What is the single most variable cost in beef production? Feed! So it makes sense to experiment with different feeding strategies that could help reduce costs – one of these being extending the grazing season. These systems have been shown to reduce costs/cow/day and the nutrients left behind are deposited directly on the field. Extensive systems include stockpiled forages, swath grazing, bale grazing and, more recently, standing corn.

Interest in utilizing standing corn as an extended grazing system has been increasing and there are many aspects that make it an ideal crop for winter grazing. The nutritive value of corn is adequate to meet beef cow requirements and the reduced nutrient content in the leaves/stems late in the year is countered by the high value of the cobs produced. If area access is limited through the use of grazing controls, such as electric fence, cows will consume both the cobs and the leaves/stocks. Corn is a warm-season crop requiring a greater number of heat units during the growing season. However, with new lower heat unit varieties continually in the research scope, growing corn in northern climates has increasing potential.

As with any crop, the goal is to get the most bang for your buck. Consequently, the agronomics of growing corn for winter grazing is a primary factor determining yield and grazing days. Although soil temperature, seeding date, fertility and seeding depth will impact emergence and establishment, corn significantly lacks competitiveness with weeds as well as itself. To help reduce competition from weeds, control is key and should be done prior to seeding and after the 3 leaf stage!

As a result of corn’s lack of competitiveness, row spacing can play an important role in overall yield. A typical corn planter is designed with a row spacing of 30 inches, which is over 15 inches greater than most common seed drills. Along with a greater row spacing, a corn planter will space seeds out at a more even interval to reduce intra-row competition. This also allows for optimum utilization of water, light and nutrients that are available to the plants. However, a small number of acres are being planted to a row spacing of less than 30 inches.

So, do the inches really matter? Data on yield and grazing days was collected last fall on two 20 acre fields – one seeded with a corn planter at 30 inch spacing and the other with a conservapak drill at 12 inch spacing. Yield samples were taken in late October and the same herd of 550 cows was turned out into each field. Likely as a result of the reduced competition with 30 inch spacing, the plants were larger with greater cob development and, consequently, out-yielded the conservapak by over 70% on an As Fed basis and 37% when (continued on page 7)
Ascochyta blight of peas is known to be caused by three different fungal species: *Ascochyta pisi*, *A. pinodes*, and *A. pinodella*. *A. pinodes* causes blight, *A. pisi* causes leaf and stem spot, and *A. pinodella* causes foot rot. Under field conditions all three fungi can occur simultaneously and it is often difficult to distinguish between them. This disease is commonly referred to as ascochyta complex under field conditions.

The fungus, *A. pinodes*, which affect roots, leaves, stems, flowers and pods is observed to be most common in Western Canadian pea fields. The sexual stage of *A. pinodes* is *Mycosphaerella pinodes*, and is also commonly known as mycosphaerella blight. In western Canada about 90% of the disease damage is caused by mycosphaerella blight as opposed to foot rot or leaf/stem spot (1, 2). This disease is considered very important in the wetter and cooler areas of Alberta and can be a major pea yield limiting factor under favourable conditions of disease development (3, 4).

Early season outbreaks of the disease caused by *M. pinodes* can result in considerable yield losses of field peas (5). Many areas of Alberta have the potential to produce higher pea yield due to ample rainfall during the growing season; however, high moisture and humidity also help ascochyta diseases appearance during early flowering to pod filling stages of peas. A recent survey of foliar diseases in the pea growing regions of the province conducted by Alberta Agriculture and Rural Development found that 100% of the surveyed pea fields were infested with the ascochyta disease complex (Alberta agronomy conference, 2013).

**Symptoms and Disease Development**

The *Mycosphaerella pinodes* pathogen attacks all plant parts including leaves, stems, flowers and pods of field pea. Symptoms include the formation of large tan coloured lesions on the stems, leaves, stipules, tendrils and pods of field pea (6). Lesions often completely girdle the stem resulting in severe lodging of the peas (7). For every 10% infected stem area about 5-6% of yield losses are expected. The lesions found on the flower stalks ceases flowering followed by blossom drop. If lesions are formed on pods fungus can eventually infect inside seed (8); according to an estimate, if 10-15% of the pod area is covered with lesions, then 5-10% of the seeds are likely to become infected (1). Fungal infected seeds may sometimes appear normal or may be discoloured and shrunken. Foot rot lesions are more concentrated at the base of the stem close to the soil surface, which eventually leads to blackening of the taproot and base of the stem. Infections early in the season leads to weathering of the stem base and the collapse of the plants as the first pods fill, resulting in premature lodging and further reduction in yield and quality (Saskatchewan Pulse Growers, Pulse Production Manual 2000).

Development of ascochyta blight disease occurs rapidly under cool and moist conditions. Repeated cycles of infection and spore production occurs when conditions during the growing season are conducive for disease development which results in rapid increases in ascochyta blight disease severity. An increase in severity is often associated with canopy closure due to dense growth which prevents drier air from penetrating into the canopy (9). Reduced air flow results in increased humidity, and the infection moves up into the mid and top levels of the canopy when conditions are conducive for disease increase. Cool conditions and adequate moisture during flowering and pod set also maximize the growth and productivity of the field pea crop, so the yield potential of affected pea crop may still remain high even though disease appears to be severe in the field. (continued on page 4)
Each year, as spring approaches and hay stocks begin to dwindle, hay prices take an upward swing. It also means that some year-old stored hay comes on the market.

“Producers purchasing hay need to take the time to feed test hay that has been put-up for a year or more before making the purchase,” says Barry Yaremcio, beef and forage specialist with Alberta Agriculture and Rural Development. “While the feed may have initially been put up very well, sitting in the yard or field for an extra year has likely changed the feeding outlook of the forage.

“Hay is a perishable commodity that deteriorates when exposed to weather. Time is a factor. For example, 90 days after cutting, the vitamin precursors’ loose “strength” and animals will require supplementation. The fat soluble vitamins A, D, and E are the first nutrients to oxidize. Injecting or feeding vitamins 90 days after animals are taken off fresh forage is necessary until they are put back on pasture the following spring.”

Bales that are stored under a shed, covered or wrapped in plastic do not deteriorate over the winter as much as hay stored outdoors. A feed test in the spring, compared to the results from the previous fall, would likely show the protein, fiber (energy) and mineral content of the hay stored under cover to be very similar. This is not the case for hay that is stored outdoors, uncovered and on the ground.

“In a 6-foot diameter round bale, 27 per cent of the bale weight is found in the outer five inches of the bale,” says Yaremcio. “For every inch of rain, 180 pounds of water will land on the bale. Some will run off, but some will enter the bale. When the exterior of the bale is rain soaked and is exposed to weather, it rots.”

More weather damage occurs to legume hay compared to grass hay. Applying twine at 4-inch spacing reduces moisture entry into the bale compared to bales with twine at 8 inch spacing. Net wrapped bales shed rain better and have less damage than bales tied with twine. Bales wrapped with solid plastic have the least amount of damage. A denser or tighter bale sheds more water than a looser bale. As well as reduced bale weights, molds and bacteria can use up the best nutrients in a bale. The soluble proteins and highly digestible sugars are consumed leaving off-coloured moldy feed, which reduces the feeding quality of the hay. Also, weather damage can increase the indigestible fibre levels in hay by 5 per cent or more and reduce energy levels by similar amounts.

“Because of possible quality reduction, the best advice is to feed test – even if you see last years’ feed test results, re-test the hay before purchasing and/or feeding,” says Yaremcio. “For that year-old hay, when exposed to the elements, damage occurs. Digestibility of the outer 5 inches of the bale is reduced by 20 per cent. Overall forage digestibility in a round bale is reduced by 10 per cent. If the hay is kept over for a second year, additional weight loss occurs and digestibility is reduced even further. In some situations, this older hay could be no better than feeding cereal straw.”

If you expect this older feed will be the majority of this years’ feeding program, protein and energy supplementation will likely be required to meet animal requirements. As a guideline, hay made in 2012 should not be more than 25 to 30 per cent of the forage in the ration for cows in early-to mid-pregnancy, and 15 to 20 per cent in late pregnancy. Depending on quality, year old hay may not be suitable to include in lactating cow or newly weaned calf rations.

To come up with a fair price when buying year old hay:
- weigh the bales – do not use average weights from last fall
- take a representative sample and test the feed – does the quality meet your needs
- price should reflect the 10 per cent reduction in digestibility—for hay that was stored outdoors – if the cows cannot digest the hay efficiently, more nutrients end up in the manure
- compare the price of year old hay to green-feed or straw – pay according to quality not forage type

Websites of Interest:
- Western Beef Development Center
  www.wbdc.sk.ca
- Alberta Canola Producers Commission
  www.canola.ab.ca
- Alberta Pulse Growers Commission
  www.pulse.ab.ca
**Integrated Disease Management**

Ascochyta blight management requires an integrated approach to achieve effective results (2, 3, 6, 10, 11, 12, 13). Effective disease management techniques include the following:

**Crop Rotation:** Disease infection may arise from the soil or from pea crop residues/stubbles. An effective approach would be to reduce the risk of infection by not planting peas in the same field more than once every 3-4 years. This will help reduce the risk of infection from pea residue or soil-borne spores in that field. Plant pea crops as far as possible from the previous year's pea fields.

**Stubble Management:** Stubble management practices can help speed up the decomposition of pea residue. Although, zero or minimal tillage does not appear to foster infection, stubble management practices such as straw-chopping during combining or harrowing to spread pea residue on the soil surface can speed up decomposition of the residue, which can help reduce the risk of spreading the disease (2).

**Variety Selection:** There are no known varieties with high level of resistance to ascochyta blight, however, some varieties are rated as having fair resistance to the disease and are less likely to exhibit lodging and yield loss if infected. Check the Alberta seed guide (seed.ab.ca) for a complete list of varieties suitable for your area.

**Agronomics:** Yields tend to be higher for field peas planted early in the spring. Yield losses may increase if seeds are planted too deep in the soil, as seeds are more susceptible to soil and seed borne disease infections. Dense pea stands favour disease by reducing air flow within the canopy and restricting humidity near the lower stems where stem and foot lesions could develop. Practices that helps in maintaining an upright crop such as choosing a variety resistant to lodging and avoiding excessive application of nitrogen helps in reducing the impact of the disease.

**Seed Quality:** Although the seed-to-seedling transmission rate of the ascochyta fungus is low in field peas, it is still advised to plant seed with less than 10% ascochyta infection. Some seed lots may have higher infection if produced under disease favouring conditions. If good quality seed is not available, seed with higher infection levels should be treated with a fungicide. Producers are recommended to select seed with high level of germination and a low level of ascochyta blight infection. Growers can get their seed tested at an accredited laboratory for levels of germination and to determine the percentage of seed that is infected with seed-borne fungi.

**Seed Treatment:** Seed treatments provides protection against both seed and soil borne disease infections. For a complete list of seed treatments registered for field pea against ascochyta, refer to Alberta Agriculture's Crop Protection guide.

**Crop Scouting and Fungicide Application:** Scouting is important for early disease detection and the progression with respect to the growth stage of the peas in order to determine the amount of fungicides to be applied if needed. Begin scouting at the vegetative stage and continue into early flowering to observe whether disease is moving upwards in the plant canopy and are present on tendrils and flowers (2). Risk of yield loss is low and fungicides are not recommended if disease symptoms do not move beyond the lower third of the plant canopy at the flowering stage. However, fungicide control is recommended if:

- 50 per cent of the bottom third of the crop canopy is showing symptoms and are progressing into the middle third of the canopy; and
- The weather has been humid and rain showers in the weather forecast and
- Expected yield justify the cost of the fungicide application.

Varieties rated as having fair resistance to ascochyta blight rarely benefit from a fungicide application. However, seed growers may want to make a fungicide application to protect the quality of the seed.

The foliar fungicides registered for use in field peas for the control of ascochyta blight include Bravo 500, Headline EC, Lance and Quadris. The ideal timing for fungicide application in field peas is at the early flowering stage. Foliar fungicides work by protecting the healthy green plant material but are not effective in repairing plants already affected by foot rot. It is recommended to use higher water volumes to ensure thorough coverage of leaves and to penetrate the plant canopy (2). Refer to Alberta Agriculture publication - Guide to Crop Protection for a complete list of foliar fungicides.
Points to Remember During the Calving Season
January 13 Issue of Agri-News

A little preparation and some advance management practices can go a long way in ensuring a successful calving season in 2014.

Feeding and nutrition management:

- Successful nutrition management requires the analysis of the feed resources.
- The best feeding management is attained by separating cows that have calved from those that have not.
- Ration balancing using the animal’s nutrient requirements and the nutrient composition of the feeds helps to determine the appropriate mix of feeds.
- Moisture content of silages must be known to assure accurate ration formulation.
- The mineral needs of a cow increase after she calves.
- Extra nutrients are required 90 days post-calving for a cow to produce enough milk and rebreed efficiently.

Health care and calving difficulties:

- Injuries and diseases at calving generally respond to treatment with little effect on the subsequent breeding period.
- Some diseases may occur during or after calving that will have an effect on rebreeding.
- Calving losses in heifers can be high because of calving difficulties.
- Use good judgment as to which calving problems require professional help.
- Traction on the calf in the early stages should be exerted upward in the direction of the tail head and not downward. Once the calf is in the pelvic cavity, traction should be straight backward and then downward allowing the calf to pass through the birth canal in the form of an arch.

- Many calving difficulties could be eliminated by proper development of replacement heifers and breeding first-calf heifers to bulls that will sire calves with light birth weights.
- Even though calf weight is the most important single cause of calving difficulty, size of the pelvic opening is also related to calving difficulty.

Good Management Practices:

- As cows calve they should be separated from cows that have not calved so both can be fed to their requirements and scours may be prevented.
- Heifers calving for the first time should be separated from older cows so they can be watched more closely for calving problems.
- The chances of calving problems with heifers are five times greater than with mature cows.
- Provide cows a trace mineralized salt-phosphorus mixture.
- The hospital pen should be dry, sheltered and convenient to work in.
- Be sure the cow is allowing the calf to nurse. Calves should receive five per cent of their birth weight in colostrum before they are 12 hours old.

Preparations to consider before the next breeding season:

- Review the vaccination program for cows and calves and vaccinate them prior to the breeding season.
- Examine and treat eye problems that might become worse on the range.
- Be sure cows, and especially first-calf heifers are receiving enough feed for milk production and preparation for the breeding season.

Hold the Date!
July 9, 2014

LARA Summer Field School

five topics    small sessions    hands-on    lunch & refreshments
Welcome Shabeg!

Shabeg Briar did his agriculture education at the Punjab Agricultural University, India. He possess several years of experience comprised of research, teaching, management and extension, and has worked in India, USA and Canada. He grew up on a farm in the north Indian state of Punjab and helped his parents on managing their farm operations, gaining experience growing diverse crops like wheat, rice and sugar-cane. He went to the US to obtain his Ph.D. in Plant Pathology and Nematology from the Ohio State University where he worked on the bio-indicators of soil food web health in agro-ecosystems and studied several courses in field pathology towards his graduate degree. Following that he moved to Manitoba to work on the prevalence and geographical distribution of quarantine pest of peas in Western Canada, at the University of Manitoba. Before joining LARA, he also experienced working with a small plot research company based in Portage la Prairie, Manitoba. On the personal side, Shabeg is married to his wife Navdeep and they have 2 children (Robin and Monty).

“"I am very pleased to join with LARA as the new Cropping Program Agronomist. A huge thanks to Meghan Elsen and the rest of the staff for a great introduction to LARA. I am looking forward to work as a part of LARA’s team of professionals, learning new things and building strong relations with producers as the time passes on.”

CanoLAB 2014: bringing the field indoors
Alyssa Krone, LARA

On February 19, I had the opportunity to attend CanoLAB 2014 held at Olds College, where, for one day, the field was brought indoors to focus on canola agronomics. Topics on seeding, fertilizer, disease, pests and many more were presented by top industry instructors including Canola Council agronomists and Ag Canada research scientists. A few of the highlights included:

Evaluating Frost Damage
How much frost damage can your canola crop sustain? The tough question was discussed through multiple demonstrations and presentations on the impacts of varying drops in temperature. The full effect of frost could take up to three days to become noticeable and it may take as many as six days before you can assess the full impacts of the damage to make an informed decision on the fate of that field. If there is any green left in the growing point (centre of leaf rosette) of the plants they will recover. However, if the growing points are frozen, the field may need to be re-worked and re-seeded, depending on the extent of the damage. Even if the damage appears to be widespread, many times the severe frost damage may only be in pockets within the field and the crop can be salvaged.

Nutrient Deficiencies
The difficult process of determining the cause of various plant abnormalities and disease-like symptoms was broken down to determine the impacts of nutrient deficiencies. Fields should be scouted throughout the growing season and a key point to remember is that the influence of varying levels of nutrients on canola is dependent on the mobility of that nutrient within the plant itself. For example, sulphur is a non-mobile nutrient and, consequently, late season deficiencies will appear in the new growing points (upper leaves) while the older growth is unaffected. In contrast, late season nitrogen deficiencies will become visible in the lower leaves due to its mobile nature within the plant.

For videos and related information visit www.canola.ab.ca
fungal problems. A disease prediction system for ascochyta blight in field pea is available on the Alberta Agriculture site. For more information on AAFRD's fungicide decision support system, visit their website [http://www.agric.gov.ab.ca/]

References

For more information:
Mission Statement:
The Lakeland Agricultural Research Association (LARA) conducts innovative unbiased applied research and extension supporting sustainable agriculture.

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Upcoming Events

Coming this Spring and Summer:

Poo and You Septic Workshop
Effective Spraying Workshop
Summer Field School
(see page 5)
Pasture walk with Jim Gerrish
Watch for upcoming Crop Walks