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Lakeland Agricultural Research Association

The Verdant Element

Times Are a Changin'

Inside this issue:

Agriculture over the past year has had some significant changes. In part, due to bad weather, lack of rain, lower Canadian dollar value, disease and pests, change of government and the list can go on. Some of these impacts have been negative, some positive and some are undetermined as of yet. One thing that is for sure, is that we, as an industry cannot sit back idle, we must agvocate, be part of the discussions, learn and be willing to change.

Social License has been a hot topic this year, not only in regards to food safety and environmentally sustainable agriculture, but now with farm safety and the introduction of Bill 6. Which many people are now asking "are we regulating ourselves out of the family farm?"

In Canada we have more freedoms than we know, and can be seen in the (lack of) regulations. Europe for instance still has a thriving agriculture industry, yet faces an amazing amount of regulations. When I worked in Denmark on a dairy farm, we had to call a veterinarian to treat any animal, including for regular vaccinations. Everything, and I mean EVERYTHING had to be reported to the government in a timely manner, otherwise prepare yourself for a very stern letter of reprimand. We were only allowed to buy a certain amount of fertilizer for our land base which was calculated by how much manure we were producing for our herd size.

We need to agvocate for our industry and the future of the family farm. Our consumers need to know that we are caring for our land and animals to the best of our ability, and that they can place their trust in us to continue to do so into the future. The average person is 2 generations away from the farm, and does not understand for instance that enriched cages are better than free range to prevent mortality loss in layers. They need to understand why we do what we do and why we love agriculture.

Resistance is Futile

What is a weed? It has many definitions and covers a range of species that are a bit different to everyone. Basically it is something that is unwanted in a particular area. No matter how you look at it there are only three ways to control weeds; chemical, non-chemical, and combination of chemical and non-chemical.

- Chemical (organic or inorganic)
- Non-chemical includes mechanical/physical (cutting, hand-pulling, cultivation, burning), cultural (good crop health, crop variety, crop rotation), and biological (insects, animals to graze, disease
- Combination of chemical and non-chemical

We describe weeds by growing type; annual, biennial and perennial.

An annual is a plant that grows from seed to seed in one growing season. The species are spread by seed, so our control objective is to prevent seed production that can be achieved through chemical and non-chemical control. We also must control the seed bank, so identifying the plant is essential to knowing the dormancy of the seed for future control. With cutting as a control it must be done before blooming, as many plants' seeds can mature from residual energy in the plant after cutting.

Biennial is a plant that grows from seed to seed over two growing seasons and is spread by seed. The control objective is to prevent seed production and can be achieved though chemical and non-chemical methods.

A perennial plant can regrow from the same root stalk for several years and can spread by both seed and root rhizomes. The control objective is to kill the entire plant, prevent seed production and destroy root / rhizomes. This can be achieved through chemicals and a combination of chemical and non-chemical methods. The best time to spray either prior to flowering or in the fall when the plant is translocating energy to the roots.

Herbicides are registered (rates) for 95% control, 95% of the time. As plants mature they need the higher rate of application. Herbicides all have various characteristics that are important deciding factors when choosing what, when and how to spray. Herbicide characteristics include: residual versus non-residual; selective versus non-selective; and contact versus systemic. The environmental conditions during the growing season and when spraying are a huge determinant to efficacy and residual of the herbicide. Spraying when it is colder than 5ºC is a waste, as the plants are not active and there would be no effect by the herbicide. An ideal temperature to spray in is between 18-22ºC. Soil moisture also has a huge effect on the residual of the herbicide, as well as herbicide efficacy. In dry years, there will be greater herbicide carryover, as residual herbicides are taken up by the roots from the soil solution. Residual is a double edged sword. It allows for longer control (all season or more than one season), so less applications; but can create recropping issues and limits what you can plant the following year. It can also have non-target effects with residual in water

and soil and potential leaching. The adsorption characteristic of a herbicide (the ability to stick/adhere to soil/ organic matter becoming unavailable to the plant), will also affect efficacy. The herbicide is not deactivated, it is just unavailable to the plant. The organic matter also prevents leaching, and the accumulation of the herbicide in a lower soil profile.

The amount of water used can affect herbicide performance. Contact herbicides require a greater water volume to increase coverage on the plants. Systemic herbicides can use less water per acre. Using the wrong nozzle can be a big determinant to herbicide performance.

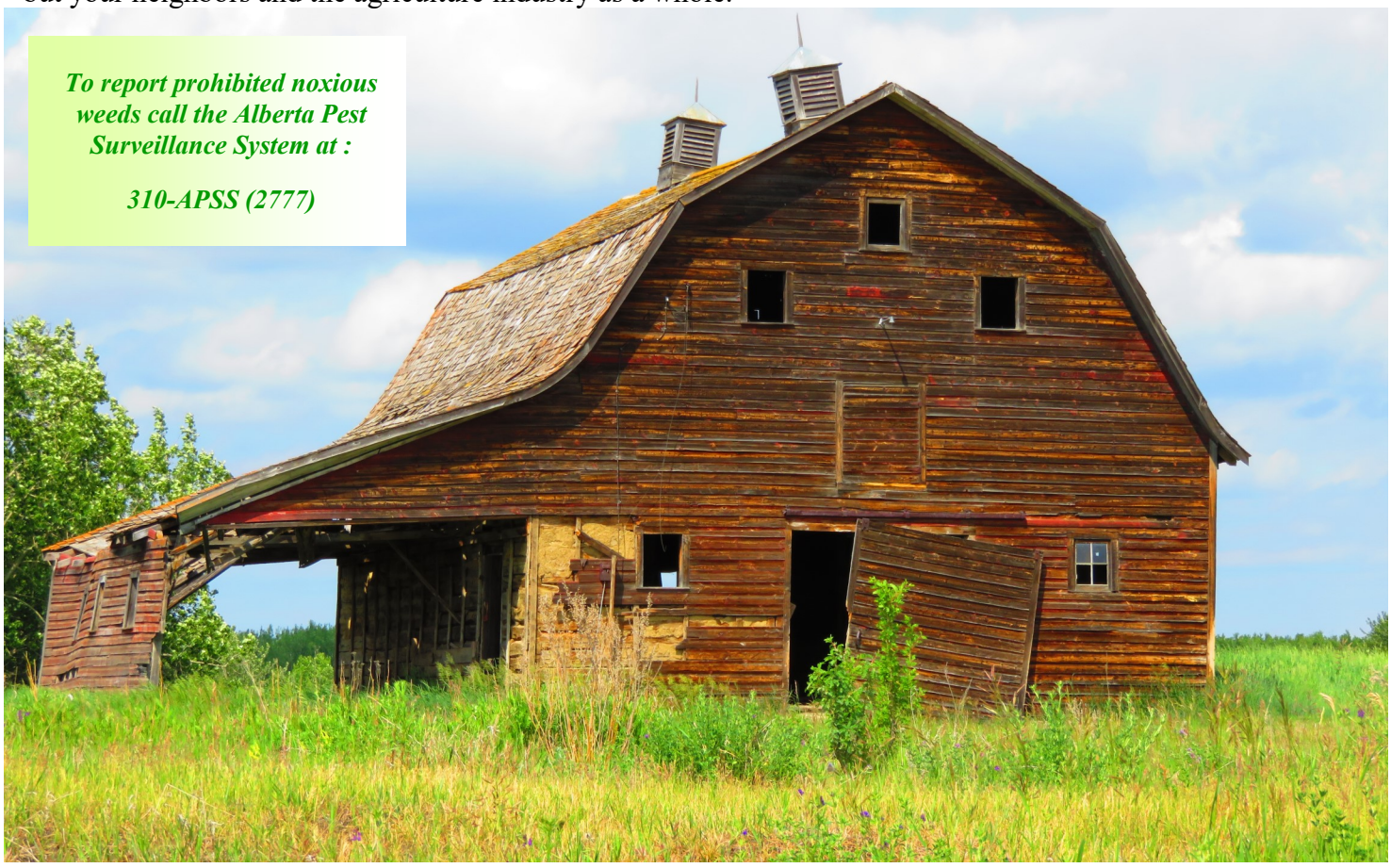
In today's world there are an abundance of options for weed control. Resistance however is becoming a greater concern as more and more species are having the dominant population resistant to several groups of herbicides and are not susceptible. Resistance issues will mean having a loss of control options, having to change cropping practices, having to resort to only non-chemical control options which may mean a loss of production or higher control costs. Resistance is due to two main factors: lack of crop rotation and lack of herbicide group rotation. Wild oats for instance are now cross-resistant to group 1 and group 2 herbicides; red root pig weed is resistant to 5 different groups. So how do we deal with the issue of resistance? Is there hope?

The first thing you can do is to start thoroughly crop scouting your fields. Proper weed identification is a must, as you need to know what you are trying to control. When field scouting, take note of the soil type, diseases, weeds, growing conditions. Don't head out to check your fields for only one thing, look at it as a complete system.

Secondly, do not buy herbicides only by trade name. Looking at the group number is critical for best management and control. Companies will sell pre-mixed tank mixes, which do not always include different group herbicides, so do your homework and look at what groups are in the mix. Make sure to rotate crops and herbicides and keep good records. And lastly, use herbicides only when needed. It will not be a popular option (as currently people are in-crop spraying multiple time a season), but in the long term will benefit not only you, but your neighbors and the agriculture industry as a whole.

To report prohibited noxious weeds call the Alberta Pest Surveillance System at :

310-APSS (2777)



ENVIRONMENTAL FARM PLANS

With all the talk of social license, the pressure from the consumer is making big business change our industry. For instance McDonalds plans to use only cage free eggs within the next decade. The desire of our consumers is pushing for environmental integrity from the Agricultural Industry. Sustainable sourcing, which encompasses buying goods from producers who adhere to a code of practice that reduces the environmental and social aspects of food production and processing. Environmental criteria include soil stewardship, nutrient management, agrochemical use, biodiversity protection and enhancement, and water. Social criteria are composed of human rights and development, worker conditions, social protection, employment relations and social dialogue. Economics are also a factor with considerations to economic viability, sustainable management and supply chain responsibilities.

Many large companies are committed to increasing their proportion of sustainably sourced agricultural products from their producers and suppliers. This will push their producers to have certification or completion of some form of environmental program. An example of an international sustainable sourcing initiative is the Sustainable Agriculture Initiative (SAI) Platform http://www.saiplatform.org/.

You, as the producer, are going to be tasked with demonstrating environmental and sustainable agricultural practices. Starting that journey early will make it that much easier to document and demonstrate sustainable agricultural practices and allow you to retain and access markets for your operation into the future.

> We all like progress, none of us like change.

The environment is becoming a more prominent issue. It is a large factor in marketing agriculture and food products in today's global markets. Consumers are demanding more transparency and are demanding high quality and safe products. Reputation of food safety is critical to retain and gain access to domestic and international markets.

Environmental Farm Plans (EFP) provide a tool for producers to self analyze their operation and identify environmental risks, current standards, areas for improvement and also highlight what they are doing well.

Having a completed EFP allows producers to access different funding opportunities, such as the Growing Forward Stewardship Program. It is also useful in product branding that demonstrates specific environmental standards.

The EFP Process

An EFP can be completed through workshops or one-on-one session(s). The EFP first identifies the soil and farm site characteristics. Following this, the producer completes only the relevant chapters that apply to their operation; such as wintering sites, fertilizer, pesticides, crop management etc. Upon completion the EFP is submitted to a Technical Assistant for review. Once reviewed the EFP will be returned along with a letter of completion.

The EFP is a living document and should be reviewed and updated periodically.

If you wish to complete an EFP or have any questions regarding EFP please contact Kellie at the LARA office at 780-826-7260

Programs Accepting Applications

- Agri Processing Automation and Efficiency - Livestock
- Agri Processing Product and Market Development - Livestock
- Agricultural Watershed Enhancement
- Animal Health Biosecurity Delivery Agent
- Business Management Skills Development
- Business Opportunity
- Confined Feeding Operation Stewardship
- Food Safety Systems Delivery Agent
- Food Safety Systems Processor
- Irrigation Efficiency
- Livestock Welfare Processor
- On-Farm Energy Management
- On-Farm Stewardship
- On-Farm Water Management
- Regional Water Supply
- Traceability Pilot
- Traceability Technology Adoption
- Traceability Training

Programs Not Accepting Applications

- Agri Processing Automation and Efficiency - Crop
- Agri Processing Product and Market Development - Crop
- Animal Health Biosecurity Producer
- Food Safety Systems Producer
- Livestock Welfare Delivery Agent
- Livestock Welfare Producer

Growing Forward

Growing Forward 2 provides programs and services to achieve a profitable, sustainable, competitive and innovative agriculture, agri-food and agri-products industry that is market-responsive, and that anticipates and adapts to changing circumstances and is a major contributor to the well-being of Canadians.

Growing Forward 2 has a wide variety of programs from For assistance with any of the Growing Forward 2 programs please contact Kellie at LARA

Growing Forward Stewardship Programs

Program Area	Eligible Costs	Cost Share
Riparian Area Fencing and Management	Permanent fencing (controlled access or exclusion): • Permanent barbed/electric fencing systems • Construction materials and supplies. NOTE: all materials must be new materials and not materials on hand • Labour and equipment will be paid at a 1:1 ratio to materials expenses. (NOTE: refer to section 7.4 in the Terms and Conditions); Purchase and planting of native trees and shrubs and/or native or non-invasive introduced species of grass and legumes; Seed and seeding operation for revegetation; Cultural weed control systems and mulch	70% to a funding maximum of $50,000
Year Round / Summer Watering Systems	Deeply buried, shallow buried, or surface pipeline installation used to distribute water within a pasture and protect a water body/water source; Portable watering systems; Year-round watering systems; Troughs, stock tanks, plastic tanks (or similar water storage); Frost free nose pumps; Pumping systems; Power sources such as solar panels, windmills etc. And other electrical supplies; Plumbing materials	50% to a funding maximum of $30,000
Wetland Restoration	Earthwork related to construction or plugging of old drains; Engineering consultant fees for design and construction; Re-vegetation costs (seed plantings etc.); Applicant's equipment use at custom rates; In-kind labour at set program rates ($25/hour)	70% at funding maximum of $50,000
Livestock Facility and Permanent Wintering Site Relocation	Construction costs to rebuild an equivalent facility or adequately sized facility in a more suitable location; Plumbing, electrical, fence lines, feeding areas, shelter/wind protection; Earthwork; Engineering design and fees (if applicable); Tear down and removal costs of the old livestock facility; Re-vegetation costs of the old site; Applicant's equipment use and in-kind labour	50% at funding maximum of $50,000
Used Oil and Lubricant Storage	Double wall steel storage tank design expressly for the temporary storage of used oil and lubricants that have a ULC or CSA approved stamp or plate indicating it is for that purpose (ULC-652)	50% at a funding maximum of $2,000
On-Farm Water Management	Wells (including test drilling, new pump and well casing, electroseismology test, disinfection of new well); Dugouts (including aeration, fencing and floating intakes); Dams (including intake and fencing); Spring Development; Water tanks/storage/cisterns for low producing wells or as part of a permanent water supply; Buried pipelines Special projects include: Specified water conservation measures (purchase and installation of water use meters, well depth meters for agricultural use of water, well decommissioning by a certified contractor, well pit conversions by a certified contractor; Tie-ins	Various funding levels, refer to the terms of reference

On November 19 and 20th we were fortunate to have Elaine Froese with us for farm succession planning. Her sessions were excellent in giving ideas to proceed with planning and resolving conflict, giving participants the courage to start having some tough conversations and the strength to continue on. Family and relationships are complex and when you bring your heart and family into a business where it is sewn into the fabric of your everyday lives it makes it that much more intricate.

Her session was so much more than just farm succession. No one likes to have the tough talks, but it is all something that we have to do and everyone that attended now has more knowledge, tools and skills to move forward. In many ways the session highlighted the importance of open communication and acceptance of the reality of what's to come. Discussing the undiscussable was a great session on how to deal with our own communication styles and recognizing and learning how to deal with the important people in our lives.

Moving past the unknown, and addressing our concerns and (mis)perceptions will allow us to reduce the stress and conflict that comes with the unknown and become more productive (and profitable) in the future.

Growing Forward 2 has grant funding for farm succession planning, and we have a great amount of resources to help you accomplish your tough talks and plans for the future. Give us a call if you need any assistance!

Stuck in the mud? Consider an offsite watering system.

Hemp; Another Addition to Your Crop Rotation?

My grandparents, when they came to Canada and homesteaded, can attribute hemp to a large part of their pioneering ways. They grew the multipurpose crop for fibre and food. They used hemp to produce ropes, clothing, paper and oil. But even before them, hemp had arrived in Canada in the early 1600s and became very popular in the 1800s, with seeds distributed for free as it was such a useful and valuable crop for the pioneers.

The collapse of hemp in the 1900s was due to the use of new crops being imported (cotton, jute), the introduction of the pulp industry, and the creation of synthetic fibres such as nylon. In 1938 it became illegal to grow *Cannabis sativa*, but in 1998 the ban was lifted and industrial hemp can once again be grown. The issue over the past 17 years is that Canada lacked the processing capacity and ability to export the crop. That has been steadily changing over the course of developing the crop hand in hand with the processing capacity. The 60 year ban on growing industrial hemp has lead to many challenges for potential producers. There has been no breeding program, and two generations that have not had to cultivate and process hemp.

Todays opportunities lie in the multitude of products that can be produced from hemp. Most of the industrial hemp that is grown in Canada is for food products (those incredibly expensive hemp hearts, and protein supplements for shakes), but hemp can be found in cosmetics (makes very nice hand lotion), paint and varnishes, lubricants and bioplastics. Due to this vast array of products there are two types of industrial hemp grown: grain (short stature, high seed yield, low vegetative biomass) and fibre (very tall plants, high stem yield, lower seed yield). There are many markets out there, however we need to have a secure uniform quality and quantity supply stock to access them.

Hemp is the second fastest growing species (only slower than bamboo), and can grow up to 15cm a day. There is definitely a northern advantage to growing hemp, especially for fibre. The long day length will delay flowering (flowers start to set when days start getting shorter); which promotes taller plants as stem elongation happens before flowering.

Before growing hemp, a FREE licence is required by Health Canada, which can take 6-8 weeks to process so if you are thinking about it start applying early.

So what does one need to know about growing hemp?

Seed Bed Prep

* Hemp is very sensitive to soil structure. There will be a yield loss when soils are compacted or have poor drainage.

Seeding

* Seed shallow (~ 1/2 inch or into moisture on a dry year).
* Seed 20-25 lbs/acre when growing a grain variety.
* Seed 40-60 lbs/acre when growing a fibre variety.
* Seed into warm soils (about 8ºC). Can seed into colder soils if a fibre variety.
* Use a low fan speed setting for air seeders (easy to crack seeds)

Fertilization

* Research will be out in spring of 2016 on recommended rates.

Pests and Disease

* Susceptible to sclerotinia so avoid growing in rotation with canola.
* Botrytis (grey mold)
* Insects are not a real problem, but need to watch for Bertha Armyworm, cutworm and grasshoppers.
* Birds are a concern as grain can be contaminated by E-coli (fecal matter).
* Growing plants are very susceptible to Glyphosate drift
* No registered herbicides at this time, although there are a few that you can use.

Spring Frost

* Hemp is fairly resistant to spring frost.

Hail Damage

* Extent of damage depends on plant stage and usage type (grain versus fibre).
* Will see recovery if damage is early in the season, but it can delay maturity and lower quality (yield recovers, but quality suffers).
* Short grain varieties are impacted less than dual purpose or tall varieties.

Harvest

* Harvest when seeds become exposed outside the protective bract or at 85% seed maturity between 12-20% moisture. Hemp shatters very easily so you cannot combine when it is to dry.
* Wrapping is a problem when harvesting. Newer rotary combines work better than conventional combines. Swathing is possible in southern AB, not in the Lakeland.
* Harvesting for fibre varieties is best as soon after the pollen is shed (70-90 DAS)

Retting (the process of beginning to separate the two types of fibre: bast (long fibre on outside of stalk) and hurd (short fleshy fibre on the inside of the stalk).

* Several methods available from field-dew retting, tank retting, enzymatic/chemical. Can take 4-6 weeks.

Grain Storage

* Depends on the variety, but harvesting at 12-20% moisture so drying needs to start immediately after combining. Use high capacity fans if moisture is over 15%, but do not overheat <45ºC as the oil in the seed will go rancid. Use slow speed augers to avoid cracking.
* Long term storage should be between 8-10%. Improper storage will lead to microbial contamination.

Lakeland Agricultural Research Association

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Sustainable farming encompasses a wide range of practices and principles; combining environmental stewardship with profitability and ensuring that the family farm will be there for generations to come.

LARA
LAKELAND AGRICULTURAL RESEARCH ASSOCIATION

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Lakeland Agricultural Research Association presents:

Farmer Appreciation Night

All Farmers Welcome!

February 5, 2016 **Glendon RCMP Hall**

Appetizers at 5:30 pm
Dinner at 6:30 pm
Entertainment to follow at 7:30 pm

With Special Guest Ben Crane!

From the Alberta ranchlands just east of Rocky Mountain House comes western country singer and songwriter Ben Crane. His love of the west country and the outdoors comes through not only in his music, but in his artwork as well. Ben Crane has been slathering his brand of clean but slightly twisted rural humor over audiences across Western Canada and the U.S. for the past 30 years.

Please RSVP by February 2, 2016.

RSVP required. Spaces are limited. Register early!

780.826.7260

Hemp Resources:

- http://www.agric.gov.ab.ca/app21/infopage?cat1=Crops&cat2=Special%20Crops
- www.hemptrade.ca
- www.albertabiomaterials.ca
- Industrial Hemp Regulations http://laws-lois.justice.gc.ca/eng/regulations/SOR-98-156/
- Health Canada Hemp FAQs http://www.hc-sc.gc.ca/hc-ps/substancontrol/hemp-chanvre/about-apropos/faq/index-eng.php

** Pictured below are some hemp products **

WWW.LARAONLINE.CA

WISHING YOU A MERRY CHRISTMAS AND HAPPY NEW YEAR AND HOPE TO SEE YOU OUT AT A LARA EVENT IN 2016!

Hemp is a crop like no other. You need to know what you are growing for (fibre or grain) and adapt your cultivation practices accordingly. The future of the industrial hemp market has endless possibilities. The industrial applications are becoming more popular and continuously evolving with building materials (hempcrete, insulation, industrial adsorbents, paint, erosion control), animal bedding, geotextiles, carpeting, automotive parts, biocomposites, fibre board, cosmetics and a wide range of food products.