

Over the Fenceline

Summer 2018

Battle River
Research Group

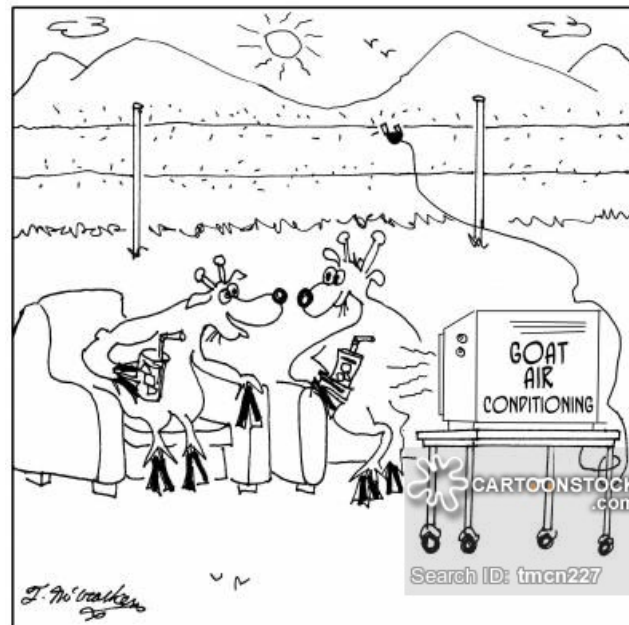


Be sure to check out our Upcoming Events
on Page 8!

Castor Field Day July 19

OffSite Watering Systems and Riparian Health July 24

Grazing School with Jim Gerrish August 13



"See, I told you this electric fence
would come in handy."

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Staff**Manager & Extension/Environmental Coordinator:**

Martina Alder

Crop Program Coordinator:

Vacant

Summer Research Assistants:

Garth Eyolfson

Jessica Norman

THANK YOU FOR YOUR CONTINUED SUPPORT

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Herbicide Resistance – Nearer than You Think

Weed resistance has been an issue in crop production for many years, bubbling away in the background. Wild oats and a few other weeds have developed resistance to many popular herbicides. As yet, it isn't doesn't seem to be real big issue as there are still some herbicide options that still works. Beware, we are starting to run out of options!

Most producers are aware of the issue but, unless it affects you directly, it isn't a huge issue. Resistance to glyphosate, commonly known as RoundUp® is found in other parts of the world and Canada. We now have glyphosate resistance in kochia in southern Alberta and it continues to spread. This should serve

as a wake-up call to producers of the importance of rotating different herbicide groups when treating problem weeds. Failure to take this problem seriously will eventually result in the loss of our most popular weed control products.

Wild oats currently hold the title for the greatest number of herbicide groups a weed is resistant to. Hugh Beckie, Agriculture Canada's resistance expert, found in 2007, 39 percent of Alberta fields had some group 1 resistant wild oats. Since 2007, the numbers of fields with resistant wild oats has only increased. The majority of herbicides used for wild oat control are group 1. If wild oats is resistant to a single herbicide

in a chemical group, it is pretty well resistant to all the herbicides that use that particular mode of action. Also in 2007, 12% of fields had group 2 resistant wild oats in them and 8% had wild oats resistant to both group 1 and 2. Soil applied wild oat control is in group 8, which is older chemistry and 15% of fields had wild oats resistant to this as well, despite the fact it hasn't been used much for the last 20 years. Other weeds with serious herbicide resistance issues include kochia resistant to group 2 herbicides, which is one of our favourite broadleaf control groups, chickweed resistant to group 2 and spiny annual sow thistle which is found resistant to group 2 herbicides in 100% of the fields in the province. Cleavers, hemp nettle, green foxtail, wild mustard, smartweed, Russian thistle and stinkweed are some of the other weeds found to have developed resistance to Group 2 herbicides. That group contain the sulfonylureas, the "imi's" and florasulam. Back in 2007 it was estimated that 40% of annually cropped land had some herbicide resistance issues. Consider all kochia potential resistant to group 2.

How can you identify herbicide resistance? Investigate areas in the field where weed control did not occur. Rule out other factors that might have affected herbicide performance including spray misses, unfavourable weather conditions, application of herbicide at wrong leaf stage or late weed flushes. Other warning signs include other weeds listed on herbicide being controlled adequately, patchy control with no reasonable explanation, a history of herbicide failure in the same area, lack of signs of herbicide injury on plants, and finally, a history of using the same herbicide group on the land year after year.

Why does weed resistance develop? When you use the same herbicide or products using the same mode of action, you are actually selecting for those plants that are either not affected or affected less by the active ingredient than other plants. By killing off susceptible plants you are actually setting the stage for the resistant ones to thrive as all their competition is killed off. Herbicides that have one specific mode of action are most likely to develop resistant weeds. Group 1 and group 2 herbicides fall into this category. However, the most important reason for having resistance show up is due to repeated use of the same chemical. Glyphosate

falls into this category. Over the last 20 years, the price of glyphosate has dropped to the point where it is relatively cheap. The move to conservation tillage and zero tillage relies heavily on using glyphosate to control volunteers and early germinating weeds. Herbicide tolerant crops further encourage glyphosate use to the point now where a piece of land could have 3 to 4 applications of glyphosate in a growing season. A short crop rotations and a lack of crop variety has set up the conditions to encourage weed resistance to emerge.

Plants are endlessly inventive in finding ways around the herbicide actions that control them. In the United States and Australia, glyphosate resistance has occurred in a large number of troublesome weeds. In some cases, they have been driven to use manual weed control through hand picking to deal with resistant weeds. Some plants have developed resistance through multiplying the site where the herbicide blocks plant growth. In some cases they have over 100 sites in the cells so that there is no way the cell can absorb enough herbicide to block all the pathways and the plant can continue to grow. Another work around weeds have developed is to be hypersensitive to glyphosate so that it prevents the glyphosate from being translocated. This allows the unaffected areas to continue growing.

Keep in mind that pesticide companies are having greater difficulty finding new products or modes of action that work as herbicides. There is not an unending supply of new products out there to control problem weeds. Miracle cures rarely happen. Herbicide companies know about resistance and they have partially dealt with the issue by using mixes of herbicides from different herbicides groups to have multiple modes of action work on the weeds. A lot of the "new" herbicides that are released annually are only co-packs or premixed formulations of existing products. Combining products helps somewhat but it does not address the real issue of specific herbicide overuse. It may extend the lifetime of a herbicide where resistance is becoming a real problem, but it doesn't solve the problem. Then you have weeds that develop multiple resistance to a wide variety of herbicide groups and modes. Thus the rise of the "superweed".

Continued on Page 7...

Member Spotlight

New to our quarterly newsletters, we will be interviewing one of our BRRG Members and featuring them in our "Member Spotlight."

Below we have interviewed Brianna Madge, a rancher in the Paintearth County.

Would you like to be our next member spotlight? email: env@battleriverresearch.com



Introduce yourself and give us a brief introduction into what you do on your operation.

I am Brianna Madge. After 3 years at Lakeland College I returned home to farm with my parents near Castor, AB. We operate a mixed farming operation with about 250 hd of commercial Cattle and 900 ac of crop land.

1. When did you begin your journey of ranching?

Well I've been on the farm my whole life and was always involved with what was going on. But officially I've only been back full time since summer of 2016. I bought some of my own cows in 2017 and am jumping head first into this whole ranching thing.

2. What do you as a female rancher running a cattle operation believe is the most important aspect of the work you do? What is the one thing you wish everybody knew about?

It's hard to say what the most important part of what we do is. But I love what I do raising quality beef and I can't imagine doing anything else.

3. What are two of the most important lessons you could share about your experience's in the Agriculture Industry?

Never give up
When working with family communication is key!!

4. Has there been anything along the way in your years of farming that maybe didn't work out the way you had hoped? Any surprises?

There's always surprises when dealing with cattle and the weather!

5. If you could turn back the clock to when you began farming and know what you know now, what piece of advice would you give yourself?

Honestly Ive just barely starting my farming journey so still figuring everything out. Give me another 5-10 years I'm sure there's a million things that I would have wished Id know sooner haha.

6. What have you found most valuable from the Battle River Research Group since becoming a member?

The most valuable thing would be the extension events and crop tours that are put on each year.



IS IT TIME YOU STARTED WITH A COVER CROP?

The funny thing about implementing change is that it's possible to over-think a situation and become mired in the process of simply getting started. A person becomes so concerned with the challenges of the "how" that they begin to lose sight of the value of the "why."

In other words, getting started can be the hardest thing to do with something new, even though it's also the most important.

Cover crops are a good example. It's more than a matter of whether to grow a single-species cover. Some farmers have gone that route and are frustrated by stand issues with red clover after winter wheat. But just because one single-species option doesn't fare well doesn't mean there aren't other options, or that multi-species blends are always better.

For Jake Munroe, what's important first and foremost is that growers determine what's best for them and their operations. Should farmers be investing in cover crops? Absolutely, he says. But it's always a matter of taking the "one-step-at-a-time" approach.

"It's a case of an individual grower figuring out what makes sense on their operation and what level of challenge or risk they're willing to accept in taking on that new practice," says Munroe, field crops soil fertility specialist with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). "Then they can find something simple to start with and build confidence from there."

Munroe acknowledges the move from the more traditional red-clover-into-winter-wheat standard, agreeing there are those who've found a lack of consistency with red clover. In spite of research findings from scientists Bill Deen and Dave Hooker of the University of Guelph that favour red clover, there's a contingent of farmers who find the species exceedingly frustrating to manage. Instead, they're trying oats or peas, or multi-species mixes, depending on what they're looking for.

New fertility paradigm

Among some advisers and agronomists, there's a growing sentiment that when cover crop blends get more complex, the likelihood that they will need fertilizer also increases.

That can inject a degree of doubt in the minds of potential cover crop users. Should you fertilize first? But here again comes the benefit of "just getting started." Munroe sees no clear indication of a "fertility first" requirement.

"You can have success growing a cover crop on lower soil-test soils and have a net positive effect because with red clover or another legume, you're fixing nitrogen and adding it to the system and for the subsequent crop," he says. "In cases where you're growing a non-legume, you're not having a detrimental effect, unless you're harvesting it and that needs to be considered in terms of nutrient management and managing soil fertility."

All of the old clichés apply about cover crops. They're another tool in the farmer's toolbox and it takes time to find the fit that creates the most value for your specific farm. And they aren't a silver bullet.

"Growing a cover crop is not going to automatically increase soil fertility levels," says Munroe. "With the exception of legumes, you're not actually adding nutrients to the soil. Instead, you might be helping to scavenge some nutrients left over from the previous crop and help reduce the amount that leaches below the root zone. Depending on the crop and seeding date and amount of growth, you might be helping to capture nutrients from deeper in the subsoil and bring them to the topsoil. You will fix carbon and add organic matter and easily available sugars for soil life, which in time can help to enhance soil structure and rooting access and nutrient cycling, and how well residue is broken down."

IS IT TIME YOU STARTED WITH A COVER CROP? CONT.

Some growers are getting ahead of themselves, and it's important not to forget about the fundamentals when adopting any new practice. In Munroe's view, the fundamentals to a cropping rotation call for diversity, including forages (when possible) and winter wheat as a regular part of the rotation. Another consideration is to look for ways to maintain soil fertility and soil organic matter.

There's also an added layer of complexity with cover crops in the use of nutrient sources including manure or organic amendments. Some of the nutrients from those sources can be taken up very rapidly in cover crop biomass and held in a form that protects against loss. Munroe states there are growers who plant a cover crop and then build on the fertility, and plenty who address the fertility without adding cover crops at all. But he believes they're missing out on some benefits from including cover crops in their rotation. Conversely, there are growers who are expecting a lot from their cover crops in terms of adding nutrients.

Ongoing research makes red clover's impact hard to debate, yet frustration in growing it remains, tempting farmers try something different. photo: Supplied
Researching the impact

Although there's a wealth of long-term research on the effects of red clover on subsequent corn yields (by Hooker and Deen with the University of Guelph), Munroe emphasizes that Ontario's agri-food sector is still in its early days with long-term research on other cover crop options. Some growers want to see some type of research data on those. There's also the argument about cyclically low commodity prices and tightening margins, and the question of whether a grower can really afford to grow cover crops, particularly if more fertilizer is needed for more complex blends.

"The other approach is to look at it from the perspective of 'Can I afford not to?'" says Munroe. "In that case, you either look at some of the challenges in the situation, and — say, if there's soil erosion that's visible in the field, cover crops can be a real tool to help minimize

that."

The erosion aspect has been a large part of the cover crop debate, particularly in the past three to five years. However, part of what complicates that assessment is the difficulty in establishing a definitive dollar value on a volume of soil. Research in the U.S. in 2014 tried to define a value attached to losses in "snirt" — snow and soil combined. However those numbers reflect dollars lost in N, P, and K, not an actual value per unit of soil lost. Munroe states there is a value to the clay particles deposited into the ditch by wind or water erosion but it's a very difficult measurement, especially on an annual basis.

"Really, you need to look at the entire system in this way, looking at the rotation benefit from wheat, the non-nutrient benefit from organic amendments and that doesn't happen within a one- or two-year time-frame," Munroe adds. "We're looking at five to 10 to 15 years."

Agriculture is still in the process of understanding the complexity and multiple layers of soil interactions, whether it's seed-to-soil, soil fertility issues, soil biology or interactions with herbicides and pests. Then there's another layer when adding cover crops. Yet Munroe emphasizes that regardless of those complexities, keeping the soil covered and protected through the season — and having live roots growing and contributing to the crumb and granular structure in soil — is where a grower can make tangible improvements, such as more even emergence.

Three added considerations

As important as it is to get started in working with cover crops (once the decision is made and the comfort level is set), Munroe believes growers can do more with their choices by keeping three important aspects in mind:

1. A deeper understanding of the soil profile. Munroe advocates growers begin to look at their soils with a different understanding — beyond just six inches of topsoil where fertilizer and nutrient recommendations

work well. Although the subsoil is “nutrient dilute,” it makes up considerable volumes.

“There isn’t a high nutrient concentration there, but there’s a lot of volume to access,” says Munroe. “When we’re talking about cover crops and soil fertility, one of the key things to wrap our heads around is what we can do to get access to some of the subsoil that we might not normally get to. And then bring those nutrients up to where they’re more accessible for the following crop.”

At the same time, it provides some preferential pathways for subsequent crops’ roots to follow and gain access, particularly to water in a dry summer.

2. Sometimes, agriculture doesn’t take full advantage of the synergies that come with applying manure or other organic amendments with cover crops. By doing that, Munroe says that we’re increasing the above- and below-ground biomass of the cover crop while capturing some of those nutrients, tying them up in the cover crop for a time and reducing the susceptibility of losses. Fix carbon dioxide and keep it in place with a crop that you’re not going to harvest and add it that way. Cover crops are certainly part of the ongoing trend in adding soil organic matter.

3. A general statement — nutrient uptake is more than just soil test levels and the 4Rs of nutrient application. Granted, they’re key pieces of information in practice, but over time there also has to be an accounting of those practices that improve soil structure and crop rooting, and provide greater access to soil nutrients.

“I understand that it can be more challenging because it’s less prescriptive to think in that way — it’s not a recipe,” concedes Munroe. “But if growers can think of what they can do to provide that crop root the best environment possible to access nutrients in the soil, that’s just going to improve the efficiency of nutrient uptake in our cropping systems.”

Ralph Pearce
CG Production Editor

Herbicide Resistance - Nearer Than You Think Continued from Page 3:

Agriculture Canada weed researchers are very aware of this problem. The solution to herbicide resistance is to use all the tools in the weed control toolbox. Herbicides are just one tool.

Other approaches to weed control to reduce resistance or to prevent it developing include limited cultivation, later seeding, heavy seeding to provide greater crop competition to the weeds, use of perennial forages in the rotation to reduce the weed seed bank, herbicide group rotations, using multiple mode of action on the weeds and a varied crop rotation.

Canada has reported resistance issues in weeds to at least 6 different herbicide groups. We have also reported resistance in wild oats to 1, 2, 3 and even 4 different herbicide group in one population. If we ignore these indications, the day may come when we might lose some of our best herbicide tools from the weed management tool box. Pay attention. Scout your fields. Keep field records. Use a good crop and herbicide group rotation to keep this problem at bay. The consequences of not doing so are not cheap or pretty! Contact the Ag-Info Centre or your local agronomist for more information.

Harry Brook
Crop Specialist
Ag-Info Center



Up Coming Events

Join the Battle River Research Group for our:

Castor Field Day

Thursday July 19, 2018
9:30am-3pm

Come listen to a variety of speakers:

Kelly Turkington Ph.D. - Research Scientist - Agriculture & Agri Food Canada
"Key Strategies for Plant Disease Management"

Rob Dunn - Farm Wise Inc.
"Potential for Grain Intercrops and Annual Covers"

Claire Langois - Cereal Specialist - Alberta Agriculture & Forestry
"Increase Seed for Increased Maturity and Possibly Yield, all with Less Headaches"

Yadeta Kabeta - Field Crop Development Center
"Selecting Barley Varieties for Forage Production"

David Simbo - Alberta Barley
Update from Alberta Barley

Trials at our Castor site Include:

Lentils, Flax, Soybeans, Canadian Humalite Barley, Cereal Regional Variety Trials, Wheat & Canola Seeding Date Trial, Silage Regional Variety Trial (Oats, Barley, Triticale, Pulse Mixtures), Cover Crops and Intercropping Demonstrations!

Carpool with BRRG staff from the Forestburg Office, or meet us East of Castor at NE 6 38-11 W4 (North on RR 115/Hwy 599)

Battle River Research Group Members: Free
Non Members: \$20

Includes Lunch!

Please Register by July 16, 2018

To Register:
www.battliverresearch.com/upcomingevents
events@battliverresearch.com
780-582-7308

FIELD DAY

WATERING SYSTEMS and RIPARIAN HEALTH

July 24, 2018, 10am-3pm
Battle River valley near Brownfield

Join us on the banks of the Battle River for hands-on demonstrations of various livestock watering system options, including:

- solar and wind systems, and
- dugout, spring and well development

Other topics will include: riparian plant ID, measuring the health of riparian areas, and riparian management strategies

Free lunch included!

Register now to secure your spot by calling 780-672-0276 or emailing sarah@battliverwatershed.ca

Directions: from Brownfield, travel west on Township Rd 390, then north on Range Rd 111. We will meet at the north end of this road.



Agriculture and Agri-Food Canada



The Field Crop Development Centre and Lacombe Research and Development Centre present

Lacombe Field Day

Wednesday, July 25, 2018

9 a.m. - 4:00 p.m. • Doors open at 8:15 a.m.

- new barley and awnless triticale varieties
- pea leaf weevil ID and recommendations
- innovative FHB management
- bioinformatics in breeding programs
- unique barley varieties behind beer flavour
- variety response to seeding rates
- using genetics to manage disease
- pulse research update



\$20 + GST includes lunch

Register by July 18 through
eservices.alberta.ca/agriculture/lacombefieldday.html
or the Ag-Info Centre at 1-800-387-6030

If you are a government employee, please call 1-800-387-6030 to register

Located at the Field Crop Development Centre, South of Lacombe on Highway 2A, South on Rg Rd 270
CCA credits are available



Alberta Barley



Agriculture and Agri-Food Canada

Agriculture et Agroalimentaire Canada



What determines profitability in grass-farming and what really matters in grazing management?



GRAZING SCHOOL WITH JIM GERRISH

August 13th - Bindloss, AB

4804-43 Ave

Box 339 Forestburg, AB T0B 1N0

Phone: (780) 582-7308

www.battliverresearch.com

Battle River Research Group

