



The Blade

Creating an Awareness of Forages

Monthly
Newsletter
of the
**Grey Wooded
Forage Association**



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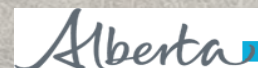


Photo Credit: Amy Leitch

GWFA Mission Statement

To promote environmentally and economically sustainable forage and agricultural practices.

GWFA Vision Statement

The community is engaged in regenerative agricultural production methods.

Message from the Chair

By Ken Ziegler

Well hello, folks! Trusting you are all well and getting the correct amount of suntan to separate you from all the folks that spend the majority of their days inside!!

With the geese pairing up again and acting rather maternal and the starlings back singing songs that they've borrowed from their southern neighbors, spring is definitely here and the prospect of another good year certainly raises feelings of apprehension.

Those of you that had set some regrowth aside last fall for this springs grazing sure are smiling. Makes sense considering the long tiring winter and the relatively low quality hay that's been around for so long.

For fun, take some grab samples of the regrowth from last year that your cows are grazing on now and get a nutrient test done on it. I'd be pretty sure that it's feed quality will be better than most hay bales around. At the very least, take note of the thickness of the cows manure while they're still on the hay diet and compare it to the manure once they've been grazing for a few days. I suspect the manure will be much sloppier from the pasture grazing. Of



course, that all translates into good nutrition and good health and milk production of the mother cows.

If you've been intrigued by the idea of grazing carry over forage starting in early April and knocking off 45-60 days of the feeding season, go to www.foragebeef.ca. There is a folder called "Extended Grazing" that contains all sorts of good information on the practice of carryover grazing and what you need to do the year previous to benefit from it.

In the meantime, I hope you'll enjoy this months newsletter. Ginette and Devin have been working hard in compiling good articles for your reading pleasure. If there's anything that you'd like information on, give them a call or send them an email and let them know your interest.

Thanks for your interest in the activities of the Grey Wooded and we look forwards to hearing from you during the various summer events that are currently being planned.

Ken



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Manager's Notes

By Ginette Boucher

Greetings,

The ground is thawing and the grass is greening up. Spring! What a great time of year with the promise of seeding and lush pastures for grazing. In this publication,

Karin Lindquist shares with us some facts on stockpile spring grazing and Devin shares his knowledge regarding developing a grazing management plan. We hope you'll enjoy this publication and continue to provide your feedback.

Many have renewed their memberships already and thank you for your prompt attention. For those who have not yet renewed, please do so at your earliest convenience, memberships are due April 1st. In the past, a large majority of members renewed at the AGM; this year our AGM will be late in June. To prevent disruption of your member benefits please send in your renewal or stop by the office. We're more than happy to help, your membership fees contribute to our program. We continue to search for new board members to replace those who are stepping off. So far, we have some interest, and continue to seek additional candidates.

If you know of someone or would consider a position on the board let us know. It would be fantastic to have enough interest from our membership in board position to hold an election. Our AGM is still in planning stages, we are looking at a few location options, and currently seeking information for a potential tour at Olds College. More to come.

We have approved three Environmental Farm Plans this year, and plan to continue to grow our environmental program. If your needing to update your Environmental Farm Plan or start a new one, please do not hesitate to contact us and we can assist you with your EFP.

As we learn about the new Growing Forward programs and the funding for this current fiscal year, we can assist you in completing the funding applications. We are planning to do some web-book workshops in late fall and early winter. If you have started an EFP and don't seem to be able to get it completed, we would be happy to assist you with the completion.

New for 2017, GWFA will start hosting webinars. We will have our first webinar set for April 19, "A Sainfoin Story" with Surya

Surya Acharya, Ph.D.

Lethbridge Research Station

"A Sainfoin Story"

Webinar invitations will be emailed to everyone on our distribution list



Acharya of the Lethbridge Research Station. Please be sure to register for these upcoming webinars; an invitation to register will be sent. If you are interested in the webinar but unable to access the registration link, please contact us and we'll make sure to get you the registration information.

We've planned a one of kind Advance Fencing for Precision Grazing field day for May 10th in Bearberry. We are pleased to partner with Greenedge Precision Fencing, Fotocure, and Mountain View County, additional speakers will include Gallagher and Sundog Solar. A poster of the event is included in this publication.

*Best regards,
Ginette*

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PRESENTERS INCLUDE GWFA, FOTOCURE, GREENEDGES,
GALLAGHER, SUNDG SOLAR, AND JERREMIE CLYDE



What's Your Grazing Plan?

By Devin Knopp, P.Ag.

It seems we just get turned around and it's April already. The snow is melting, the days are getting longer and warmer, and seeding is just around the corner.

Do you have a grazing plan in place? Now you're probably thinking, why would I or should I be thinking of a grazing plan? I'm still dealing with calving, the grounds still frozen and I won't be putting cows out for another 10 weeks if not longer. That's exactly why you should be looking at a grazing plan, because there isn't a lot of time left.

With everything else needing our immediate attention, pastures are often the last thing on our mind, but creating a grazing plan, ahead of time, can save future headaches and prolong pasture lifespan.

Making a grazing plan doesn't need to be difficult, sitting down and determining a few key goals can go a long way in giving your plan direction.

Goals are a starting point, that allow you to look back at where you started, compared to where you are, and then allow you to determine where you want to be. Your goals should be measurable, so you can track successes and opportunities that come out of them.

All producers have a plan of where they want to be, but most of those plans are locked in their heads, not down on paper. Having goals can help the next generation see where the farm started from, where it's at now and where it should be, so any farm transitions may happen more seamlessly.

Setting goals is only one part of your plan, you also need to know what you have. Take an inventory of everything. Start with a resource inventory of all your permanent and temporary infrastructure, fencing, watering systems, equipment, etc. Include aerial photos or satellite maps in this section to draw out or mark the different land use areas.

The second part of your inventory list is your forage inventory for each land use area. This determines present plant species and available forage for grazing, and is going to help you answer questions about grazing duration and frequency in your grazing schedule. Having an inventory ensures you know what you have and helps you figure out if any changes need to be made prior to grazing.

Propose a grazing schedule in your plan. This can be based upon historical plans, but needs to be flexible and account for environmental factors that change year to year. A grazing schedule should have estimated carrying capacity, grazing days, and rest periods all calculated from the plant inventory numbers. A grazing schedule goes hand in hand with your inventory.



Contingency planning should be a big piece of the plan. Without contingency plans, how will you react to unforeseeable situations such as drought, market collapse, or disease outbreaks. No, you can't have a plan for everything, but there are trends and situations that are recurrent and should be planned for, such as drought. We don't ever know when drought is going to occur, but we know its only a matter of time before it does. How are you going to manage your pastures in a drought situation?

Having a plan allows you to react quicker. That plan may be culling your herd, sourcing additional pasture, creep feeding, using a sacrifice pasture, or feeding alternative feeds. There are lots of options out there, but you need to know which works for you and put a plan in place. Without a plan, you may end up culling live-stock when prices are at their lowest or purchasing feed when it's at its highest. Contingency plans can save you money and keep your operation in better shape in the long run.

Grazing plans do not need to be difficult drawn out documents. A simple plan outlining a few key goals, a list of your inventories, a simple grazing schedule and contingency plans will make sure this grazing season is planned, well before any animals are put on pasture. If you have any questions about pasture planning give us a call or stop by the GWFA office and we'll be happy to help.

Is your annual compensation review coming this year?

It is time to start planning.

I can help. Give me a call.



Farm Transition Workshops

By Dean Dyck, P.Ag., Farm Business Management Specialist, Ag-Info Centre

During January and February 2017, Alberta Agriculture and Forestry collaborated with the Grey Wooded Forage Association to host a two day Farm Transition Workshop in Lacombe. The workshop attracted 37 producers, many of whom were farm families looking at transitioning the farm to the next generation.

Day one featured Shauna Feth with the Alberta Business Family Institute who talked about the need for all generations to communicate and create a plan that fits their family situation. The second day featured presentations from financial planners, accountants and lawyers that discussed the tax and estate planning tools to implement a farm's transition plan.

Participants were given the opportunity to discuss their own questions with these advisors during "one on one" sessions in the afternoon.

Feedback from the workshop was very positive. Approximately 92% of people that filled out an evaluation form said they gained useful tools on farm transition that they would take back to their families. They especially liked the "one on one" time with the advisors to talk about their own situation.

Ginette Boucher was instrumental in creating awareness and advertising the workshop in the area. Alberta Agriculture and Forestry appreciates her assistance as well as the partnership with ARECA in promoting these workshops.

Planning will begin soon for another series of these workshops in the province. If you would like to be put on a mailing list for more information, please contact Ginette or myself at 310-3276 or dean.dyck@gov.ab.ca

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Good Pasture Management to Reduce Soil Salinity

By Russel Horvey, Big Deal Galloway Cattle, Delburne



Healthier pastures result in healthier soils. Well managed pastures produce more forage. Well managed pastures also reduce soil salinity. The cornerstone to managing soil salinity is to reverse the movement of salts up in the soil profile to moving the salts down. Continuous plant growth is important. Perennial forages are the best, but deep rooted perennial forages are even better. Healthy pastures are deep rooted forages with lots of cover. The things that produce healthy pastures are the same things that reduce soil salinity.

Reducing evaporation off the soil surface reduces the movement of salts to the soil surface. Reducing evaporation leaves more moisture in the soil for forage production. More forage production results in more moisture being pulled down to the forage roots. The movement of moisture down in the soil profile moves the salts down as well, thus reducing the concentration of the salts in the soil. Lower concentrations of salts increase the health and vigor of plants growing in saline soils.

Deeper rooted forages pull the salts deeper into the soil profile, further diluting the salt concentration in the soil. Well managed forages are deeper rooted. Over grazing often results in shallow rooted forages. What is over grazing?

1. Overgrazing is when an animal comes back and bites off the same plant a second or third time in a short period of time, (in less than 3 to 5 days),
2. Overgrazing is not leaving enough leaf area after grazing, (less photosynthesis capability),
3. Overgrazing is too short of a recovery period before grazing again, (depleting root reserves),

What is an adequate rest period? Plant recovery can take 30 to 50 days, or longer, depending on day length, moisture conditions, grazing history, etc. A longer rest period is always better. The amount of plant re-growth is the best way to determine when to go back into a pasture or paddock. Generally the more plant growth above ground, the more plant growth there is below the ground, (the deeper the plant roots). Think of how much more moisture and nutrients deep rooted plants can access compared to shallow rooted plants.

Deeper rooted forages will increase the amount of moisture drawn deeper into the soil profile. This draws the salts down in a saline soil profile, again lowering the concentration of salts throughout the soil profile. This increases the spectrum of crops that can be grown and increases the production of the crops grown on saline soils.

In summary, good forage management, is good salinity management. More forage production reduces soil salinity. What can be better than this win/win relationship between forages and soil salinity? What can be better than well managed pastures producing nearly double what conventionally managed pastures produce? That is like buying another ranch. Management changes worth consideration.

Here's some things to point out:

- 1) We've upped the cost of production in the high yielding field, since now we're farming around a bigger area. Is that increase realistic? Too high? Too low?
- 2) Seeding in native sedges and cattails has a cost. With the ALUS Program, 75% of those "establishment costs" can be covered by ALUS. So, the \$150 here is what's left / it's the cost to the farmer. Is \$600 per acre to establish native sedges and cattails realistic?
- 3) We are now being paid by ALUS for the acres producing increased ecosystem services. We're getting paid \$40 per acre on the marginal acres, and \$5 per acre on the permanent water acres (these are the current rates for this kind of acres in ALUS in Red Deer County).
- 4) Because of the high cost of establishing this native vegetation...the marginal acres are still losing us money this year, with the numbers in the table (but, how accurate are those numbers?).
- 5) We're also still losing money on the water acres. But at least now, we've cut those losses in half.

With ALUS, we can enroll our acres for up to 10 years, and hopefully, more (Fig. 4).

So, to get the complete picture, we'd need to calculate the economics for each of those years, with anticipated crops in rotation, anticipated costs of production, yields, prices etc.

Not easy, but worth it.

For example, let's look at our field again, this time 4 years into ALUS (when we've planted canola again).

Highlights:

- 1) We're now making money from the marginal acres.
- 2) Overall, this parcel is now making us similar money to what we would have made this particular year, had we planted canola in the marginal acres instead.
- 3) This revenue for management that produces increased ecosystem services (\$40 per acre from ALUS) is guaranteed / contracted. It is not weather dependent. We can budget that revenue for the duration of the contract. Can we do the same on any of our other acres?
- 4) If you had similar profit off the marginal acres for the 9 remaining years after native vegetation establishment, you'd **net a profit of \$2,700** off those acres over those 9 years...which more than offsets the losses in the first, establishment year. This, compared to a **net loss** over 10 years of cropping those marginal acres, of **maybe \$5,000?**

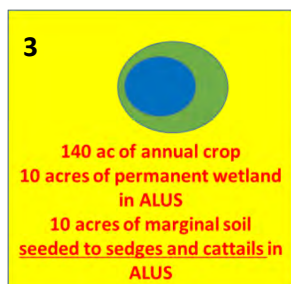
Like I said at the beginning...I'm neither a farmer nor an economist. You'll have to plug in your own numbers, to see how ALUS might pencil out for your farm.

We can help you do that. We can sit down with you, look at an air photo of some land with potential ALUS acres in it, plug in your numbers to our basic spreadsheet, and come up with an idea of how ALUS might work for your operation.

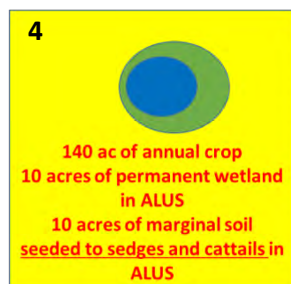
It looks like then, that ALUS *does* send a different market signal to you, the farmer, about your marginal acres. Management to produce increased ecosystem services *can* be a legitimate product / income stream on certain parts of your farm.

This spring, when you're looking at those marginal acres around your pot-holes, sloughs and creeks...please think once or twice about ALUS and better yet, give us a call.

Let's see what we can do.



| | Canola | Native Plants* | Permanent Wetlands | Parcel Total |
|---|--------------------|--------------------|--------------------|--------------------|
| Crop Name | Canola | Native Plants* | Permanent Wetlands | |
| Cost of Production (\$/ac) | \$410.00 | \$150.00 | \$10.00 | |
| Seeded Acres in field (ac) | 140 | 10 | 10 | |
| Cost of Production for field (\$) | \$57,400.00 | \$1,500.00 | \$100.00 | \$59,000.00 |
| Yield Per Acre (bu/ac, Tons/ac, ALUS Acres) | 45 | 1 | 1 | |
| Selling Price (/bu, /Ton, /ALUS Acre) | \$12.00 | \$40.00 | \$5.00 | |
| Gross Sales (/ / ac) | \$540.00 | \$40.00 | \$5.00 | |
| Gross Sales for field | \$75,600.00 | \$400.00 | \$50.00 | \$76,050.00 |
| Profit Per Acre | \$130.00 | -\$110.00 | -\$5.00 | |
| Profit for Field | \$18,200.00 | -\$1,100.00 | -\$50.00 | \$17,050.00 |
| *ALUS pays 75% of Establishment Costs | | | | |



| | Canola | Native Plants | Permanent Wetlands | |
|---|--------------------|-----------------|--------------------|--------------------|
| Crop Name | Canola | Native Plants | Permanent Wetlands | |
| Cost of Production (\$/ac) | \$410.00 | \$10.00 | \$10.00 | |
| Seeded Acres in field (ac) | 140 | 10 | 10 | |
| Cost of Production for field (\$) | \$57,400.00 | \$100.00 | \$100.00 | \$57,600.00 |
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| Selling Price (/bu, /Ton, /ALUS Acre) | \$12.00 | \$40.00 | \$5.00 | |
| Gross Sales (/ / ac) | \$540.00 | \$40.00 | \$5.00 | |
| Gross Sales for field | \$75,600.00 | \$400.00 | \$50.00 | \$76,050.00 |
| Profit Per Acre | \$130.00 | \$30.00 | -\$5.00 | |
| Profit for Field | \$18,200.00 | \$300.00 | -\$50.00 | \$18,450.00 |

A Cash Grain Broker – Part of Your Crop Marketing Plan?

By Neil Blue, P.Ag., Alberta Agriculture and Forestry

Numerous cash grain brokers have become established across the Canadian Prairies. Could using the services of a cash grain broker be part of your marketing plan?

By definition, a broker is a matching agent who arranges a transaction between a buyer and a seller, and for that service, is paid a commission. The seller typically pays a commission, but some brokers may charge commission to both the seller and buyer.

A cash grain broker acts as a matching agent between a seller and a buyer of physical grain. As a broker, they do not take legal or physical possession of the crop being brokered, but arrange for the deal to proceed upon agreement of the terms of the transaction by both parties. The broker may arrange for the trucking, or the buyer or seller may have the trucking capacity to handle that aspect.

Unlike a grain dealer, a cash grain broker does not take legal possession of the crop and therefore does not need to be licensed with the Canadian Grain Commission (CGC), although some brokers may elect to do so. If licensed with the CGC, the broker will need to post a bond or irrevocable letter of credit from a bank to serve as security for outstanding payables.

To check on whether any firm is licensed, you may contact the CGC by phone or check their website at <http://www.grainscanada.gc.ca>. Look for the link to “licensed grain companies”.

Cash grain brokers often deal with buyers who are not licensed. Under current rules, end users of grain need not be licensed with the Canadian Grain Commission. Crop producer protection has been under review in recent years and is subject to change. End users obviously include cattle, hog and poultry feeding operations.

The cash grain broker attempts to deal with buyers who they believe will stand for payment of the delivered grain, but there is always a chance of a full or partial payment default. In such a

case, the cash grain broker will try to help recover the funds. At least one cash grain broker, in a case of payment default, covered the outstanding payments for their brokered grain sales from their own resources.

If there is a higher default risk in using a cash grain broker compared to a large licensed grain company, why would one do so? The answer is “usually a higher net price”. A cash grain broker can often get a producer a higher price for grain than the producer could arrange on their own. Brokers can often do so by arranging to meet a buyer’s needs for volume purchases.

Also, a cash grain broker may be able to find higher-priced markets that the producer may not have the time or knowledge to seek out. Often the deal is made “picked up from the farm” with direct delivery to the buyer’s facility. Typically, an intermediary buyer is not involved and that saves handling costs, potentially benefiting both the buyer and seller.

In this year where many producers have lower quality or “tough” crops to market, a cash grain broker may be able to find a buyer that is willing to purchase grain with specs that prevent that grain from entering traditional market channels.

A crop marketing contact list, which includes some cash grain brokers, is available on request.



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Spring Grazing 2017: Going Beyond the Pasture

By Karin Lindquist, Forage Beef Specialist, Ag-Info Centre

The anticipation of putting livestock back out to graze is palpable. Snow cover is slowly edging away, leaving fields partly bare, and pastures with exposed old growth. New green shoots will come soon, when the frost finally leaves the ground.

The new shoots springing up through the brown, dead material are small, succulent, and an irresistible delicacy to any passing grazing animal. But they are also quite sensitive to being eaten.

They rely on energy stores from the roots they are borne from to grow, and only begin to photosynthesize as more of their green tissue is exposed to the sun's rays. When eaten they need to revert back to the stored energy in the roots to regrow.

Too much of this with too little time to recover, these new shoots will not have as much energy left to grow as they did at first.

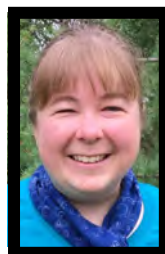
Resisting the urge to turn animals out on pasture when this new growth has sprung is quite important. These grasses need to have three or four leaves out and photosynthesizing before they can be grazed.

Going by height alone may not be enough because different species of grasses reach different heights when at the three-to-four leaf stage.

It may take three or four weeks or so, if moisture conditions and springtime temperatures are ideal, for these new shoots to reach this important stage of growth. If moisture is limiting, then these plants will take longer to grow.

Meanwhile, around 1 million acres of cropland in Alberta, according to the latest from AFSC, have not yet been harvested. This could make some opportunity for spring swath or crop-residue grazing, and to allow those pastures to reach that optimum stage for grazing.

But this opportunity needs to be met with a bit of caution, especially with using cow-calf pairs or backgrounder/stocker cattle.



These over-wintered crops are going to be high in fiber and low in protein, energy, calcium, and magnesium. It's very important to supplement these animals with a high calcium mineral-vitamin mix with dried molasses. The molasses will help with intake because the calcium portion of the mixture, in the form of limestone, is quite chalky and tasteless.

Supplementing cattle with grain or feed pellets along with grazing will also help to meet their nutritional needs while on swath grazing or crop-aftermath.

Creep feeding calves at 50 to 60 days of age with a 16% protein feed will also help alleviate the increased nutritional requirements of lactating cows because it puts less pressure on those cows to eat higher quality feeds for optimum milk production so that they can raise a good-sized, 600-pound calf at weaning. Feeding good-quality hay part of the day before turning them out onto the field in the afternoon may be another option to consider.

Limiting access with temporary electric fence and moving once every one to three days will reduce problems with acidosis followed by compaction. Watch the cows and watch the manure. Manure should be soft in a nice pat, not heaped up in a pile.

Swath grazing and crop-aftermath grazing will help take pressure off of spring pasture regrowth and give cows an alternative feed source while the grass grows. It's a good way to clean up those unharvested crops while the new spring grass gets ready for the grazing season.



ALBERTA ENVIRONMENTAL FARM PLAN

General Inquiries:

Alberta Agriculture & Rural Development

Toll free help line: 310-FARM (3276)

or Email: Info@Albertaefp.com



Alberta Ag-Info Centre

310-farm

Phone 310-FARM (3276) toll-free to contact Alberta Agriculture and Rural Development, or visit one of our field offices across the province for your agricultural information needs.



May 2012

Agdex 089/845-2

Farm Direct Marketing Eggs: What You Need to Know

The provincial egg regulation, the *Purchase and Sale of Eggs and Processed Egg Regulation*, affects the sale of eggs direct to end consumers.

According to the regulation, uninspected, ungraded eggs can be sold directly to consumers for their own personal use provided that:

- the eggs are produced on the producer's own farm
- the eggs are clean, have no visible cracks and are not leaking
- the eggs are kept at an ambient temperature of 7° C or less
- the eggs are packed in clean containers that are conspicuously labeled with the word "UNINSPECTED" in letters that are at least 2 centimeters in height

What does this mean?

Uninspected, ungraded eggs must only be sold by the producer and cannot be sold by an intermediary. The eggs can only be sold to the end consumer and not to anyone who will use them as ingredients in products they will in turn sell to the end consumer.

For example, uninspected, ungraded eggs cannot be sold to chefs for use in their restaurants, to caterers for use in their catering businesses, to owners of bed and breakfasts for use in their breakfasts or to bakers at the farmers' market who will use them as an ingredient in their baking destined for sale at the farmers' market. Uninspected, ungraded eggs can also not be used by the producer as an ingredient in a product destined for sale to the end consumer.

Cracked eggs cannot be sold because of food safety concerns. Research has shown that

cracked eggs can become contaminated very quickly, especially if laid in dirty egg boxes. Once contaminated, the egg contents can't be sterilized by normal practices such as washing.

Eggs must be kept at a holding temperature not exceeding 7° C. If selling at a farmers' market, this means that all of a vendor's eggs should not be sitting out on the table because the ambient air temperature is too warm. One carton can be displayed to attract customers' attention, but the eggs for sale should be held in a cooler that can maintain the cool temperatures. Eggs in an open refrigeration unit can be displayed provided the air temperature around the eggs is less than 7° C.

Egg containers can be recycled provided they are clean and free of contaminants. Remember that according to the federal Egg Regulations, containers that are labeled with a grade, such as Canada A Large, can't be used unless the eggs have been graded at an inspected egg grading station. If uninspected eggs are being sold in recycled cartons, the grade must be covered up. According to labelling regulations, the name of the grading station on recycled egg cartons should

also be covered. Cartons must also be labelled with the producer's name and address.

Farmers' market managers should be ensuring that all egg vendors are in compliance with federal and provincial regulations.

Handling eggs

Eggs are a perishable food and must be handled properly so they don't pose any food safety risks. Improper handling also reduces the quality of the egg.

*Uninspected,
ungraded eggs
can only be sold
by the producer
to the end
consumer.*



(continued on Page 13)

What is a Good Crop Rotation?

By Harry Brook, Ag-Info Centre

A good crop rotation is one where there is an adequate variety of crops grown so that any one type of crop is grown only once every 3 or 4 years. Advantages with this system include keeping diseases, insect pests and problem weeds under control. It can reduce your pest costs, prolong the usefulness of our pest control products and improve the bottom line. Limiting or shortening the rotation may provide short term financial benefits but in the long term it could severely limit future cropping options.

A prime example of this is clubroot. This disease affects canola by converting the canola root into a massive spore factory. It is only spread in infected soils but each year we see it found in more fields in Alberta. Once you have clubroot, it is there for the long haul. These soil borne spores can remain viable in the soil for up to 20 years. If you have it, many counties will require the land be put on a 4 or 5 year crop rotation, canola free. Also, anything that moves dirt around can potentially move infecting spores and spread the disease. Once one field is infected, it isn't long before it is found in other fields owned by the same farmer as field machinery is great for moving the spores around. Resistant or tolerance genes have been used in our recent canola varieties yet we are already seeing this tolerance break down.

It doesn't help keep resistance in a crop when the crop rotation is wheat followed by canola. Using a variety of crop types can add to the health of a soil. Pulses in rotation improves soil health and reduces fertilizer costs. Peas, lentils, and faba beans all capture nitrogen from the air. They also encourage beneficial bacteria and fungi that can benefit following crops. There is a nitrogen benefit left in the soil that extends up to 3 years after the pulse crop.

Permanent forages in the crop rotation provides even more benefits. It reduces the weed seeds present in the soil, increases organic matter, and is an excellent break for crop diseases and insect pests. Also, a varied crop rotation can help diversify a farm operation, reducing financial risk. It spreads out machinery use and can allow for more efficiency in machinery use.

Moisture use efficiency also improves with a varied crop rotation. Canola, wheat and peas all root to different depths and extract moisture from different parts of the soil. A planned crop rotation can utilize soil moisture more efficiently. Permanent forages can also address soil problem such as soil salinity or acidity. Seeded in a field for three to five year, they are an excellent break from annual crops and add to the soil organic matter, which is your soil nutrient bank account. They can even reclaim soils over time.

A diverse crop rotation also naturally varies the pesticides used and reduce the chance of resistance developing to pest control products. Conversely, a tight rotation can quickly develop into problem pests, be they weeds, insects or diseases, requiring great-

er expense to control the issue. In the case of clubroot of canola, the only answer is resistant varieties, and that tolerance has already broken down.

Stop and reconsider your crop options. A diverse crop rotation is one of the best tools to reduce the risk of pest issues rearing their ugly heads. It can save you money and grief in the future. Crop rotation is a very useful tool in farming. Take it out and use it more often.

(continued from Page 12)

Eggs should be washed with clean water as soon as they are collected. The temperature of the wash water should be around 43° C. The temperature of the wash water is important; if too cold the egg can draw harmful bacteria into the egg. Never let eggs sit in the wash water. Change the wash water as needed to ensure proper cleaning. Remember that the egg bucket washers also need to be washed, rinsed and sanitized between egg water changes which should be after every second washing.

Immediately after the eggs are washed, they should be dunked into a sanitizing solution. Household bleach is a commonly used sanitizer. Five milliliters of bleach into one litre (5 ml/L) of water makes a safe solution. This solution should also be at 43° C.

Once the eggs are washed and sanitized, they should be quickly air dried and packaged. Promptly refrigerate the eggs at a temperature not exceeding 7° C, and keep them refrigerated up to the time they are sold.

Provide your customers with a little extra value and remind them to get their eggs home as soon as possible and place them into the refrigerator. Eggs should be kept in the main body of the fridge, where they can be kept at a more constant, colder temperature and not in the door.

Need more information?

If you need more information about how to produce and handle eggs or any poultry product safely, contact Dr. Colleen Christianson at 403-948-8575 or Dr. Delores Peters at 780-427-7501, Animal Health Branch, Alberta Agriculture and Rural Development.

For more information about the *Purchase and Sale of Eggs and Processed Egg Regulation*, contact the inspection and investigation branch, regulatory services division, Alberta Agriculture and Rural Development, at 403-755-1474. Dial 310-0000 first for toll-free access.

This factsheet was prepared by Alberta Agriculture and Rural Development.



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Coccidiosis in Cattle

Coccidiosis is a common parasitic protozoan disease of cattle, particularly weaned calves, in Alberta. Bovine coccidiosis is seen most frequently in calves that are three weeks to six months of age. Calves become infected when placed on pastures or lots contaminated by older cattle or other infected calves. Mature cattle may become infected when they are brought in from pastures and crowded into feedlots or barns.

At least nine species of coccidia occur in Alberta cattle, but only two, *Eimeria zuernii* and *Eimeria bovis*, cause severe clinical disease. To a lesser extent, *Eimeria alabamensis* also can cause clinical disease. The prevalence of the different species of coccidia can vary considerably between farms, regions, seasons and age groups.

Life cycle of coccidia

Bovine coccidia have stages both within the host animal as well as outside. The developmental stages in the animal give rise to a microscopic egg (called an oocyst), which is passed out in the manure (Figure 1).

Under proper conditions of temperature, moisture and oxygen, the oocyst develops within three to seven days and is now capable of infecting cattle. At this stage, the oocyst contains eight bodies (called sporozoites), each of which is capable of entering a cell in the animal's intestine after the oocyst is eaten.

When a sporozoite enters a cell, it changes into a meront and divides many times, producing up to 100,000 offspring called merozoites. The numbers produced depend on the species of coccidia involved. Each offspring, in turn, may enter another intestinal cell. This cycle is repeated several times. Because of this multiplication of parasite stages, large numbers of intestinal cells are destroyed.

Eventually, the cycle stops and sex cells (male and female) are produced. The male fertilizes the female to produce an oocyst, which ruptures from the intestinal cell and is passed in the manure. Thousands of oocysts,

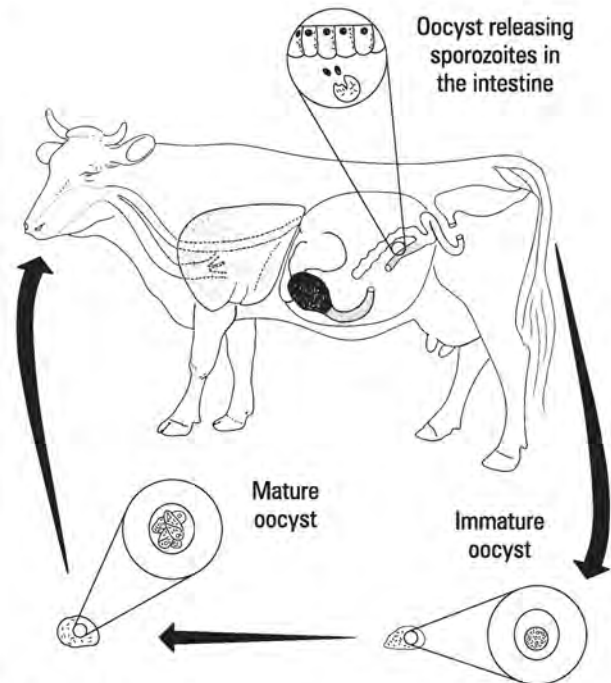


Figure 1. Life cycle of coccidia in cattle

each containing eight sporozoites when mature, can be passed in the manure of an infected animal.

What disease does coccidia cause?

The severity of the disease depends on a number of factors including the number of oocysts eaten, the species of coccidia present, the age of the animal, or if the animal has developed immunity due to a previous infection.

Coccidiosis occurs mainly in calves that are three weeks to six months of age and is usually accompanied by diarrhea varying in severity from watery manure to one containing blood. Animals affected with coccidiosis often strain due to irritation of the lower bowel and rectum.

Alberta

Blood may appear in the manure after the second or third day of diarrhea. Dehydration, weight loss, depression, loss of appetite and occasionally death may also be observed.

Infections that fail to produce signs of disease may nevertheless affect the growth and health of an animal by impairing intestinal function and feed conversion. Calves with only a light infection usually show no signs of disease, but shed oocysts in manure, so the oocysts accumulate in pastures, yards, barns or on the hair coats so that severe coccidiosis may develop when new calves are placed in these areas.

Cattle that recover from coccidiosis usually become immune to later infections, but they may continue to pass oocysts in the manure, thereby providing a source of infection for susceptible calves.

Are all cattle equally susceptible?

Coccidia occur in all breeds of cattle. Calves may acquire infection as soon as they begin grazing or eating food other than their mother's milk. Although the disease is seen more commonly in calves three weeks to six months of age, it may occur in yearlings and adults.

Recognizing the disease

The most common signs of the disease are profuse diarrhea that may contain blood, dehydration, weight loss and death in severe cases. Unfortunately, these signs are not specific to coccidiosis, and a veterinarian should be consulted if the above signs occur. Loss of appetite occurs during clinical coccidiosis in calves regardless of the *Eimeria* spp. involved. In severe cases, feed intake can be reduced as much as 60 per cent during peak infection and can remain low subsequently.

Diagnosis of the disease

Diagnosis is made from a combination of herd history, clinical signs, physical examination of the animal and microscopic examination of manure taken from the rectum. Diarrhea usually precedes heavy oocyst discharge by one or two days but may continue after oocyst discharge has returned to low levels.

Because of the many problems associated with diagnosing coccidiosis, it is advisable to consult a veterinarian in suspected cases.

Prevention of coccidiosis in cattle

Good management practices are important when establishing parasite control programs. The primary concern in coccidiosis outbreaks is the potential to spread the disease to other susceptible animals in the herd.

- Prevent drinking water and feed from becoming contaminated with manure.
- Keep pens dry and supplied with ample dry bedding.
- Use pastures that are well drained.
- Raise watering troughs above the ground.
- Keep grazing to a minimum on grasses along the edges of ponds and streams.
- Prevent overgrazing. Animals forced to graze down to the roots of plants may eat large numbers of parasites.
- Heavily parasitized animals should be isolated from the rest of the herd and treated.

Treatment of affected animals

There are several anticoccidial drugs available that may be used. Outbreaks of coccidiosis in calves and feeder cattle may be handled by mass medication added to either the feed or water. Specific recommendations should be obtained from a veterinarian.

Prepared by

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Alberta Agriculture and Food



Grey Wooded Forage Association

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