

Forage FOCUS

May 2011

Determining Forage & Livestock Research Priorities

At the 2010 Manitoba Grazing School, the Manitoba Forage Council Board of Directors invited attendees to a discussion regarding MFC's role in guiding the future of research in forage and livestock production for Manitoba. From this initial meeting, a document entitled the Forage and Grassland Research Priorities for Manitoba was born. Over the past few months, MFC directors and industry stakeholders have provided input on the direction for research and extension for the forage and livestock sectors. These research priorities are a "Work in Progress" and the MFC Research Committee will continue to meet with partner organizations to refine as required. If you have any suggestions please contact Wayne at (204) 726-9393 or mfc@mbforagecouncil.mb.ca

This initial document has been quite helpful for a number of organizations including MAFRI, the University of Manitoba, and Agriculture and Agri-Food Canada as they develop long-term research priorities. Most recently, the Brandon Research Station hosted an initial round of Regional Research Update Meetings to improve the collection of input from industry stakeholders regarding the direction of the Brandon Research Station's Beef Program. The timing of the development of this document was quite important as it provided guidance during this meeting. To view the suggested priorities go to page 3.

MFC seeks support to resurrect Green Gold Program

For 15 years, John McGregor of MAFRI, carried out an alfalfa monitoring program called Green Gold. In 2010, John retired and the program was cancelled.

Due to its importance, the Manitoba Forage Council is trying to resurrect it for 2011. John has been hired to expand the program beyond south eastern Manitoba to central and western Manitoba.

The Green Gold Program (Alfalfa Scissor Clipping Project) is used to help predict the date when pure alfalfa stands are at optimum (150 RFV) quality. Over the past years, due to unusual environmental conditions (cool weather and extreme warming conditions), > page 2



**Mark this on your calendar
Provincial Grazing Tour - Aug 3 - 4th**

Green Gold Program continued

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(continued from page 1) we have seen alfalfa reach optimum quality well before the traditional early bloom (10% flower) stage. In most cases, had producers waited for the crop to show these signs, harvest would have been delayed by up to 2 weeks and the RFV would have been in the 110 range.

Deciding when to harvest high quality alfalfa forage in Manitoba is difficult as the quality of standing forage varies with the growing season. Traditionally, the optimum time to harvest the first cut has been determined on the basis of late bud in alfalfa, or the

appearance of the first bloom. However, bud or bloom development may be delayed by climatic conditions and is not always the best guideline. Targeting an optimum Relative Feed Value (RFV) of 150 for dairy and 110 for beef requires a forecasting method to determine the declining rate of RFV quality of alfalfa so that producers can predict the optimum harvest date of their forage.

Higher-quality forages, such as alfalfa, and varieties of grass harvested at the ideal stage have higher energy content and quality – thus less fiber and high sugar levels which mitigate enteric fermentation and methane production.

The world's 1.3 billion cows (a cow for every five humans) vent about 300,000 billion liters of methane annually. Forage is the cheapest feed you can provide for beef and dairy cattle but the extended digestive

Targeting an optimum Relative Feed Value (RFV) of 150 for dairy and 110 for beef requires a forecasting method to determine the declining rate of RFV quality.

process cattle utilize when consuming poor-quality hay typically produces the most methane gas. A high-grain, low-fiber diet spends less time in the rumen being pre-digested, and this produces fewer fermentation gases, including methane. Higher-quality forages, such as alfalfa, and varieties of grass harvested at the ideal stage have higher energy contents and lower fiber – and are known to reduce methane production.

Support requested

As a supporter of the Green Gold Program, we are requesting a contribution of \$300 to help cover some of the costs of forage sampling and analysis during the test period from late May to mid- to late June.

Agri-businesses Nominate a producer

Nominate a producer with a pure alfalfa field that can be monitored during the test period. Samples must be taken at approximately 8:00 a.m., twice a week (Monday & Thursday), and depending on the number of participants, field locations need to be such that a schedule and route can be arranged to enable sampling (approximately 1 sq ft) and delivery to the lab before 11:00 a.m. that day.

Results will be available a couple of days after clipping to share with your producer(s).

MFC will be promoting the program on Radio Southern Manitoba, the Manitoba Co-operator, the Carillon news and possibly other media outlets in central and western Manitoba. Results will be posted on the MFC web site and e-mailed to producers twice a week.

The Dairy Farmers of Manitoba will be informing their producers of the program and when results can be accessed. The bi-weekly report that is sent out to producers will list you and/or your company as a sponsor of the program.

Please call John McGregor at (204) 414-2240 or email him at jbmccgee@shaw.ca as soon as possible.

Research Priorities continued

(continued from page 1)

The following research priorities have been suggested:

Empirical Research Priorities:

- Increase and improve forage utilization across all stages of beef production;
- Evaluate water soluble carbohydrates (WSC) as a means of identifying/optimizing forage quality vs. other available methods;
- Initiate forage variety development programs aimed at increasing intake/palatability in forages, improved disease resistance, and winter hardiness;
- Measure nutrient partitioning in forages to see where/when nutrients are used by the plant (i.e. know when to harvest to maximize removal of P and N);
- Reduce energy consumption and improve water use efficiency in forage systems;
- Develop and evaluate forage crops;
- Investigate a whole-systems approach to managing forages, grasslands and livestock.

General Forage and Grassland Agronomy Priorities:

- There is a need for the AAFC-BRC to partner with MFC and MAFRI in the management of the Manitoba sites within the Western Canadian Forage Variety Testing Program;
- Examine forage agronomic management within the Canadian production system;
- Examine optimum establishment techniques and equipment, and conduct species adaptation trials to identify the optimum species mix for identified regions;
- Investigate alternative grazing systems;
- There is a continued need to examine forage seed production options for the Canadian Prairies.

Processing Research Priorities:

Develop cost effective drying facilities for long fiber hay products to improve the exportability of high quality forages.

*MFC Processing Rep recognized
as one of 12 Champions of the
New Rural Economy*

Gary Halwas, President of Sun Prime Extracts in Russell, Manitoba was recognized for his entrepreneurial skills and his innovative spirit in his community.

12 champions were chosen to represent their community and liaise with key business, community and government leaders regarding challenges within their community.

This program was created following recommendations and advice from the Premiers Economic Advisory Council and the Agri-food Development Research Council in an effort to strengthen rural communities.

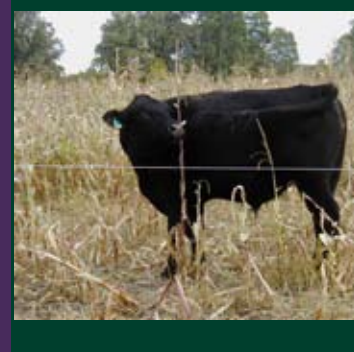
These champions represent the diversity of rural Manitoba, its geographic regions and industries.

They will focus on four key areas:

- the green economy;
- building economic opportunities;
- improving wellness, and
- protecting and rehabilitating the environment.

Provincial
Grazing
Tour

Aug 3rd &
4th
SW
Manitoba



Wayne's Clippings

The Provincial Forage and Grassland Strategy has been very helpful as the Manitoba Forage Council sets out priority areas to focus on. A key recommendation in this Strategy is the importance of the Manitoba Forage Council in providing leadership in the forage and grassland area and ensuring that policies and issues affecting this industry are addressed. An example is the annual meeting that representatives attend with Manitoba Agriculture Services Corporation (Crop Insurance) to bring forward concerns and recommendations regarding forage and pasture insurance.

Another example is the regular meeting with the Minister of Agriculture, Food and Rural Initiatives. At this meeting with Minister Struthers, which is coming up shortly, we will be briefing the Minister on MFC initiatives and also discussing the long term sustainability of the Council.

Board and Committee Structure Changed to Increase MFC Effectiveness

Following the recommendation made in the Provincial Forage and Grassland Strategy, the MFC Board has re-

viewed its organizational structure.

At a recent meeting the MFC Board of Directors recommended that the Board composition remain similar to the existing Board. They also recommended that an Executive Management Committee be established that will meet more often. This Executive Management Committee will be composed of the Chair, Vice-Chair, MAFRI Representative, One District Rep and One Commodity Group Rep.

The MFC Board will meet twice a year and the Executive Management Committee will meet approximately every two months and be more involved in the operation of the MFC. The Board is also reviewing the MFC Committee structure to ensure that we have effective committees in place to assist MFC staff in the operation of the Council.



John McGregor to Assist with Extension Events

As part of the ever changing face of the Manitoba Forage Council, John McGregor will be representing the MFC and helping with a number of forage and livestock extension events that we are involved in. Welcome John.

Sincerely,

Wayne Digby
Executive Director

Forage Insurance being investigated

Manitoba Agricultural Services Corporation (MASC) has recently been undertaking a review of their forage insurance programs. The MFC has agreed to work with MASC again in 2011 to investigate and offer solutions that will address the needs of all forage growers in Manitoba.

Forages are generally perceived as a low risk crop and in some ways they can be, on the other hand the variability in yield can be extremely high from one year to the next, and from one area to another in any given year.

Forages are susceptible to drought, excess moisture, frost, insects etc., the same as other crops; the number of emergency (ad hoc) forage programs in the past is proof that forage production is risky.

Crop Insurance requirements for forage crops are quite different from the programs required for annual crops such as cereals and oilseeds. The most obvious difference is a result of the perennial nature of many forage crops grown in Manitoba. Perennial forage crops require an establishment period which carries certain risks separate and apart from production risk or variability once a stand has been established. > page 5

Board News

(continued from page 4) The age of a perennial stand affects productivity which can influence coverage. Perennial forage crops can be legumes or grasses or a mixture of both and much of Manitoba depends on native grasses for their forage requirements. Additionally many farmers rely on annual forages for some or much of their requirements.

Another major factor impacting on forage insurance requirements is the variety of forage producers in Manitoba. We have farmers who grow forages to produce hay and/or pasture for their own livestock, some produce for the cash hay market while others produce forage seed. In some cases, forages are grown as a green manure crop or in the rotation to improve soil quality. Each of these often involves different management styles, risks and insurance needs.

The challenge for us is to design and develop programs for a wide variety of producer needs from a diverse mix of forage crops and types.



CFGA launches electronic newsletter



This April 2011, the Canadian Forage & Grassland Association (CFGA) distributed its first newsletter to its members and potential members across Canada and the U.S. The CFGA has been very active since its incorporation in March of 2010 and has been in discussion with importers from China, Japan, U.S. and the Middle East on alfalfa protocol. As well, the CFGA raised concerns with the Natural Sciences and Engineering Research Council of Canada (NSERC) regarding their decision to eliminate the dedicated agricultural category in the new NSERC funding. NSERC has now assured the CFGA that “the agricultural-related research has long been an area of focus and, while it has recently been folded into larger priority areas, it will continue to be funded, and researchers in food and agriculture will continue to have access to our Strategic Project Grants and Strategic Network Grants programs.”

Setting Research Direction

As well, the CFGA Research and Extension Committee is in the process of soliciting ideas for forage and grassland research and technology transfer needs and activities. The goal will be to facilitate the dissemination of research and technology transfer products through the CFGA and its member organizations.

To view the recent projects that are completed and/or to subscribe to the electronic newsletter (Join our mailing list) go to: www.canadianfga.ca

Wondering About Membership in the CFGA?

Those of you who are members of the Manitoba Forage Council are automatically CFGA members. The Manitoba Forage Council pays a \$1,500/yr membership fee on behalf of MFC members. Forage Exporters to the U.S. pay \$250/yr and Overseas Exporters pay \$1500/yr.

CFGA Sponsorships are Platinum: \$10,000, Gold: \$5,000 and Silver \$2,500. Please check out the CFGA site and see how you can provide input into the direction of the Association and/or financially support it. Thank you to the existing supporters: Ducks Unlimited Canada, Nutritional Feed Additives Inc., Wallenstein Feed and Supply Ltd., MacDon Industries Ltd. and Steffen Systems.



MFC Reports

Manitoba Forage Marketers Update

Although last year's hay crop did not provide a huge surplus for exporting, the Manitoba Forage Marketers group has been plodding on, making contacts for future use and promoting the quality of our hay and producers. Currently, the group is making plans to attend World Dairy Expo in Madison, Wisconsin. The plans for this year at the World Dairy Expo include working with the Canadian Forage & Grassland Association to promote both Manitoba and Canadian forage products to US and world markets.

The website: www.manitobaforage.ca continues to be visited and the growers have been contacted about hay purchases. In the last month (March 28 – April 27, 2011), the site has been visited 78 times from Canada, U.S., U.K., New Zealand, Germany, Hungary and Mexico.



Grass Fed Beef Now on Vita Health FRESH MARKET Shelves

Manitoba Grass Fed Beef Producers' Association



This active group of producers has been working hard to develop value-added grass fed beef products, test them, develop labels and bar codes and find additional avenues to distribute them to interested consumers.

As of May 2011, Vita Health's FRESH MARKET stores (there are four in Winnipeg) will be carrying several of the association's products.

According to Jim Lintott, grower and one of the founders of the Association, "Vita Health has chosen some of our products that don't conflict with products they are already marketing. They'll be carrying our provincially inspected grass fed hamburger, our Saskatoon berry and wine pate, our dill sausage and our meat pies."

Jim is very excited about the momentum of the Association and is pleased that other venues such as Cramptons, the St. Norbert Market, and Humbolt's Legacy will still be places consumers can purchase their beef.

The group has also been actively promoting their products at events such as the "Local Flavours," Meet and Sample evening which was held at the Direct Farm Marketing Conference in Portage la Prairie in March.

To subscribe to their e-newsletter go to www.manitobagrassfedbeef.ca



Churchill Study Underway

The development of export forage markets is a key priority area for the MFC and there is a desire to review potential opportunities to use the Port of Churchill for hay exports. MFC also recognized that a large component of exporting forage products through Churchill will include forage produced and possibly processed in Saskatchewan.

As a result, Tyrchniewicz Consulting was contracted to conduct the study “Environmental Scan on the Potential of Forage Crop Export to World Markets.” The study is funded by the Manitoba Rural Adaptation Council and the Churchill Gateway Development Corporation.

The study focuses on five key components: production capacity, potential export markets, processing capabilities, transportation issues, and potential opportunities with the Port of Churchill.

A component of creating successful export markets is sourcing economical transportation. Considering the ever increasing price of overland transportation, shipping over water could provide a competitive advantage for farmers. The environmental scan will include assessing Manitoba and Saskatchewan’s ability to produce and export their forage commodities including present transportation costs and whether they are a hindrance to accessing a greater global market share.

The scan will include an assessment of the volume of hay and alfalfa available, what forage products are available (pellets, cubes, long-fibre), what qualities of hay and alfalfa are most readily available, what varieties of forage are most suitable for which markets, and the strategic locations to establish processing facilities in Manitoba and Saskatchewan.

The project will also investigate whether the Port of Churchill can provide farmers with a more economical transportation route for their export product.

Another component of the study will be the investigation of how forages are moved through the Port of Churchill. The Port of Churchill’s ability to ship different forms of forage will be evaluated, and the cost of shipping compared to other ports in Canada and the United States. The type of product that can be shipped, description of any additional processing or packaging that may be required for ocean transport, assessment of the existing shipping season and future shipping seasons, storage requirements and storage available will also be examined.

The study is currently underway with Tyrchniewicz Consulting conducting interviews with industry experts on all aspects of the study. The final report should be available

to the Manitoba Forage Council in late June.

North America route map



MFC Reports

Provincial Grazing Tour

August 3rd & 4th, 2011

Southwestern Manitoba

▲ This year the Manitoba Provincial Grazing Tour will be held in south western Manitoba on Aug 3rd & 4th. This 2 day tour will have something for everyone. We have lined up stops to look at: heifer development, management intensive grazing, stockyards, using stock dogs, poly cropping, swath grazing, bale grazing, corn grazing, burning for tree and ground juniper control, and much, much more.

The tour is a great deal at \$100 for producers, and \$175 for industry! You will be provided with accommodation (double occupancy), meals, the tour and evening workshops. The program will be out very soon so check with your local MAFRI Go Office and the MFC web site for details.



Grazing School 2011 -
December 5th & 6th
Victoria Inn - Winnipeg, MB



SUMMERS ARE MEANT TO BE AN OUTDOOR ADVENTURE

It's an outdoor adventure of a lifetime, and everyone 14 to 17 years-old who is interested in the outdoors, conservation, wetlands, wildlife, science, and the environment, has a chance to be a part of it. Applications are now open for Ducks Unlimited Canada's (DUC) 2011 Canadian Wetland Adventure Camp (CWAC).

Ten applicants from across Canada will be selected by DUC to spend August 6 to 12, 2011 at the world renowned Oak Hammock Marsh and Delta Marsh in southern Manitoba. The action-packed week includes activities like duck and songbird banding, radio telemetry, geocaching, decoy carving, wilderness survival, camping, canoeing, and much more.

Applications are online and must be submitted by June 15, 2011. All applicants will be asked to outline what they've done for the environment, and what their plans are after high school including post-secondary education and career goals.

The camp fee for Canadian residents is \$500 and covers all food, lodging, programs and expenses. DUC will provide Canadian participants with complimentary airfare or transportation to join DUC from anywhere in Canada. Camp fee for non-Canadian residents is \$2,000. DUC can assist with letters of support and information on tax receipts for campers looking for donations from within their local community to offset their camp fees.

Applications are online at ducks.ca.

Coming Events

Alberta hosts third annual Western Canadian Holistic Management Conference

HEALTHY PEOPLE, HEALTHY LAND,
HEALTHY PROFITS

by: Pamela Iwanchysko, MAFRI

The third consecutive Western Canadian Holistic Management Conference was held on February 15th and 16th, in Lloydminster, Alberta, Canada with 200 delegates in attendance. The event was organized by a committee composed of Manitoba Agriculture, Alberta Agriculture, and Saskatchewan Agriculture staff as well as the Chinook Applied Research Association and numerous farmer volunteers across the Canadian prairies.

The conference opened with a tremendously inspiring presentation by the Ponoka Holistic Management Club from Ponoka, Alberta. The group openly discussed their keys to a successful Club and provided invaluable tips for other groups.

Two keynote speakers who made a huge contribution to the event were Kier Barker and Dr. Elaine Dembe. Kier spoke of his personal struggle with spina bifida and how he overcame hurdle after hurdle throughout his life. His presentation was the beginning of many humanitarian and “people” type presentations throughout the conference. Dr. Elaine Dembe’s angle was on “personal health” (physical activity and healthy eating). Her humorous presentation on how not to “grow old” was very well received.

Many break-out presentations were made on the practical side of Holistic Management (HM) by producers across Western Canada who are practicing Holistic Management. Open bear-pit sessions also took place at the beginning of day 2 relaying thoughts and comments on the personal side of HM, the financial side of HM and the cropping and land management side of HM. These break-out sessions were delivered by the Canadian certified HM educators.

A big thank you goes to all the sponsors who made the conference possible. Special thanks to the Alberta Agriculture Department for their very substantial financial contribution as well as Farm Business Communications.



Listening to the Ponoka Holistic Club panel delivering their talk on how to be an effective support group.



(Above) Kier Barker delivers presentation on purpose and passion in life. (Below) Don Campbell, Holistic Management Certified Educator from Meadow Lake, Saskatchewan chaired the Producer Panel which was Don Guilford from Manitoba, Owen Pekrul from Saskatchewan and Jess and Cindy Hudson from Alberta.



Events Review

Planning for Profit

by: Angela Lovell

The economics of the farm all too often take a back seat to production when it comes to planning for the year ahead, but careful financial analysis and projections can make all the difference between a red and a black number at the bottom of the balance sheet.

That was the subject of a workshop held recently at the Brandon Research Centre, where Leonard Pigott introduced a number of Manitoba and Saskatchewan producers to a financial planning process that incorporates the concepts of holistic management. It was funded through the Agri-Extension Environment Program, a federal initiative administered by MAFRI (in co-operation with Ducks Unlimited Canada, and the Manitoba Forage Council), which aims to encourage the adoption of environmentally sustainable agricultural practices.

The two-day course was intended to provide a framework that would help producers manage the financial aspect of their operations better. "They are going to come up with a complete, profitable financial plan for 2011," said Piggot. "And then they are going to track how it turns out on a monthly basis throughout the year. Doing the numbers, as I call it, will show them how profitable they are or aren't. Then if they aren't profitable they need to take steps to correct that."

According to Pigott, most people figure out their income at the start of the year and then plan their expenses to be a little under that figure, but that doesn't allow any cushion to cover the emergencies that seem to be a constant in agriculture, like BSE, drought or floods.

A holistically managed financial plan turns conventional thinking on its head, taking a gross revenue figure to start, deciding the desired profit margin and then allocating the remainder to expenses. The premise is that if a producer concentrates too much on building up from the expenses he will prevent himself from building up profit. "As simple as that sounds," says Pigott, "it's a big transition in thinking for a lot of people."

Pigott also cautions producers not to take their expected cash sales for the year and use that figure for planning. The gross revenue figure will be higher (as it includes inventory) and if cash income isn't going to cover expenses, that is when producers need to examine those expenses and try to reduce them.

The process basically involves making predictions about the annual income and expenses that a producer expects for each aspect of the farm operation, i.e. livestock, crops etc. From these figures a cash flow projection is developed for the entire farm, which can then be compared with actual monthly income and expenditures, and the difference recorded cumulatively through the year. This helps to identify areas where available cash at any given time may not meet expenses and so leads to decisions

about how to either reduce expenses or consider borrowing to cover them.

Each decision, however, has to be arrived at by considering more than just the immediate cash needs of the operation. Holistic management, says Pigott, requires that each decision you make about an aspect of your operation should meet certain criteria based upon core holistic principles of lifestyle, protection of the resource and production sustainability. An important test that Pigott says all decisions need to pass is cause and effect. "For example, if we have a grasshopper outbreak, we will go out and spray it, but that is only treating the symptom, there is something causing the grasshopper outbreaks," says Pigott. "So we need to find out what it is. In holistic management we are doing that – we are preventing or lowering the incidence of grasshopper outbreaks and then we don't have that expense anymore."

Financial analysis and projections can make all the difference between a red and a black number at the bottom of the balance sheet.

Expenses are also broken down into "inescapable" (things like payments and land taxes) and "wealth generating", which Pigott says should be a priority over the maintenance costs. "For example we have discovered that we can increase carrying capacity substantially by planned grazing," he says. "So if you had 100 cows that you had carried on your land with season long grazing, and now decided to fence it into paddocks, you are probably going to be able to put 150 to 175 cows on that land. The small expense of fencing has generated new wealth potential and it didn't take any more land. We call that a wealth generating expense."

Different producers were taking home different things, but most agreed that they saw the importance of careful collection and analysis of data to help plan economic outcomes. John Finnie of Kenton was hoping the workshop would help him figure out how to increase his net profits without increasing production, whilst Val Pogson, a producer from Clearwater, Manitoba, said it had made her fully appreciate the difference between cash sales and gross income and how easy it is to underestimate the value inherent in the operation itself.

"The one who is the farmer out on the land is the one that sees the biological value of the land and the animals, whereas the one back in the office doing the books is often fixated on the numbers and isn't assigning value to anything but those numbers," she said.

Another producer, commenting on the workshop, said >

(continued from page 10) “This is typically the information that producers keep in their head.” It’s an observation that supports what Pigott has seen over the years. He estimates that fewer than 5% of farmers go through a formal financial planning process, and that they would benefit tremendously if they just learned how. “With accounting programs that we have now it’s very easy to keep track of your expenses on a day to day basis,” he says. “And although the first year the planning process is not going to be perfect, when you do keep careful track of your income and expenses over that year, the following year will become much more representative of the true picture.”



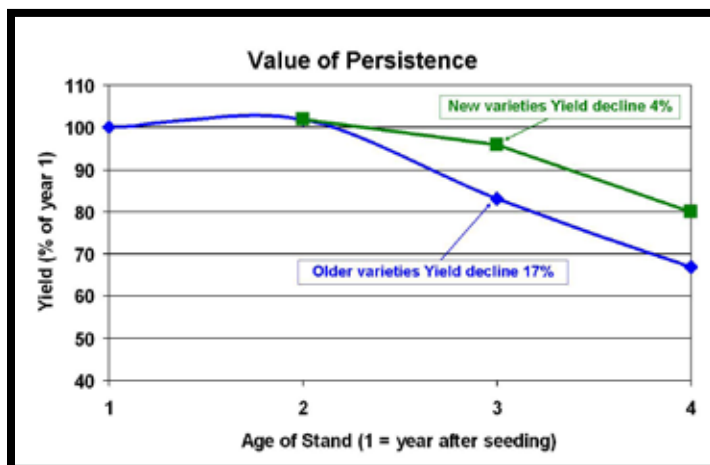
Buying alfalfa with the mindset of buying a car

by: Ingrid Hillerup

Do you remember the first car that you purchased? It may have been your first big purchase. But sooner or later, repairs necessitate replacement and new technology, exciting bells and whistles, and better fuel efficiency drives us to purchase younger models.

This concept also applies to alfalfa stands. “An alfalfa stand technically can last 10 to 12 years,” according to PICKSEED’s Director of Western Canada Sales, Terry Scott. “However, yield potential declines with the age of the stand. The best yields are only visible for the first two to three years”. After this point, the stand starts to diminish and the question arises: “do we rotate the alfalfa stand out next year in order to seed a new, higher yielding, and more persistent stand in two years time? Or do we hold onto this stand for one more year and hope for the best?”

The data in the graph below shows the average yield of a typical alfalfa stand over its lifespan. The top of the graph shows the years when the greatest yields are expected, but as the age of the stand increases, persistence decreases, stands start to die out and ultimately lead to a decrease in profit.



in the first and second production years should be considered. When persistence starts to be an issue, typically in year three and beyond, these better varieties will provide a yield advantage in addition to a persistence advantage. Even in the fifth and sixth production years, these improved varieties will give you considerably more yield than older varieties, as also shown on the graph.

From a cost perspective, the current alfalfa stand is depreciated over three years and is technically off the books, as an expense at year four, and is free for rotation at any time.

An alfalfa stand leaves behind the perfect soil conditions to rotate into a profitable corn crop. The nitrogen credits that alfalfa leaves in the soil greatly reduce the input production costs for the first year of growing corn and can also increase corn yields by up to 10 percent. A once diminishing alfalfa stand can very quickly become a profitable field of corn.

Once the rotation returns to alfalfa, better persisting varieties that give a yield advantage



To Fertilize or Not to Fertilize: Soil Testing From the Bunker

by Glenn Friesen, MAFRI

Provincial recommendations are to soil test every year for annual crops, and a minimum of every three years for perennial hay crops and pasture. Ultimately, a soil test or tissue test is the best method to determine nutrient needs of plants and to guide fertilizer and manure applications. The window of optimum nutrient levels is often narrow with a wide window of luxurious uptake which is wasteful and may result in plant toxicity symptoms. Feeding forages with unbalanced levels of minerals can present considerable consequences in animal health, so managing a balance is very important.

The optimum level of nutrients in plant material varies from crop to crop and the stage of maturity for each crop. Generally the macronutrients are required in higher amounts than the micronutrients. The amount of nutrients needed in the plant for optimum growth varies slightly with climate and soil type; however, minimum levels needed are similar throughout many regions of North America.

For example, general guidelines in Alberta on alfalfa suggest that healthy alfalfa plants in the late bud to early bloom stage should contain a minimum of 3.0% nitrogen, 0.2% phosphorus, 1.7% potassium, and 0.2% sulphur obtained by a tissue test from the upper 15 cm of the plant (Table 1).

Table 1. Levels of nutrients in the top 15 cm of alfalfa tissue at 5 per cent bloom

Nutrient	Low	Sufficient per cent (%)	High
Nitrogen	<3.0	3.0 - 5.0	>5.0
Phosphorus	<0.20	0.20 - 0.70	>0.70
Potassium	<1.70	1.70 - 3.80	>3.80
Calcium	<0.25	0.25 - 3.0	>3.0
Magnesium	<0.20	0.20 - 1.0	>1.0
Sulphur	<0.20	0.20 - 0.50	>0.50
Parts per million (ppm)			
Boron	<20	20 - 80	>80
Copper	<5	30-50	>30
Iron	<20	20 - 250	>250
Manganese	<20	20 - 200	>200
Molybdenum	<0.5	0.5 - 5.0	>5.0
Zinc	<20	20 - 70	>70

Source: McKenzie et al.

Recommendations from the University of Cornell suggest the optimum nutrient ranges for alfalfa production are slightly higher than Alberta's recommendations. For example, alfalfa yields are best when tissue test levels for nitrogen in alfalfa at early bloom are between 3.75 to 5.50% by weight, and between 0.25 to 0.7% for phosphorous, 2 to 3.5% for potassium, and 0.25 to 0.5% for sulfur (Table 2 - right). In this example, one tonne of alfalfa hay cut at early bloom would contain 75 to 110 kg of nitrogen, 5 to 14 kg of phosphorus, 40 to 70 kg of potassium, and 5 to 10 kg sulfur. Similarly, research in Utah suggests tissue tests just prior to first cut should observe the following minimum nutrient thresholds to maintain optimum production: 0.26% phosphorous, 2.0% potassium, 1.3% calcium, >

(continued from page 12) 0.25% Magnesium, 0.26% sulfur, 21 ppm zinc, 30 ppm iron, 25 ppm manganese, 5 ppm copper, 30 ppm boron and 1 ppm molybdenum.

Finally, Dr. Loraine Bailey of Agriculture and Agri-food Canada in Brandon demonstrated the effect of optimum plant nutrient levels in alfalfa yield and quality in Southwestern Manitoba (Tables 3 below, 4, 5 - next page). Plant phosphorus levels between 0.22% to 0.25%, potassium levels between 2.5% and 3.2%, and sulfur levels 0.23% provided the highest yield and protein. > page 14

Table 2: Plant tissue analysis sufficiency ranges for corn, soybeans and alfalfa.						
Macronutrients recorded as percent (%) and micronutrients as parts per million (ppm).						
Macronutrients (%)						
	Nitrogen	Phosphorus	Potassium	Calcium	Magnesium	Sulfur
Corn						
Seedling stage	3.50-5.00	0.30-0.50	2.5-4.0	0.30-0.70	0.15-0.45	0.15-0.50
Prior to tasseling	3.00-3.50	0.25-0.45	2.0-2.5	0.25-0.50	0.13-0.30	0.15-0.50
Silking	2.75-3.50	0.25-0.50	1.7-2.5	0.20-1.00	0.20-0.60	0.20-0.50
Soybeans						
Prior to flower	4.70-6.10	0.30-0.50	2.0-3.0	1.00-1.50	0.03-0.60	0.20-0.50
Early bloom	4.25-5.50	0.25-0.50	1.7-2.5	0.35-2.00	0.25-1.00	0.20-0.40
Prior to pod set	4.00-5.50	0.25-0.50	1.7-2.5	0.35-2.00	0.25-1.00	0.20-0.40
Alfalfa						
Early bloom	3.75-5.50	0.25-0.70	2.0-3.50	1.75-3.00	0.20-0.60	0.25-0.50
Micronutrients (ppm)						
	Boron	Copper	Iron	Manganese	Zinc	
Corn						
Seedling stage	5-25	6-20	40-250	25-160	20-60	
Prior to tasseling	4-25	3-15	10-200	15-300	15-60	
Silking	4-25	6-20	20-250	20-150	20-70	
Soybeans						
Prior to flower	30-60	7-15	50-400	20-150	25-60	
Early bloom	20-50	10-30	50-350	21-150	20-50	
Prior to pod set	20-55	10-30	50-350	20-100	20-50	
Alfalfa						
Early bloom	30-250	10-30	30-250	30-100	20-70	

Source: Cornell University Extension Service.

Rate of P ₂ O ₅ (lb/ac)	Yield (ton/ac)	Plant Phosphorus content (%)	Plant Protein content (%)
0	2.2	0.08	11.3
20	2.7	0.15	12.5
40	4.5	0.20	13.8
60	5.6	0.22	20.0
100	5.0	0.25	18.8

Table 3: Effect of phosphorus application on alfalfa yield, phosphorus content and protein.

Data from five stations on three Manitoba soils. Initial soil phosphorus levels were 3.5 to 11 ppm. Plots also received 30 lb/ac of potassium and 30 lb/ac sulphur annually.



To Fertilize or Not - continued

Rate of K ₂ O (lb/ac)	Yield (ton/ac)	Potassium (%)	Protein (%)
0	1.5	0.8	9.4
50	2.8	1.2	12.5
75	3.7	1.8	17.5
100	4.7	2.5	20.0
200	4.4	3.2	21.2

Data from five stations on three Manitoba soils. Initial soil potassium levels were 14 to 180 ppm. Plots also received 60 lb/ac of potassium and 30 lb/ac sulphur annually.

Table 4: (left) Effect of potassium application on alfalfa yield, potassium content and protein.

Table 5: (below) Effect of sulfur application on alfalfa yield, sulfur content and protein.

Source: Bailey, AAFC.

TISSUE TEST VERSUS THE FEED TEST?

There may be another option if you cannot justify the time to sample your hay field prior to cutting. Like a tissue test, a feed test on harvested bales examines the nutrient levels of the hay to determine the additional minerals required when feeding the hay to livestock. The accuracy of the nutrient levels in the feed tests are directly linked to the plant material included in the cored sample submitted by the producer. These often contain all plant parts with a range of plant maturity levels typical in a mixed hay field. This variability explains in part the range of nutrient levels found over 6 years of feed test data collected from across Manitoba between 2000 and 2005 (Table 6 - next page). For example, the phosphorous levels in alfalfa/grass mixes averaged 0.20% plus or minus nearly 0.20% - certainly too wide a variation to use an average safely, and underscoring the need to test your feed from both a nutrient removal standpoint and livestock nutrition.

We must also recognize that feed test samples collected do not follow the sampling guidelines used in tissue tests which are calibrated for specific plant parts (top 6 inches) and stages of maturity (early bloom in alfalfa).

For this reason, a feed test should only be used as a guideline and must be followed up with a tissue or soil test to determine the actual deficiency and amount of fertility to apply. ▶

Rate of S (lb/ac)	Yield (ton/ac)	Plant sulphur content (%)	Plant protein content (%)
0	1.6	0.10	8.8
15	2.8	0.16	11.3
30	4.3	0.21	18.8
45	5.3	0.23	20.6
60	5.2	0.23	21.3

Data from five stations on a Manitoba grey wooded soil. Initial sulphur content was 13 lb/ac. Plots also received 60 lb/ac of phosphorus and 30 lb/ac potassium annually.

Manitoba Sheep Association Show & Sale

August 12, 13th & 14th, 2011

MSA is once again sponsoring the "Gathering of the Flock" sheep show and sale, Neepawa Ag Grounds, Neepawa, MB, August 12 - 14.

The sheep sale is August 14. Also, as part of this event is the second annual "Wild and Woolly" Fibre Festival, August 13 and 14, which will feature a fleece competition and sale, workshops, vendors and a demonstration "sheep to scarf" event.

For information, contact Shelley Zahaiko, email - zahaiko@mts.net or (204) 849-2273

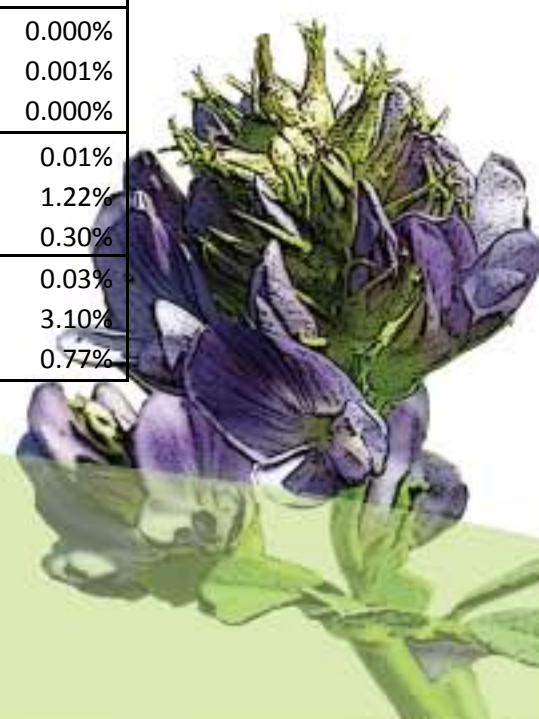
Table 6: Average, minimum, and maximum nutrient removal rates based on province wide summary data of Manitoba feed test data collected between 2000 and 2005.

Feed		Proportion of fertilizer removed (% of Dry Matter or ppm)					
		Alfalfa	Alfalfa/grass	Grass/Alfalfa	Native Hay	Barley GF	Oat GF
N (%)	Min	1.23%	0.70%	0.94%	0.62%	0.80%	0.53%
	Max	4.77%	4.19%	4.51%	2.51%	3.70%	3.33%
	AVG	3.25%	2.58%	2.11%	1.52%	1.82%	1.65%
P (%)	Min	0.09%	0.05%	0.08%	0.06%	0.08%	0.04%
	Max	0.45%	0.40%	0.44%	0.29%	0.46%	0.55%
	AVG	0.23%	0.20%	0.19%	0.12%	0.25%	0.23%
K (%)	Min	0.59%	0.54%	0.75%	0.41%	0.45%	0.41%
	Max	4.05%	3.33%	3.72%	3.14%	3.57%	4.06%
	AVG	2.24%	1.99%	1.93%	1.30%	1.78%	2.03%
Ca (%)	Min	0.41%	0.20%	0.25%	0.26%	0.12%	0.06%
	Max	2.89%	2.62%	1.58%	1.08%	1.15%	0.90%
	AVG	1.59%	1.19%	0.81%	0.54%	0.45%	0.33%
Mg (%)	Min	0.15%	0.07%	0.08%	0.12%	0.08%	0.07%
	Max	0.67%	0.66%	0.60%	0.51%	0.57%	0.49%
	AVG	0.35%	0.30%	0.24%	0.27%	0.25%	0.22%
Mn (ppm)	Min	0.002%	0.000%	0.003%	0.004%	0.001%	0.001%
	Max	0.006%	0.010%	0.004%	0.027%	0.004%	0.012%
	AVG	0.004%	0.004%	0.003%	0.010%	0.003%	0.003%
Zn (ppm)	Min	0.000%	0.000%	0.001%	0.002%	0.000%	0.001%
	Max	0.003%	0.004%	0.002%	0.003%	0.003%	0.003%
	AVG	0.002%	0.002%	0.002%	0.002%	0.002%	0.002%
Cu (ppm)	Min	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
	Max	0.002%	0.001%	0.001%	0.001%	0.001%	0.001%
	AVG	0.001%	0.001%	0.000%	0.000%	0.000%	0.000%
Fe (ppm)	Min	0.005%	0.002%	0.005%	0.007%	0.004%	0.004%
	Max	0.033%	0.077%	0.030%	0.027%	0.066%	0.050%
	AVG	0.016%	0.012%	0.011%	0.014%	0.019%	0.011%
Mb (ppm)	Min	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
	Max	0.001%	0.001%	0.001%	0.000%	0.001%	0.001%
	AVG	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Na (%)	Min	0.01%	0.01%	0.01%	0.04%	0.01%	0.01%
	Max	0.42%	0.28%	0.08%	0.41%	0.95%	1.22%
	AVG	0.05%	0.03%	0.02%	0.08%	0.17%	0.30%
NaCl	Min	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%
	Max	0.83%	0.72%	0.16%	1.04%	1.82%	3.10%
	AVG	0.13%	0.08%	0.06%	0.15%	0.44%	0.77%

*Bodycote nitrogen data based on 6.25 x crude protein.

**BOTTOM
LINE:**

Although not the most accurate indicator, your feed test can be an excellent substitute to identify fields in need of some fertilizer attention. Since all feed being sold or used for feed is usually tested, this needn't be an additional cost to your operation.



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