Farming North of 58°

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MARA
Mackenzie Applied Research Association

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EVENTS COMING UP:

April 13th 2015: ***Northern Ag Update***

April 24th and 25th: ***Trade Show: La Crete***

August 7-8: ***Agriculture Fair***

Herbicide Resistance, keeping the weeds at bay

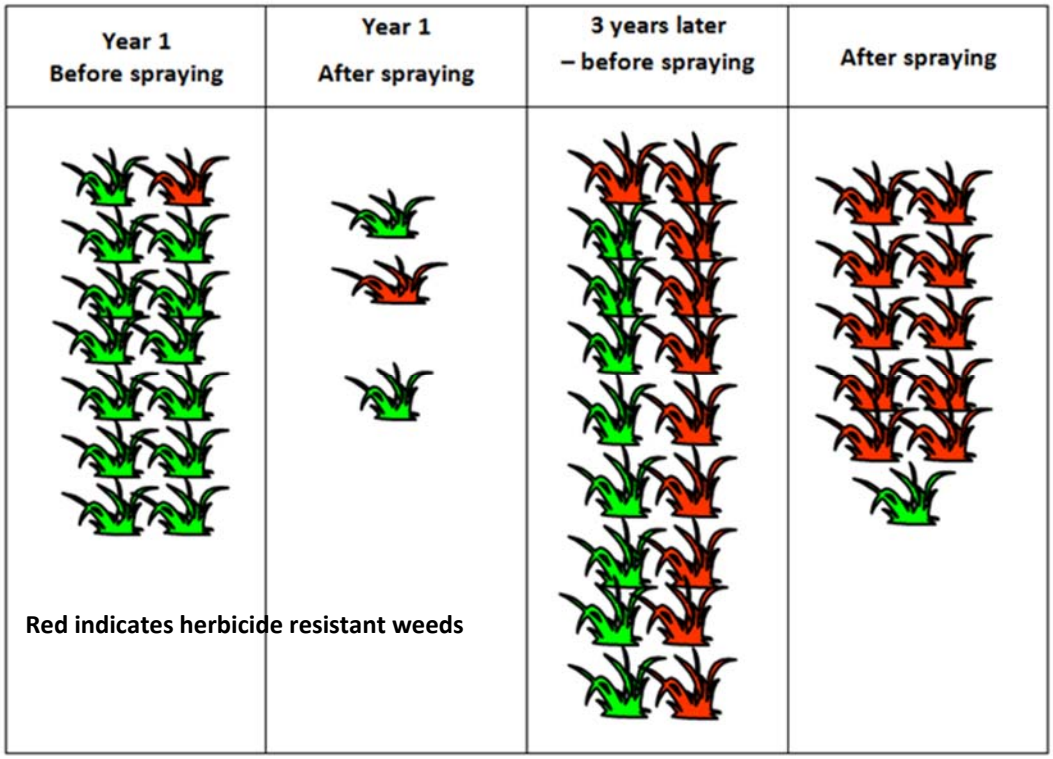
Herbicide resistant weeds are a nuisance to farmers. Herbicide resistance can develop in a weed plant population when a herbicide or a herbicide group is used repeatedly. Similar to the way our bodies can build resistance to some medication after repeated usage, prolonged exposure to the same herbicide or mode of action allows weed plant populations to build natural resistance or 'immunity' to that mode of action. This occurs because some plants are naturally more resistant to herbicides than other plants of the same species in the same field. When these naturally resistant plants survive herbicide treatment, they will go to seed while other non-resistant plants will not. The offspring of the resistant plants will then make up a greater proportion of the next generation of weed species.

In Alberta, wild oats is a major concern when it comes to herbicide resistant weeds since they have been found to be resistant to three different modes of action (Group 1, Group 2, and Group 8). So far in the Peace Region, wild oats resistant to Group 1 active ingredients (for example, clodinafop-propargyl and tralkoxydim), and cleavers resistant to Group 2 active ingredients (for example, imazamethabenz and thifensulfuron-methyl) have been detected in provincial surveys.

According to Alberta Agriculture, as few as 3 plants per square foot of wild oats can translate to an 18% yield loss in canola and wheat crops, if both wild oats and seeded crops emerge around the same time. Also, about 9 false cleavers per square foot was previously found to cut canola yields by 20%.

Herbicide resistant plant seeds can be wind-blown or spread by contaminated equipment. However, it is important to recognize that herbicide resistant can still develop even without contamination from other fields. Again, this is because of that natural variation in the genetics of plants, where more resistant plants will thrive if exposed to the same mode of action repeatedly.

The most important step to prevent herbicide resistance is extended crop rotation. For example, different herbicides are required for pulses, brassicas and cereals, hence helping to minimize the same chemical residue build up which leads to resistance. However, sometimes balancing the long term benefits of rotating crops with the short term financial benefits of growing high-value crops more frequently, can be challenging for a farm business. There are typically not many herbicide options available with these high value crops, meaning that when crops are not rotated frequently, herbicides are also not rotated frequently enough.



Source: http://www.grdc.com.au/Resources/IWMhub/Section-1-Herbicide-resistance

Herbicide Resistance

In an interview with Bayer Crop Science, Dr. Neil Harker, a weed scientist with Agriculture and Agrifood Canada (AAFC) explained: "*There is tremendous financial pressure on growers to grow certain crops a little more often than they should. Even though farmers are well aware of resistance as a possibility, they have short-term financial necessities to pay for equipment, to pay for land or to recover from previous years when prices were not so good. So it's difficult for us to say 'this is what you should be doing' when we don't share their financial circumstances."* Unfortunately, Dr. Harker also noted: *"I think a lot of growers believe there will be a new mode of action in the near future that will help solve their resistance concerns. But when you look at what's been introduced over the last two decades, it doesn't look promising*".

While recognizing that crop rotation is the most important part of preventing herbicide resistance, what else should producers be doing then in order to slow down herbicide resistance weeds? Herbicide resistance increases when herbicide resistant weeds are able to reproduce, therefore, it is crucial to kill as many herbicide resistant weeds as possible before they go to seed. Some advice for achieving this goal is:

- **Increasing crop seeding rates**

In a study by AAFC examining wild oat populations in Fort Vermilion and Beaverlodge, it was found that a 4 year crop rotation, and higher seeding rates between 1 and 2 times the recommended rate was more effective at reducing the amount of wild oat plants than applying herbicide at 100% of the recommended rate.

- **Rotating herbicide groups**

Incorporating herbicides with no known resistance yet to their modes of action may also curb herbicide resistant weed populations. For example, Group 14 pre-seed and pre-emergence soil-applied herbicides (ex. sulfentrazone, or saflufenacil) control cleavers in flax and sunflower fields. For canola producers, rotating the different herbicide systems (Cleafield, LibertyLink and Roundup Ready) with cereals in between can be a very effective way of controlling weeds and minimizing herbicide resistant weed population. Also, Group 4 herbicides (ex. fluroxypyr, dicamba, 2,4-D, MCPA) can be used on their own for cleaver control, or easily mixed with Group 2 herbicides for more widespread coverage. Finally, both Group 4 and Group 11 herbicides (ex. amitrol) can be mixed with glyphosate for broad spectrum control.

- **Crop scouting and hand weeding**

Focus on the weeds that do survive the herbicides and try other physical ways to get them out! This could include tillage between rows, or even if possible, some hand weeding to be able to get rid of weeds before they seed, especially in dense areas (Hint: This could be an excellent way to keep your kids busy during their summer break!).

Do you know these weeds? (Page 6 for answers)

Image Sources: Canola Council & Government of Manitoba

Environmental Farm Plan, Alberta's voluntary farm stewardship program

The Environmental Farm Plan (EFP) is a process that helps identify environmental risks and strengths associated with farm operations and the development of plans to reduce the risks and build on the strengths. The entire EFP process is voluntary and simple. It is a self-assessment and self-planning program. EFP is an ARECA-Alberta Agriculture and Growing Forward initiative. Here are some frequently asked questions.

Q: What are the benefits of EFP?
A: Completion of an Environmental Farm Plan shows our commitment to land and environmental stewardship. Our farming operations impact nature and nature impacts our farming operations. EFP helps identify each of the weaknesses and how they can be fixed, in addition to building on the identified strengths. *Think of EFP as getting your entire farm operation and homestead "certified"*. EFP is also tied to some funding programs. For example, if a producer wants to access government grants under Alberta's Growing Forward 2 On-Farm Stewardship program, EFP is mandatory. More and more agricultural and environmental business opportunities are being linked to the EFP. A farmer who completes an EFP will receive a letter or certificate of Completion to use with grant applications. Some producers may also receive a road sign indicating they have successfully completed an EFP.

Q: The government will know about my farm operations
A: Actually, that is not the case. With the exception of your name and contact information which is sent to Alberta Agriculture for your completion certificate/ letter, no other information is shared with the government. Any information you provide, from your farm's location to your operations never gets to the government. All the EFP technicians are also legally bound not to share producer's information with anyone or any agency unless the producer specifically authorizes so.

Q: EFP is expensive
A: EFP is actually free. The only cost to you is the time used to complete the plan and the cost associated with the actual implementation. And since the whole EFP process is voluntary, you only need to implement the action plan when you have the resources. Alberta Growing Forward 2 may help you fund some of those projects, in a cost-share agreement.

Q: EFP is time consuming
A: The length of time required to complete the EFP depends on the location, nature and type of one's farm enterprise. For example, an organic cereal producer with one farm may spend less time than a conventional farmer growing the same crop. This is because the organic producer may skip all the sections related to pesticides, herbicides, fertilizer use and transport while the conventional producer may need to complete those sections. In simple terms, not all sections need to be completed by every producer. For example, if you have no water source or water body on your farm, you skip the chapters on water quality and usage.

Q: The EFP binder is too big to carry or complete
A: The size of the EFP binder may be daunting to some. However, not all sections of the binder need to be completed. And the good news is that, you can skip the binder and complete the entire process online. **Yup: the EFP is available online**. The online version is faster and much easier because all the calculations are automatically done for you and sections not applicable to your farm operations don't even show up. It also comes with videos and hints that make it easy to understand and complete. All you need to use the online EFP is a valid email address and internet connectivity. The online version can even be completed on some mobile devices.

ARECA
AGRICULTURAL RESEARCH AND EXTENSION COUNCIL OF ALBERTA

BUILDING ON A SOLID FOUNDATION
Alberta EFP
ENVIRONMENTAL FARM PLAN

Alberta

Growing Forward 2
A federal-provincial-territorial initiative

Q: What is involved in the EFP?
A: To complete an EFP, whether the print or online version, contact an EFP Technician who will set you up for your choice. You may complete the applicable sections and submit it to the technician who will review it. The technician will issue you a letter or certificate of completion, if the plan is acceptable.

Continued on Page 5

Environmental Farm Plan

The technician will guide you throughout the completion process to answer your questions. The second phase of the EFP is the implementation component, which can be a short or long term action plan. Since the EFP process is voluntary, your technician will not monitor whether you have completed the documented action plan or not. You the producer, will take complete ownership of the entire process and monitor the plans in a self-assessment system. However, your technician will be available to help, if requested.

Q: Great, I am interested, how do I start the process?
A: Glad you want to complete an EFP. You can contact any of the technicians listed on the Growing Forward site (http://www.growingforward.alberta.ca/Map/index.htm) to set you up. If you are a producer or Mackenzie County resident, you can contact the Mackenzie Applied Research Association (MARA) to guide you through the process. MARA has the trained technicians to guide you through the EFP process. **MARA can be reached on 780 927 3776**
Email: manager@mackenzieresearch.ca
Visit our website www.mackenzieresearch.ca for more information about services we provide.

Bovine spongiform encephalopathy (BSE), the basics

BSE is a fatal neurodegenerative disease in cattle that causes brain and central nervous system degeneration. Mad cow disease, as it is commonly called, is widely thought to be caused by modification of prion proteins. The disease is progressive in nature. In other words, it can take over 4 years for infected animals to show signs and symptoms. Cattle infected with BSE may show different symptoms including nervous or aggressive behavior, abnormal posture, lack of co-ordination or difficulty in rising from a lying position, decreased milk production in dairy cows, and weight loss despite an increased appetite. The signs and symptoms mainly show up at the later stages of the disease. Even though animals can have the disease for over 4 years, the symptoms may last only for a period of two to six months before the animal dies.

Generally, cows get BSE by eating feed contaminated with the modified prion protein. Because of the long incubation period of the disease, it is assumed that some cows can pass it on to their offspring. Unlike other diseases or infections which can be diagnosed in live animals, at present, BSE can only be confirmed through microscopic analysis of brains of dead animals.

Can humans contract the disease? Yes, however, in humans, it is not called BSE but known as **variant Creutzfeldt-Jakob disease (vCJD)**. The sheep equivalent of BSE is called Scrapie, and in deer and elk, it is known as chronic wasting disease. The prions that cause BSE and vCJD are highly resistant to heat, freezing, ultraviolet light, and disinfectants that normally kill viruses and bacteria. Hence, the consumption of contaminated meat and some meat products from infected cows may result in humans contracting vCJD.

Neither BSE nor its human version, vCJD is contagious.

As a livestock producer in Alberta, should you be concerned about the February 2015 BSE case in the province? Everyone, whether consumer or livestock producer should be concerned about any livestock disease, including BSE. However, producers do not need to be panicked. There is no cause for alarm as long as each farm sticks to the Canadian Food Inspection Agency feed and specific risk materials regulations and other safety protocols. For example, excluding animal products in cattle feed, proper disposal of blood, skull, brain, nerves attached to the brain, eyes, tonsils, spinal cord and nerves attached to the spinal cord, may help prevent your cattle from contracting BSE. It is also important that proper records are maintained for each animal and purchased feed as that may help to easily trace an animal's history. Finally, when you suspect any unusual behaviour in your animals, contact the local veterinarian for proper diagnosis.

Manager's Corner: Dr Jacob Marfo (PhD, AIT)

It has been a very busy period for everyone at MARA's office. However, every minute of the time spent is worth it. Sabrina and I are very excited to have this newsletter out. In case you are wondering who Sabrina is, she is the Assistant Research Coordinator. She has been with MARA since October of 2014. This newsletter, **Farming North of 58°** is one of the many ways we want to communicate with our producers, partners and the general population. Another way we want to communicate with you is through our website. The website was a project I promised Mr. Greg Newman, (MARA Chair) and Dicky Driedger (Board Member) during my interview in 2013 that if I get hired, I will personally design a website for MARA. Luckily, they believed me and gave me the job. *Well, now I am glad to tell you that we have* ***www.mackenzieresearch.ca*** *up and running*. You can pick up membership forms, securely pay membership dues, make donations to MARA, sign-up for events, subscribe to our newsletters, read current and previous research reports, all on the website. We are constantly updating the site, so I recommend you visit it often.

Mackenzie County, the local Agriculture Service Boards, Alberta Agriculture & Rural Development, Alberta Canola, Barley, Pulse and Wheat Commissions have been very supportive of our programs and deserve commendation. Local agro-companies like Brett Young, Richardson Grains (High Level), Cargill (La Crete), UFA (La Crete), Prairie Coast (La Crete) have been extremely kind to MARA. Our biggest support comes from the producers who attend our events, volunteer their time to support MARA, read our reports, visit the office, allow us to use their fields for tours and other public activities.

Let me end by telling you briefly about the **Northern Ag Update (see last page).** We all at times pay huge monies to attend agriculture events in other parts of the province, because such events are not organized up here in the Mackenzie County. Well, now MARA with the support of the County is bringing experts up here to deliver a whole day presentation on important agriculture and environmental matters. Call it the mini FarmTech. Your attendance is essential, especially as future series will be planned based on the first one. MARA is still looking for sponsors for the event, including exhibitors. If you are interested in partnering with us for this event, please contact the MARA office. We need you at the Fort Vermilion Complex on April 13 2015 for the first ever Northern Ag Update. Thank you.

Page 3 Weed IDs: A: Cleavers, B: Wild oats, C: Redroot pigweed & D: Canada thistle

Alberta Barley

2015 Alberta Barley Student Scholarship

Value: Up to $2,000
Application Open: Mar 1, 2015
Closing Deadline: April 12, 2015 or until awarded

Alberta Barley is a farmer-directed, not-for-profit organization representing Alberta's barley farmers. The organization works collaboratively within all levels of agriculture to achieve tangible results that benefit Alberta's barley growers.

Through check-off dollars, barley farmers make a valuable investment in the future of their farm and the future of barley. We are committed to investing these check-off dollars in research projects that provide value for our members.

Alberta Barley invites all full and part-time undergraduate and graduate students to submit a one-page summary of a proposed research project approved by an academic supervisor and/or research institution.

This summary should include a statement of how it may be beneficial to the barley industry under one of the key themes of feed, food, malt, agronomy and bio-products, or as a novel concept.

Contact information for the supervisor must also be included.

Proposals, CVs and/or any questions should be forwarded to Garson Law at **glaw@albertabarley.com**.

Thank you to Our Partners

Alberta Barley

Agriculture and Rural Development

To Partner with us or become a sponsor, please contact us at Phone: 780 927 3776

Email: manager@mackenzieresearch.ca

You can also complete Corporate membership forms on

https://www.mackenzieresearch.ca/about-us/membership-forms

Mackenzie Applied Research Association

Mackenzie County

Present the first

Northern Ag Update

(a subject matter specialists series)

Presenters:

Dr. Rigas Karamanos, Senior Agronomist
Dan Orchard, Canola Council Agronomist
Brent Anderson, Manager, Richardson Grains

Topics:

Soil micro nutrients, money in the soil or in my pocket?
Canola pests and diseases; the latest buzz
More than grain movement; the Northern Alberta issue

Date: April 13, 2015 (10:00 AM – 4:30 PM)

Location: Fort Vermilion Complex

Snacks & Lunch is provided. Registration fee $40.00 for non-MARA members & $25 for members.

To register please Call 780 927 3776 or 780 285 0911
You can register online at www.mackenzieresearch.ca/events

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