Over the Fenceline

Winter 2021

Battle River Research Group

BRRG

VIRTUAL

AGM

MARCH

15, 2021

9AM

MEET

WITH OUR

MLA

JACKIE

LOVELY

VISIT

BRRG

WEBSITE

IN THIS ISSUE

KTT(Knowledge Transfer) 2020

- In 2020, Battle River Research collaborated with Other association for many news article.
- published three research updates and one newsletter and Annual report 2020
- Recorded many educational videos and shared on our YouTube channels and website.
- Organized seven webinars
- One virtual field day
- One crop walk
- BRRG facilitates one o one consultancy for producers with the name of specialist on call event.

Project digs deep to understand soil health

By Mary MacArthur

Reading Time: 3 minutes

Published: October 8, 2020

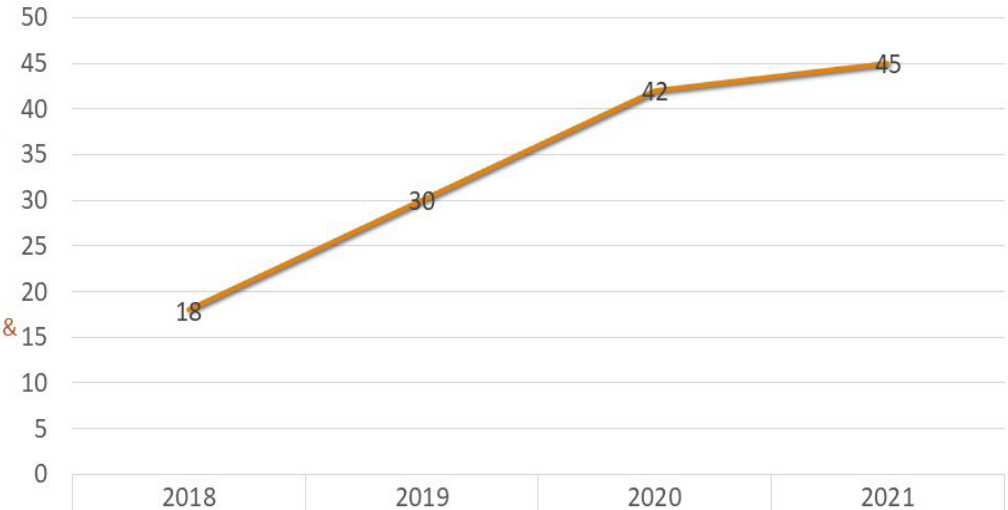
News

Research updates

We got funding11 CAP Projects in 2020

total Plots = 2000

# of sites = 4(Galahad & Viking)



	2018	2019	2020	2021
# of Research Projects	18	30	42	45

Battle River Research Group

BRRG VIRTUAL Calving Clinic

Keeping Newborn Calves Healthy: Strategies for Preventing Respiratory Disease and Scours

Date: March 10, 2021

Time: 6:30PM to 8:00PM

Speaker Dr. Tamara Quaschnick

DVM | Veterinary Services - Cattle/Equine/Genetics

register@battleriverresearch.com

Younger Cattle Co.

Brownfield Public Library

“Weedy Thoughts” for Hay and Pastures

For most forage managers weeds are a fact of life. So, if they are present, how did they get here? In newly establishing stands weed types may appear where these species were never seen before. In that case we can only presume they came with the new forage seed we bought and planted. If they were present before in small amounts, how can they suddenly be so abundant? In this article I will share thoughts on how weeds are coming into stands and how can we prevent a weed problem from even starting. Also, once weeds are present how can they be effectively managed, controlled or eliminated?

In new establishing stands purchased forage seed is often blamed as the initiating source of weeds. This is possible and I will explain why. There are tolerances of various Noxious and Nuisance weeds in perennial forage designations of (Ranked in Order from Highest to Lowest class) Foundation, Registered, Certified, Blend, and Common seed classes. Less weed seeds are tolerated in the Foundation class and most at the lowest Common No. 2 class. To ensure this forage seed fields are acceptable for seed production, they may be walked by a forage seed inspector prior to harvest. If they are, or even if they are not once this field is harvested and cleaned, random samples are taken, and a specific seed lot number given to this field. The samples are inspected for any contaminants and germination tests are done. The sample designation of class is on this certificate and could be lowered based on contaminants, weed seed types and amounts, and germination. The contaminants, weeds, and germination are

recorded with this seed certificate number for any buyer to look over and know what they are buying. This happens for every different seed lot or blend you may buy from a forage seed company. It is important to note that Primary noxious weeds are not allowable in forage seed of any of the designated classes except in Common No. 2 and then only at a certain level. Primary noxious weed examples are: Canada thistle, Quack grass, Knapweeds, Toadflax, Leafy Spurge, Tansy Ragwort, Perennial Sow-thistle, etc.

My thoughts for this article are mainly on Secondary Noxious weeds as their spreading is increasing. Secondary Noxious weed examples are: Scentless Chamomile, Ox-Eye Daisy, White Cockle, Downey Brome, etc. The tolerances for Secondary Noxious weed seeds in perennial forage seed ranks from least in Foundation classes, to more in Common seed classes. The highest tolerance is in the Common No. 2 class.

My advice is that whenever you are buying perennial or even annual forage seed "plan ahead of time". Approach the organization you plan to buy from asking for a Seed Certificate for that species you want to buy or that Blend components if in a mix. The company head office has those on file and can fax or email a copy of it to you.

After this discussion on perennial forage seed and weed tolerances allowed in forage designated classes, **The reality is it is very, very seldom that problem weeds come in purchased perennial forage seed.** All of my experience of over 30 years in forage extension, research support, and key industry networking has shown that as the case. Companies are too competitive and do not want to lose your business. But…always check the seed lot certificate before buying.

The majority or maybe even all the time I will boldly say that I have found weeds in perennial forage stands come from being here already. To get to the field beforehand weeds come through a variety of means. Imports of grain, straw, hay, wildlife, birds, water, wind, and machinery are ways most common. Some weed seeds can be survive in the soil for a short time frame of just a few years and others can survive as a viable seed in the soil "seed bank" for over 100 years. Dormant weed seeds wait for the best circumstance for their survival and take advantage of a situation that is most promising for establishment. This opportunity is highest where there is little competition and adequate nutrients. Slow growing forage seedlings, seedlings lacking nutrients to be competitive, places where seeding error occurred, cover crops outcompeting forage seedlings, bare areas between plants, drought are all opportunities for weeds to fill a void.

In established stands weeds find opportunities usually due to a lack of fertility, forage cultivar lack of longevity, over grazing, or supplemental feeding on this landscape. These are all opportunities for weed seeds to arrive or grow. Once established many weeds are prolific seed producers. It does not take much time for a weed invasion to go from unnoticed to be significant.

The importation of weeds is where most of our weed control efforts need to be. Purchased feed is a key area to focus on. Asking the seller questions about the presence of weeds and even looking at the field before purchasing feed is the first steps to prevention. Feeding in a specific area, that may be cultivated or on a grass pasture will give the most flexibility in weed control if a problem does arise. Monitoring areas where imported feed is fed should always be done. Prevention of seed set on new establishing weeds is number one in importance.

Control of new problem weeds needs to be quick and thorough. Hand rogueing, herbicides, mowing, animal consumption, and ensiling are all options that need to be done in timely manner. For example, once petals of Scentless Chamomile start to droop, up to 300 seeds/flower may be viable. Oxe-eye Daisy can produce 26, 000 seeds/plant. In general, if weeds are not allowed to set seed in 4-5 years 90-95% of weed seeds will be reduced in the soil. However, if one year is missed these efforts are undone.

Mowing to a 4-8 Inch height works well for annual weeds. Herbicide options even for legume/grass stands are available but should be used early in weed growth. Hand roguing and removal of weed plants must be done prior to weed seed drop.

Silage is an excellent tool to use in weed control. Silage fields when weeds are vegetative before they set seed. Fortunately ensilaging and digestion can reduce viability of almost all weed seeds. Of the two processes silage is more effective than an animal's rumen for destroying viability of weed seeds. Grass type seeds are the most easily damaged by either biological process. For different species of broad-leafed plants ensiling and digestion varies from highly effective to particularly good control. One exception that survives both ensiling and digestion is Round Leaf Mallow. A caution I have is that with round or square bale silage, the lower moisture content and higher pH at stability may not create as much damage to a weed seed as a chopped silage. I have not found research that has tested weed seed survival in bale silage.

In summary your best weed control in perennial forages is a vigorous and competitive forage stand. When purchasing new seed to establish a stand start early and buy after you have looked over the seed certificate that comes with that forage seed. Purchase forage cultivars or mixes best suited to your planned use. Establish that forage stand using best management.

practices so it can be most competitive. Monitor new and established perennial forage stands in a timely manner and use weed control methods quickly to prevent weedy plants from setting seed. If purchasing feed know what you are buying and feed it in a restricted area for best options for future control. Do field monitoring of these areas through the next growing season and even year or two after. Applying fertility or controlling animal grazing will keep the forage stand highly vigorous and competitive and limit invading weeds from getting a foothold.

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Association	Event	Date (2021)	Registration information
	Mental Health First Aid Certification Course	March 9th and 10	https://chinookappliedresearch.ca/calendar-of-events
	Calving Clinic Keeping Newborn Calves Healthy: Strategies for Preventing Respiratory Disease and Scours	March 10, 2021	https://www.battleriverresearch.com/
	Pre-Calving nutrition impacts Calf health, Milk production and breeding season	March 16, 2021	https://www.battleriverresearch.com/
	Organic Production Webinar Series	April 3, 2020 @ 12:00 pm - April 8, 2020 @ 1:00 pm	https://www.mackenzieresearch.ca/event/organic-production-webinar-series/2020-04-03
	Cover Crops Webinar	- April 8, 2020	https://www.mackenzieresearch.ca/event

Thanks for Sponsors

Battle River Research Group

How Pre-calving Nutrition Impacts Calf Health, Milk Production And The Breeding Season

Webinar
With Barry Yaremcio
March
16, 2021
7:00 To 8:30pm

Register
@ battleriverresearch.com

Management and Weather Impacts Forage Quality.

Feed Test Results so far…

Weather has a huge impact on forage quality. This year is no different. From the high rainfall areas in the northern half of the province to the dry conditions in parts of south; we are starting to see trends in feed quality from each region. Localized areas will be similar in quality, but each farm will be different depending on the type and age of the forage stand, soil fertility, rainfall, temperature, and management.

The plant has one objective during a growing season. That is to produce seed so that the stand can be sustained. If moisture is abundant, there is large amounts of growth. When it is dry, the plants restrict growth and produces seed earlier in the season. Plants can shut down three weeks earlier (or more) than normal. The differences in growing season impacts forage quality.

Mineralization or the release of nutrients from the soil is reduced when drier conditions occur. This reduces the amount of nutrients available for the plants to use. For example, the amounts of phosphorus and magnesium available to the plants may be lower compared to a year with good moisture. But depending on overall growth or yield, nutrient levels in the plant can be higher than in a year with good growth. The available nutrients in a dry year are not diluted down because of the lower yield and thus can be higher than normal. This is

especially true with protein. With higher temperatures commonly experienced in a drier year and an abundance of sunshine, the photosynthesis process is very efficient and is driving the conversion of available nitrogen into protein.
With high rainfall and wetter conditions, the effect on overall quality is opposite to that of dry year. Yes, mineralization increases because the soil will release more nutrients into the soil water, but there is a limit to the total amount of nutrients available to plants each year. The dilution effect due to a high yield has a large impact on mineral and trace mineral concentrations in the forage. This is an oversimplification, but if the yield is three times higher than average, then the concentration of a nutrient is roughly one-third of normal. Unfortunately, the high yield is working against nutrient concentrations.

The one nutrient that is contrary to the dilution rule is Manganese. This trace mineral increases in concentration on a wet year. Levels can be 2 to 4 times higher than average. Average concentration for Manganese is 40 mg/kg (or parts per million – ppm). On a wet year, it is possible to have levels up to 120 mg/kg or higher. In this situation, it is possible to reduce the supplemental Manganese in the mineral supplement, or if very high, can be eliminated all together. From experience, very high Manganese concentrations can interfere with reproductive efficiency.

Forage quality is impacted by the type of forage present in a stand. Legumes such as alfalfa, clovers, sainfoin, cicer milk vetch and bird's-foot trefoil are higher quality forages than grass species. Higher protein in the legumes reduces the need for canola meal, distiller's grains or soybean meal thus reducing winter feeding costs.

The legumes contain more calcium than the grasses and more protein. Having legumes in the stand are a benefit when trying to balance a ration. To adjust calcium levels in a ration, limestone (38% calcium) is commonly added to supplements, minerals, and premixes. Unfortunately, if included in a free choice mineral, it reduces the acceptability of the product. This problem is resolved by adding a flavouring agent or other ingredients (such as anise - licorice flavour, wheat midst, distiller's grains) to the mineral. It is more common to have a reduction in mineral intake when there is phosphorus in the mineral.

One of the two biggest influencers on forage quality is the maturity of the crop. As a crop grows and matures, quality decreases. Research that was done through the Soil and Animal Nutrition Lab measured yield and how maturity affected feed quality on thirteen different grass species (Sulieman et. al., Journal of Range Management 52:75–82 January 1999). Forages were cut on a weekly basis starting when the plants were at the 4 to 5 leaf stage. Data from the dry year of 1992 found that yield increased up to week eight and then declined. In 1993, a year with

good moisture, yield increased up to week 12. Quality is negatively impacted as the forage matured. From the 1992 data, fibre levels increased by an average of 3 % per week. This reduces digestible energy content by 2 % per week. Protein decreased by 2.5% per week. Waiting for a higher yield by not cutting or being delayed by bad weather dramatically reduces quality.

The second influencer is rain damage when the crop is laying in the swath. Loss of soluble carbohydrate and protein occurs. When the cut plants dry down below 40% moisture, the cell walls rupture and make the nutrients susceptible to leaching. Many times, a hay crop that is a day or two away from baling receives a rain. This results in lower energy and protein content, and higher fibre levels. Voluntary feed intake is reduced because it is more difficult for the animals to digest the higher fibre forages.

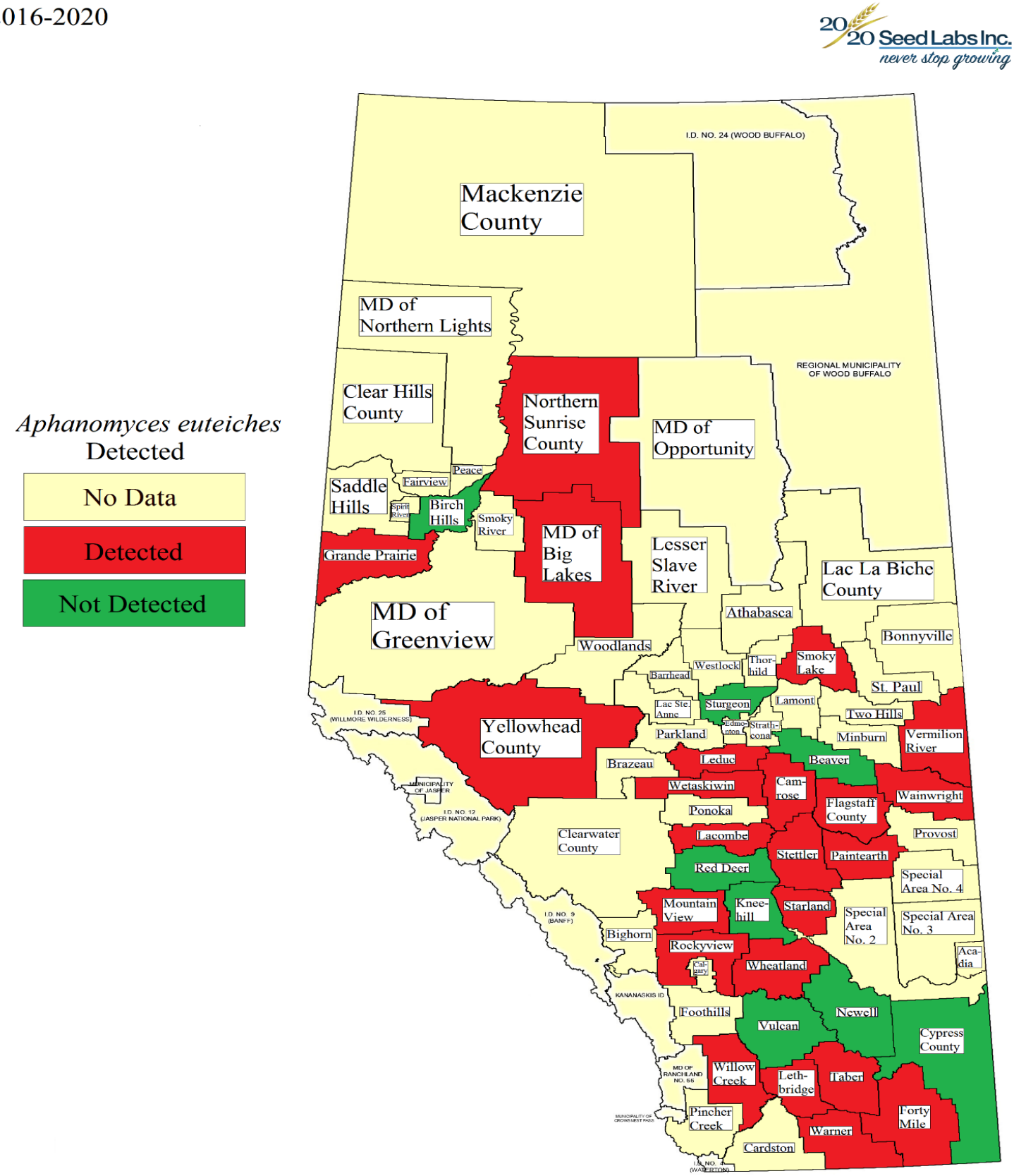
Feed samples I have received or taken this year, have variable quality. In central and northern Alberta, with cooler temperatures, cloudy conditions and high rainfall, yields are high but protein content in the forages are down by 20 to 25% compared to long term averages. In many cases, cutting was delayed by 3 to 4 weeks because of poor weather. This has increased fibre levels and reduced energy content in the forage.

When taking forage samples, use a core sampling tool. It is necessary to take 15 to 20 core samples from bales collected off a field. A core sampling tool collects all the fine leaves and flowers from the bale providing a true indication of quality. A grab sample is not accurate. Some of the high-quality leaves and stems are lost when grabbing a sample from a bale. A grab sample can be 2% lower in protein and 5 points lower in TDN when compared to a core sample. Have minerals and trace minerals analyzed by the wet chemistry method. With varied conditions across the province, the only way to be certain of forage and grain quality is to send samples in for analysis. If help is needed interpreting the results and developing balanced rations, contact your feed company or a nutritionist.

Barry Yaremcio M. Sc. P. Ag.
Yaremcio Ag Consulting Ltd.

FUSARIUM HEAD BLIGHT MAP 2016-2020
FHB A possible threat in East Central Alberta

2016-2020



Fusarium Head Blight Management Strategies

Articles adapted from Alberta.ca.

Management strategies o FHB

Crop rotation
To reduce the buildup of infested crop residues, rotating away from cereals to non-host crops, including canola, pulses and forage legumes, should be considered for at least 2 years. This will allow enough time for infested residue to decompose before the next cereal crop is planted.

Variety selection
Although few cereal varieties are resistant, using the least susceptible varieties will help to reduce the risk of fusarium head blight (FHB) and perhaps the potential for buildup of F. graminearum. Producers in areas of higher risk should select varieties that exhibit some level of

FHB resistance. In general, the level of FHB susceptibility decreases from durum wheat to CPS wheat to hard red spring wheat to barley and to oat. Winter wheat often escapes FHB infection because it flowers before Fusarium spores are present. While oat is the least susceptible, due to often being used for human food processing, there is a very low FDK tolerance. For more information on FHB reactions of registered cereal varieties see: Varieties of Cereal and Oilseed Crops for Alberta.

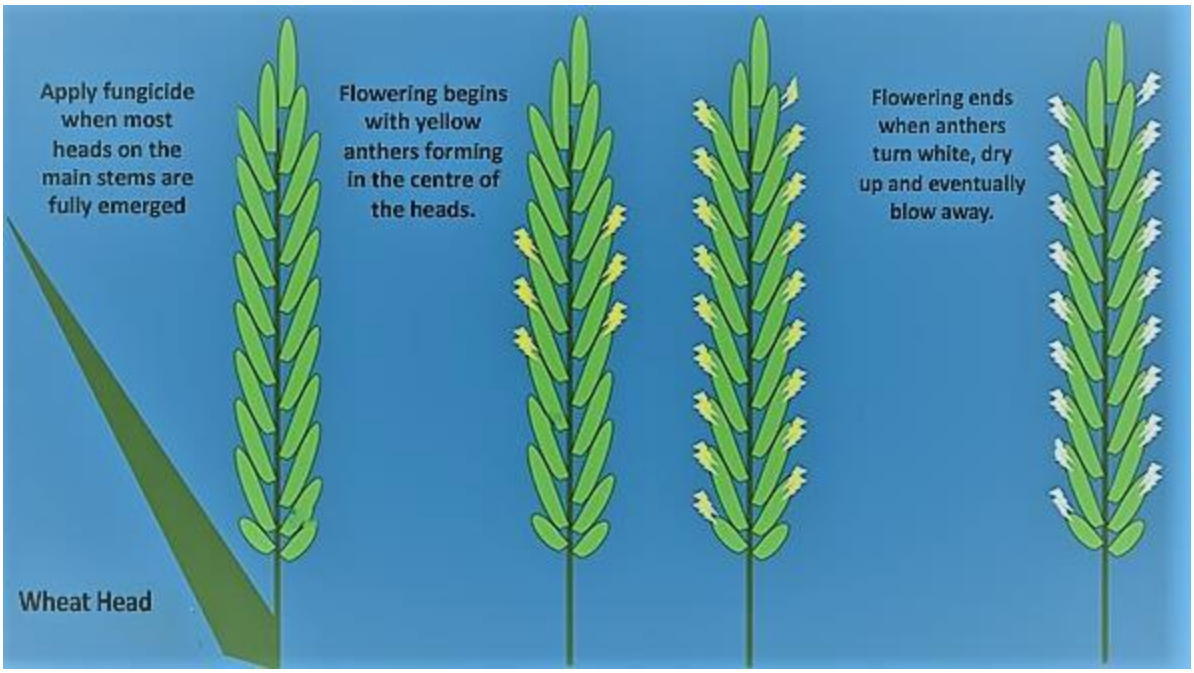
Use clean seed.
Where possible, producers must avoid planting seed that is infected with F. graminearum. Seed of susceptible crop species must be tested by a seed testing laboratory and only seed with non-detectable levels of F. graminearum is to be used for seeding purposes. Although infected seed can cause seedling blight, it typically does not directly give rise to head blight symptoms in one growing season. The fungus will move from the infected seed to the root, crown and stem base tissues of the plant that develops from the infested seed, therefore, creating potential sources of infested residue that can impact subsequent crops. Buildup of the pathogen would also be favoured by growing successive host crops continuously or in short rotations, and disease-conducive weather.

Seed treatment
Although unable to prevent infection later in the growing season, seed treatment helps prevent seedling blights caused by FHB and other seed and soil-borne pathogens. Therefore, prior to planting a cereal crop, treat the seed with a registered fungicide that includes FHB on the label list of diseases that are controlled.

Increase seeding rate
Increasing seeding rate causes less tillering leading to a more uniform and shorter overall flowering period which minimizes the length of time during which heads are susceptible to FHB infection. Less tillering means less variation in crop growth stage, which may improve overall fungicide performance. Less tillering and a shorter flowering period also reduces the time that irrigation should be avoided (during the flowering period) when the pathogen infects wheat and barley crops.

Stagger planting dates between fields
Humid weather during flowering in wheat or heading in barley favours Fusarium infection. Vary seeding dates to avoid having all cereal fields flowering at the same time.

Irrigation management
If possible, limit irrigation just prior to and during the flowering period to reduce humid conditions in the crop canopy which would otherwise favour FHB infection. For further information on using irrigation management to minimize FHB, see Fusarium head blight – Irrigation management.



Full head emergence and flowering stages of wheat. (Diagram adapted from Saskatchewan Ministry of Agriculture)

Fungicide application

In-crop fungicide application may be considered but can be inconsistent and only provides FHB disease suppression. Disease symptoms form later in the growing season and are not visible at spraying time. See the Alberta Blue Book (Crop Protection guide) for registered fungicides. Strobilurin fungicides (group 11) should not be used for FHB management because they may cause increased DON contamination in harvested grain.

The period that a cereal plant is susceptible to FHB infection is short. Therefore, the spray window is also short (approximately 7 days). Warmer weather conditions narrow the spray window while cooler conditions widen the spray window.

FHB fungal spores infect the cereal plant by entering openings created where tiny flower parts, referred to as anthers, form on the cereal head. Wheat flowers after the head is fully emerged from the boot while barley begins flowering as the head emerges from the boot. Tiny yellow anthers initially form in the middle of a head, ultimately developing over the full length of the head and finally turning from yellow to white as they age and dry out before blowing away. For fungicide application purposes, a field is at “full flower” when 50% of the heads on main stems are flowering.

Under ideal growing conditions, the length of time from when the wheat head is just emerging from the boot to the beginning of flowering is 3 days, so begin scouting closely when the head begins to emerge from the boot. The spray window begins when most of the wheat heads on

the main stems are fully emerged from the boot and continues through the time when yellow anthers form on the heads until 50% of the heads on main stems are in flower.
Barley begins to flower in the boot, however, so wait until most of the barley heads have emerged from the boot before spraying.

Ultimately, good head coverage prior to infection is critical for improving fungicide efficacy for both wheat and barley, thus waiting until all heads are out of the boot may be advisable.

Dr. Tom Wolf of Agri Metrix Research and Training provides these fungicide spray recommendations for FHB:

- angle nozzles forward or use a double nozzle (forward and back)
- greater angles are better
- use coarse sprays
- maintain low boom height
- fast travel speeds are fine for vertical targets (cereal heads)
- water: recommend 15+ gallons per acre (70+ litres per acre)

Scout for symptoms

Search for premature bleaching of one or more wheat spikelets (Figures 1 and 3) at the late milk to early dough stage. For spring seeded cereals, this typically occurs during the last part of July or early August. Once symptoms are present it is too late to apply a fungicide, however, keeping a record of this information is valuable for your FHB disease management plan in subsequent growing seasons. Symptoms in barley are much less distinct than wheat (Figure 4). Send suspicious looking cereal head samples to a laboratory to determine whether affected heads contain FHB infection and to determine whether the Fusarium species is F. graminearum or one of the less damaging FHB species, or possibly another disease that resembles Fusarium symptoms. Symptoms may also appear in threshed grain as FDK or discolouration, which should also be sent to a lab to determine Fusarium species. See laboratory suggestions in the next section.

Harvest management (combine adjustment)

Adjust fans to blow out lightweight infected wheat kernels, which may not be an option for infected barley and oat kernels that are not typically shrunken or shrivelled. While a majority of wheat kernels are lightweight, wheat kernels infected well after flowering and up to the soft dough stage of kernel development may be too heavy to blow out.

While there is some risk of having more wheat heads and straw pieces in the grain sample, some growers adjust the sieves to a more wide-open setting. A wider sieve setting slows the rearward flow of the grain mass that aids cleaning and separation of lightweight kernels due to a more vertically directed air blast. Thoroughly clean equipment used to harvest infected fields before moving to clean fields.

Harvest travel speed

Slower combine ground speed results in less material on the cleaning sieve and allows more time for the increased air blast to separate good kernels from lightweight, infected wheat kernels.

Consider harvesting early.

Under moist weather conditions, FHB fungal growth and DON production continue to develop and spread in grain over 19% moisture content. Therefore, if inclement weather is forecasted, consider harvesting early, however, be aware that higher moisture grain is heavier, which reduces the effectiveness of blowing out lightweight wheat kernels.

Post-harvest management Thorough chopping and uniform spreading of infected cereal straw will encourage decomposition and reduce pathogen survival. Research conducted over the last 20-30 years has found the impact of tillage to be variable, especially the typical forms of conventional tillage practiced in Alberta. Although moldboard ploughing may help, it is detrimental to soil health and increases the risk of erosion. Moreover, FHB is still an issue in areas that utilize moldboard ploughing.

Storage aeration and drying

Infected wheat should be aerated soon after storage to reduce grain temperature and fans should be turned on periodically thereafter as air temperatures decrease until the infected wheat is 5°C. If necessary, dry infected grain to 14% moisture content or lower. Drying temperatures should not exceed 60°C to retain milling quality.

Separate storage

Bin more infected grain separately if FHB levels vary between fields or within a field.

Gravity table and colour sorter

Although not entirely effective, gravity tables and optical colour sorters are able to separate out severely infected FDK to facilitate a grade increase. Although a gravity table is lower cost, some FDK are missed while some healthy kernels are eliminated. FDK colour varies from white to pink to black, which can complicate and slow a colour sorting process. A practice of using a gravity table first to clean the grain followed by colour sorting is being applied, however, time and cost of grain cleaning increases.

Both colour sorters and near infrared technology (NIT), that determines the presence of chemical characteristics (DON) via light response, have considerable potential to increase the

quality of a grain sample with Fusarium infection. These technologies will likely become more common as these technologies become more advanced, familiar and cheaper.

Control volunteers

Control volunteer cereals and grassy weeds on infested land, including headlands.

Handling feed grain and grain spillage

Feed grain represents a risk for introducing F. graminearum due to the sheer volume of feed grain brought into Alberta. It is known that F. graminearum on infected grain is killed during passage through the digestive system of cattle. Feed grain must be handled responsibly to ensure that all infected grain is fed to cattle. Grain spillage should be avoided. Infected spilled grain should be cleaned up and composted, reaching a temperature of 60 degrees C for at least 2 weeks, which kills F. graminearum.

Careful feed grain loading/unloading.

Infected grain must not be allowed to come in contact with the soil, which would allow F. graminearum to establish a foothold in roadsides or fields. Unloading sites must be covered or equipped with drop socks and wind fences to ensure that infected grain does not blow onto nearby soil. Trucks, or any vehicles, used to haul feed grain must be securely tarped. Trucks must be cleaned thoroughly at the unloading site and all remaining grain composted.

Feed grain storage

Limit the storage of feed grain/grain products in uncovered piles or in direct contact with the soil. Moisture contacting this grain can promote the growth and development of F. graminearum. Sites where infected grain/grain products were stored should be properly cleaned up and leftover grain composted.

Hay and straw management

Grass hay and straw from areas infested with F. graminearum can carry the pathogen and should be handled in accordance with the best management practices applied for feed grain. Grass hay represents a lower risk than straw because hay should all go through the cattle, which kills F. graminearum. Caution should be used when spreading infested livestock bedding straw in fields, which puts the FHB pathogen in contact with the soil. If the bedding straw is not collected and composted in early spring, any F. graminearum present may become established in the field or field edges.

When Should I Calve My Cows?

Adapted from: Manitoba Agriculture

Photos Courtesy: Nora (NPARA)

One of the most common questions asked in the last few years is, "Should I switch my calving season to spring or summer? Or "Why not fall calving"? It seems like an easy question to answer, but there are many factors each producer must consider. Most producers calve at a particular time of the year because that's how it's always been done on the farm. Some producers have chosen a specific season of calving because it best fits their other farm commitments.

Success for each cow/calf producer is related to the ability of the producer to wean one healthy calf per cow each year. It is recommended that cattle not be bred earlier than 60 days following parturition, even though they may exhibit heat earlier for maximum fertility. A disturbing problem with beef cattle can be the excessively long before the first postpartum estrus. It becomes difficult to breed for a yearly calf crop if the breeding interval is longer than 90 days.

Any cow/calf operation's objective is to keep the calving interval as short as possible. Most producers would consider 45-60 days ideal as this ensures a relatively uniform calf crop. The calving interval is greatly influenced by nutrition and health. If not managed properly, it will spread out the calving interval, making less efficient use of labour and capital. Therefore, choosing a calving season that allows the producer to provide the necessary care to ensure maximum fertility is very important.

There are four specific times of the year for potential calving seasons. That being, Winter (January, February, and March), Spring (April and May), Summer (June and July) and Fall (August, September and October).

For the purpose of this comparison, we are assuming that all operations will be feeding in confinement for 180 days and grazing for 185 days. All the cows will be provided with the same quality hay and are assumed to have a mature weight of 1,300 pounds. To determine the cost of feeding the cows, hay was valued at $60/ ton and barley $2 per bushel. Supplemental energy is provided where necessary. Feed waste is estimated at approximately 10 - 12% in confinement feeding (round bale feeders) and 3 to 5% when wintering in larger fields (ex: feeding with a bale shredder).

Estimates on infrastructure costs would suggest that they are greatest for winter calving operations. Facilities for spring and fall calving would be similar, about 20% less than those for winter. Summer calving operations would require the least investment in facilities, about 25% less than winter operations.

Total labour requirements for a cow-calf operation would be most significant for winter calving operations. Fall operations would require 10% less labour, followed by spring operations with 20% less, and finally summer operations with about 25% less labour.

Winter Calving

For herds that calve in the winter, the traditional period is usually considered January to March, with an average of February 15. Depending on the type of operation, the cow herd can be confined as early as October/November through to May/June, approximately 180 days, with the pasture period being about 185 days.

During the confinement period, which coincides with the animals third trimester and first 3 months of lactation, a 1,300-pound cow would consume approximately 3.8 tons of good quality alfalfa/grass hay (42 lbs/cow/day) and 7 bushels of barley. The total feed cost for this period would be $242. This excludes the cost of additional feed supplements.

Calves are typically weaned in the fall and weigh approximately 600 to 650 pounds, depending on the breed of animal. About 10 to 15% of the calves would usually be retained either as replacements or for further development due to quality reasons at the time of sale (e.g. lightweights, off quality etc.). Calves retained for further development are usually sold in the February/March period. To calve during this period, insulated barn and calving shelters are essential to protecting cows and calves from the elements.

Season	Advantage	Disadvantage
Winter Calving	• Calves can be weaned off grass in August/September and are available as 650 lb feedlot replacements. • Weaned calves are older/heavier and less stress-prone for feedlots. • Minimal feeder calves overwintered. • Re-breeding can be controlled before cows going out to pasture. • Winter born calves can be finished before April to take advantage of more robust markets. • Labour commitments don't interfere with other farm operations. • Calves garner a higher gross revenue at the time of sale.	• Infrastructure cost higher than other systems due to the need for good calving facilities. • Labour intensive because calving in winter requires constant vigilance. • Manure buildup greatest due to confinement; therefore, removal costs are higher. • Increased feed costs due to cows lactating during winter and feeding cows during her highest nutritional requirement period. • Extended pasture grazing (i.e. November) may not meet the cow's nutritional requirements if it is in her third trimester. • Increased risk of neonatal diseases due to higher animal density because of confinement.

Spring Calving

Spring calving herds usually calve in April and May. The confinement period is like a winter calving operation. The difference between calving seasons is the feed requirements for the third trimester and lactation periods. In a spring calving scenario, the nutritional needs during these critical periods are lower due to warmer weather.

The period includes second and third trimester and lactation nutrition requirements for the cow, each animal would consume approximately 3.2 tons of good quality alfalfa/grass hay (35 lbs/cow/day) with no grain required, for a total cost of $192 (cost of minerals/vitamins excluded). Calves are typically weaned in the fall and weigh approximately 450 to 500 lbs, depending on breed type. Producers would expect to keep at least 30% of their calves for replacement or further development (lightweights). Those not used for replacements can be sold in March.

Season	Advantage	Disadvantage
Spring	Reduced infrastructure costs. No calves are suckling in winter conditions. Moderate temperature improves comfort for both cattle and operator. Least labour-intensive system of all four. Decreased feed costs since feeding the cow during lactation are for a shorter period than with winter calving. Bigger calves can be marketed in November when the market is traditionally more robust. Lower quality feeds (i.e. straw and byproducts) and extended grazing meet the cow's nutritional requirements in her second trimester. Less bedding required for the calves.	Interferes with mixed farming. Finished calves may be marketed during periods of lower prices (i.e. June). May need to background smaller calves which comes at an additional cost. Spring storms can cause high calf mortalities. The breeding season occurs during the hottest summer months, which may affect conception.

Summer Calving

Summer calving herds usually calve in June and July, with calves born on pasture. The confinement period is like a winter calving operation. For this scenario, cows are fed heavier for approximately two of the six winter feeding months because they are lactating.

Approximately 3.4 tons of good quality alfalfa/grass hay (lactating cow with calf 55 lbs/day; dry cow 30 lbs/day) will be required along with 4 bushels of grain during the lactation period. The total cost of feeding in confinement is $212 (supplements excluded). Calves are typically weaned (December-January) during the winter months weighing approximately 500 to 550 pounds, depending on breed type. At this point, they are fed until reaching suitable health and condition to be marketed. This period of retention results in an additional cost to the system

Season	Advantage	Disadvantage
Summer	➢ Less labour and infrastructure required since cows calve on pasture. ➢ Good quality summer pasture meets all the cow's nutritional requirements. ➢ Winter feed costs are reduced. ➢ Calves are "hardened" by weather and usually trouble-free to wean and start on feed.	• Time commitments may overlap with other chores such as seeding, spraying and haying. • Predation and flies may be a challenge to calves. • May have to overwinter calves. • Handling animals on more extensive pastures may be difficult. • Calves need to be tagged immediately after birth. Otherwise, they may be challenging to locate on expansive pasture. • May have increased udder problems due to higher lactation yields. • Cows having calving difficulties may be left too long or overlooked. • Suckling of late lactation cows requires a higher investment in the feed. • It is difficult to pinpoint a good time to wean as the long cold stretches usually coincide with desired time to wean.

Fall Calving

Fall calving herds usually calve in August, September and October and naturally wean the calves in the spring weighing approximately 450 to 550 pounds, depending on breed type. These calves usually are pastured and supply the yearling grass-fed market.

Under challenging years with challenging environmental conditions, such as drought or excess moisture, reproductive problems may occur. Conception rates may decline if the quantity and/or quality of feed is limited if elevated insect populations cause animals to stress and if muddy conditions make breeding difficult for herd bulls. Challenging conditions like these may cause cows that are typically fertile to remain open or become repeat breeders. In situations like this, it may be reasonable to consider keeping these open cows and repeat breeders and shifting them into a fall calving program rather than downsizing your herd.

The confinement period of 180 days includes the nutritional requirements to maintain pregnancy and suckle a calf. Therefore, the approximate stored feed requirements of the cow are 4.5 tons of good quality alfalfa/grass hay (50 lbs/day - with calf included) with 7 bushels of barley, for a total of $302 (excluding supplement costs).

Season	Advantage	Disadvantage
Fall	➢ Calves marketed as grassers in the spring when markets are traditionally stronger. ➢ Cows pre-calving nutritional requirements can be met by pasture. ➢ Cows may calve in semi-confined areas, thus reducing neonatal diseases and reducing labour requirements.	➢ Must use stored feeds during the cows highest nutritional demand period (i.e. lactation), thus increasing feed costs. ➢ Cows must re-breed while being fed stored feeds; thus, proper nutrition is critical. ➢ Increased bedding requirements. ➢ Interferes with mixed farming.

Conclusion

All management systems can be made to work. No one calving system has all the advantages. Because the land resources, equity position, labour availability, wants and needs of the operator; are all variable - success is when an operator combines all the parts into a viable operation that meets their needs. Switching your calving season is a major farm decision. Consider the advantages and disadvantages carefully.

Battle River Research Group

How Pre-calving Nutrition Impacts Calf Health, Milk Production And The Breeding Season

Webinar
With Barry Yaremcio
March
16, 2021
7:00 To 8:30pm

Register
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