence rows is not really summer, but only an imitation of it. Yet many a southern Wisconsin farmer, fond of his quail, has himself evicted this bird from his acres without being aware of how or why. Two changes in the land are, I think, responsible for the decline of quail: smaller and fewer weeds due to declining fertility, and smaller and fewer thickets due to the elimination of fence rows and pasturing of woodlots. The tall weeds were winter food, and the thickets winter cover.”

And ever since the 1963 Kabat-Thompson report came out, we know the solution to restoring quail populations across its range is improving habitat. A direct correlation between hedgerow cover and quail populations has been well-documented. “Quail can be maintained in Wisconsin but only with a concerted effort to preserve existing hedgerows and restoration of this habitat feature so large blocks of land contain a minimum of 1 mile of hedgerow to 450 acres of land...Fortunately, hedgerows have multiple values to other game, songbirds, beneficial insects and also soil and water conservation values.”

A recent trip to our county’s Buena Vista grasslands was an eye-opener. Mile after mile of windbreak hedgerows that have been planted over the past several years on private land are bearing fruit – namely songbirds, beneficial insects and also soil and water conservation values. I contacted the Central Wisconsin Windshed Partnership (CWWP) https://www.goldensandsrcd.org/sustainable-agriculture and had 200 yards of hedgerow plants incorporated on our property amid a field of prairie grasses.

Elsewhere in this newsletter, how to create pollinator habitat and planting prairie strips are discussed. Why not add hedgerows to your list of projects this year? Then perhaps whistling bobwhites and cackling pheasants will join thousands of pollinators on your land. One can only hope.