Saskatchewan Hay & Pasture Report

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Inside This Issue:

Note from the Saskatchewan Forage Council

Welcome to the first edition of the 2015 Hay and Pasture Report. This report is now in its 16th season, and will continue to provide current forage industry production and marketing information. For more detailed forage information check out the 2015 Forage Market Report posted on the SFC website.

This edition of the Report contains articles about alfalfa and spring frost, breeding forage varieties, stockpiled perennial forages and upcoming Saskatchewan Forage Council projects and events. You'll also find forage market information and the Saskatchewan Agriculture Crop Report in this and every edition.

As always, we welcome your feedback and encourage anyone interested in being placed on our email distribution list to contact the SFC at office@saskforage.ca. You may also want to visit our website www.saskforage.ca for regular news and information related to the forage industry.

Saskatchewan Forage Council 27th Annual Tour and AGM

The Saskatchewan Forage Council (SFC) is excited to announce that well-known speaker and grazier Jim Gerrish will be a guest at this year's SFC annual AGM and field tour. **In partnership with the Western Beef Development Centre (WBDC) Field Day, this full-day event will take place June 23 near Lanigan, SK.**

After registration at 9:30 AM Jim Gerrish will discuss "What Really Matters in Grazing Management". The winner of the Saskatchewan Agriculture 21-Day Calving Challenge will be announced and Kathy Larson will present "Practices to Prevail: Cow-Calf Survey Findings". After lunch there will be a number of bus tour stops that highlight WBDC and other research including cicer milkvetch for stockpiled forage, selecting cows for feed intake and more. The SFC AGM will commence at 4:30 and the day will wrap up with a steak supper and information on "Making Cost Effective Pasture Improvements" from Jim Gerrish.

Registration is at no cost and the steak supper is $10 (payable at the door). Please add your name to our registration list by June 15th by contacting the SFC at 306.329.3116 or office@saskforage.ca. We look forward to seeing you there!

Saskatchewan Agriculture Crop Report

(For the period ending May 11, 2015)

Significant seeding progress was made this past week. Thirty-four per cent of the 2015 crop is now seeded, according to the Saskatchewan Agriculture Crop Report. The five-year (2010-2014) average for this time of year is nine per cent seeded.

Producers in the southwest are most advanced, with 61 per cent of the crop seeded. In the southeast, 45 per cent is seeded; the west-central region has 26 per cent seeded; the east-central region 16 per cent, the northeastern region 13 per cent and northwestern region has 31 per cent seeded.

Topsoil moisture conditions on cropland are rated as 10 per cent surplus, 76 per cent adequate and 14 per cent short. Hay land and pasture topsoil moisture is rated as six per cent surplus, 74 per cent adequate, 16 per cent short and four per cent very short. Moisture conditions vary throughout the province.

In parts of the southwestern and west-central regions, some moisture would be beneficial to get crops off to a good start. Some areas in the southeast and in the east-central region, however, still have surplus moisture.

Cool weather has resulted in slow emergence of crops. Some farmers have reported frost damage to emerged crops and alfalfa.

SFC New and Ongoing ADOPT Projects

Laura Hoimyr-Saskatchewan Forage Council Project Coordinator

The Saskatchewan Forage Council (SFC) is collaborating around Saskatchewan on exciting new and ongoing forage demonstration projects. Four new Agricultural Demonstration of Practices and Technologies (ADOPT) projects are beginning in 2015 and work will continue on two ongoing ADOPT projects.

Demonstration of AC Yellowhead Persistence and Performance in Saskatchewan Forage Stands

This project was initiated in the spring of 2014 and provides a demonstration of AC Yellowhead alfalfa establishment, winter survival and persistence in forage stands at four sites in Saskatchewan. Yield and nutritional quality of this forage is also being assessed in comparison to more commonly used purple-flowered varieties. Sites are located in the Swift Current, Smeaton, Rosetown and Yorkton areas and project collaborators are the Saskatchewan Ministry of Agriculture and Ducks Unlimited. Due to varied establishment success in 2014, work will continue on these sites in 2015 where establishment success and winter survival will be evaluated and yield and nutritional quality measured.

Use of the Grazing Response Index (GRI) on Saskatchewan Pastures to Facilitate Forage Management Decisions

The project demonstrates a simple, effective way for livestock producers to evaluate grazing impacts on their land by applying the principles of plant response to defoliation using the Grazing Response Index (GRI). GRI evaluates frequency and intensity of plant defoliation, and the opportunity for a plant to recover from use to

determine whether a grazing system is providing long-term beneficial, neutral or harmful effects to the stand.

A GRI monitoring system was set up on three sites in 2014 and two additional sites will be added in 2015. The GRI system was originally designed for range management, and project partners Ducks Unlimited, Saskatchewan Agriculture and Agriculture and Agri-Food Canada are working to adapt this program for use on tame forages.

July, 2014, GRI ADOPT Project

Grazing cages at DU Touchwood Hills Conservation Ranch assist in estimating grazing intensity and opportunity for regrowth by acting as "non-grazed" areas.

Photo Credit: Jodie Horvath, Ducks Unlimited

New ADOPT Projects in 2015

Control of Absinth and Common Tansy in Perennial Pasture using Three Methods of Wiper Application

Absinth (Artemisia absinthium L.) is a long-lived perennial herbaceous plant with a woody base. Absinth is found throughout Canada but is most abundant on the Prairies. Common Tansy, (Tanacetum vulgare) is a perennial herbaceous plant with a tap root and creeping root. Once established, abinsth and tansy are very difficult to eradicate and will take over in forage stands reducing both forage quality and yield. Cattle do no graze either plant by choice. Tansy contains alkaloids that are toxic to both humans and livestock and if dairy cattle consume absinth on pasture or in hay, milk will be tainted.

Wiping a concentrated solution of Glyphosate herbicide onto the target weeds can be an effective control method. There are several different types of wiper equipment available, none of which are widely used. This project will demonstrate three different types of weed wipers for use on absinth and common tansy in perennial forage stands and will compare the effectiveness of these three application methods.

Demonstrating the use of Yellowhead alfalfa in a one cut and two cut harvest system in northeast Saskatchewan

This project will provide producers with information on how cutting schedule effects hay yield and quality of Yellowhead alfalfa (Medicago sativa, subspecies falcata - a finer stemmed, yellow-flowered alfalfa type) compared to two commonly seeded alfalfas, AC Longview (tap root) and Rangelander (creeping root) in northeast Saskatchewan . AC Yellowhead was developed at the Semiarid Prairie Agricultural Research Centre (SPARC) of Agriculture and Agri-Food Canada (AAFC) in Swift Current, SK and is reported to have improved persistence under grazing and superior cold hardiness and winter survival as compared to standard purple-flowered alfalfa varieties.

The stems and leaves of Yellowhead are finer and smaller than purple blossom varieties. This trait may allow it to maintain protein and energy levels longer than

other alfalfa types. If this is the case, AC Yellowhead would be useful in years when hay harvest is delayed due to precipitation such as experienced in the last two summers in eastern Saskatchewan. This project will also show the yield of one verses two cuts per season and the effect of cutting during the critical fall period (CFP) for these three alfalfa types. This project will take place at the Melfort Research Farm where the plots have already been established and will be supervised by a Saskatchewan Agriculture Forage Specialist.

Demonstration of scarification methods for cicer milkvetch seed

The objective of the project is to assess practical methods by which producers can scarify cicer milkvetch seed on-farm. Scarification is a technique used to improve the uniformity of germination in cicer milkvetch by abrading the impermeable seed coats to allow uptake of moisture from the soil.

Demonstration of simple implements and methods to scarify seed on-farm will provide producers vital information to optimize seeding of this legume on their own operations, enabling them to make better use of this valuable forage crop. Simple scarification techniques that allow for more rapid and uniform germination of cicer milkvetch without causing damage will result in better establishment and more productive, healthier forage stands.

Development and testing of three potential modes of action to scarify cicer seeds will take place the Prairie Agricultural Machinery Institute (PAMI) in Humboldt. Based on the results of germination testing, these methods will be field-tested in 2016 and demonstrated in the field and on video.

Demonstration of forage peas in mixture with cereals for greenfeed production

By demonstrating pea/cereal mixtures for greenfeed in side-by-side comparisons with monocultures of barley, oats and peas, producers will be able to see how these mixtures perform in their geographical area. This project will increase the comfort level that producers have with seeding and managing annual forages on their farm and will provide more information on what species to choose when growing annual forages.

This demonstration will take place at four Agri-ARM/AAFC research farms around Saskatchewan and projects will be completed in cooperation with Saskatchewan Ministry of Agriculture Forage Specialists. Sites are located in: Melfort (North East Agriculture Research Foundation – AAFC Melfort Research Farm), Swift Current (Wheatland Conservation Assoc.), East Central Research Foundation (Canora), Western Applied Research Corporation (Scott). Visit field days at these sites this summer to learn more or watch for the final report in early 2016.

These projects were supported by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada-Saskatchewan Growing Forward 2 bi-lateral agreement.

Keep an eye on the SFC website, www.saskforage.ca for project updates and reports as well as upcoming events that feature our ADOPT demonstration plots throughout Saskatchewan in 2015 and 2016. To find out more about these projects, contact the SFC at office@saskforage.ca or 306-329-3116.

EFFECT OF PERENNIAL FORAGE SYSTEM ON FORAGE CHARACTERISTICS COW PERFORMANCE AND SYSTEM ECONOMICS

Ruwini Kulathunga MSc, Dr. Greg Penner, Dr. Jeff Schoenau, Dr. Daalkhaijav Damiran, Kathy Larson MSc, and Dr. Bart Lardner, Western Beef Development Centre, Lanigan, SK.

Introduction

Winter feeding costs are 60 to 68% of the total production cost of a cow-calf operation system in western Canada (Kelln et al., 2011; Lardner et al., 2014). These costs are due to feeding cows in drylot pens over the winter period, and include costs for harvesting, transporting feed and manure removal. Providing forages to pregnant beef cows during the winter months in western Canada is usually managed as round hay bales placed in bale feeders in pens (Krause et al., 2013). However, forages stockpiled in the field and grazed as dormant fall/winter pasture can be an excellent alternative to the more costly feeding in drylot pens. Winter in field feeding directly on pasture is a potentially more efficient system in terms of nutrient recycling compared with drylot feeding in a yard (Jungnitsch et al., 2011). The objective of this study was to determine the effects of (i) grazing stockpiled perennial grass-legume forage in field paddocks (SPF) (ii) or drylot pen feeding similar quality forage as hay (HAY) on beef cow performance and winter feeding system costs.

Crop Management and Weather

A 3-year winter grazing study was conducted at the Western Beef Development Centre's Termuende Research Ranch near Lanigan, Saskatchewan. Each year, a 60-acre meadow bromegrass-alfalfa (grass legume ratio 4:1) pasture (average yield = 1.8 ton/acre) was stockpiled until early September, swathed and windrowed for either grazing or baling. Consequently, 30 acres of the forage crop was baled as large round bales (~1500 lb), transported to the yard site (1 mile from field site) and fed in drylot pens and the remaining crop was swathed in the field for stockpile grazing.

Temperature and precipitation data were obtained from a Termuende Research Ranch benchmark site weather station located at the study site, and from Environment Canada's Climate Data for Esk, Saskatchewan (51°48'N, 104°51'W; http://climate.weather.gc.ca/).

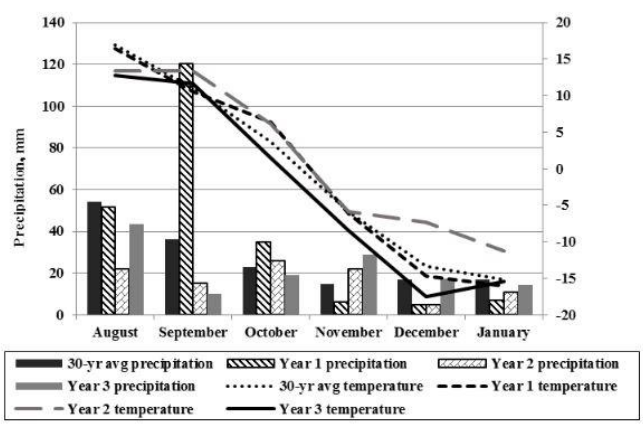

Figure 1. Average monthly precipitation and temperatures from August to January of yr 1, yr 2 and yr 3 compared to 30-year average

Differences were observed between years for precipitation (rain+snowfall) and temperature, with yr 2 feeding period (November to December) being warmer compared to either the 30-year average (Figure 1) or yr 1 and 3.

Grazing Management

Year to year weather variation affected the length of the fall/winter grazing period. The study was conducted from October 20 to December 7 2010 (yr 1: 48 d); October 11 to December 22 2011 (yr 2: 72 d) and October 11 to December 5 2012 (yr 3; 55 d). Dry, pregnant Black Angus cows (60, 60, and 48 cows for yr 1, 2, and 3, respectively) averaging 1413 lb were used in the study. Each year, cows were stratified based on body weight (BW), age, and pregnancy status and randomly allocated to 1 of 2 replicated (n = 3) forage systems either; (i) stockpiled forage grazing (SPF), where perennial grass-legume forage was stockpiled, then swathed and windrow grazed; or (ii) drylot (HAY) pen feeding, where cows were housed in outdoor pens and fed similar quality grass-legume round-bale hay

The SPF field was further subdivided into 3, 10-acre paddocks for grazing and cows were managed in field paddocks where forage was allocated on a 3-day grazing period basis using portable electric fencing. Water was supplied in insulated troughs and 3 portable wind breaks were supplied in each paddock. Cows allocated to the HAY system were housed in 3 separate outdoor pens surrounded by wooden slatted fences, with each pen containing an open-faced shed, watering bowl, and round-bale feeder. The goal was to have cows maintain body condition and have no weight gain above that required for pregnancy. However, the amount of stockpiled forage and hay allotted varied depending on forage utilization and environmental conditions. Throughout the study, cows in SPF and HAY systems received an average of 2.4, and 0.2 lb/d of rolled barley grain (12.2% CP; 86% TDN), respectively, or 0.2 and 0.01% BW daily. Supplement levels differed between SPF and HAY systems, as SPF cows in field paddocks were more exposed to wind chill factor and energy loss due to cold temperature (NRC 2000).

Winter Grazing Stockpiled Forage
Photo Credit: Laura Hoimyr, SFC

Cow BW and body condition (BCS), feed intake (DMI) and subsequent reproductive performance were monitored during the study. The same cows were used for the entire 3 year study unless culled for injury or failure to conceive. All cows had ad libitum access to a commercial 2:1 mineral supplement and cobalt-iodized salt throughout the feeding period. Following each treatment period, cows were group-fed 4 lb/d of a 16% CP range pellet and mixed grass:legume hay (16% CP, 36% ADF, 58% NDF) to meet protein and energy requirements until there was adequate pasture growth in the spring or until calving.

System Cost

Costs associated with each system included feed, salt/mineral, bedding, and yardage-labour, equipment use, infrastructure and manure removal (HAY only). Feed included both forage and rolled barley grain. The rolled barley was purchased at an average price of $0.10/lb. The cost of the forage was determined by dividing the total DM yield (average 1.8 ton/acre) by the costs of swathing, baling and hauling bales to the yard site in the HAY system ($0.023/lb). A land rental rate of $30/acre was also included in the forage cost calculation. For the SPF system, $0.25/cow/day was used to represent the cost of the forage plus a depreciation cost for the infrastructure (fence, portable windbreaks, water trough, feed trough). The feeding process was timed; the times were used to determine equipment and labour costs for feed allocation in each system. Other direct costs included bedding. Depreciation cost for HAY was calculated using an estimated cost for drylot pen infrastructure (fence, gate,

pole shed, water bowls, feed trough, bale feeder) less estimated salvage value, divided by expected years of use. Labour was valued at $15.00 per hour and rates for equipment (truck, tractor, bale processor) were obtained from SMA's Farm Machinery Custom and Rental Rate Guide.

Results and Discussion

Differences were observed in snowfall and temperature between years, with yr 2 feeding period (November to December) being warmer compared to the 30-year average (Figure 1) or yr 1 and yr 3; which allowed for a longer winter grazing period in the second year.

Forage Nutritive Value, Dry Matter Intake and Soil Nutrients

Forage nutritive value (9.5% CP, 51% TDN) was similar between the two systems (Table 1), and met NRC (2000) recommended energy requirements for beef cows with similar weight and gestation stage as cows used in the current study. Animal accessibility to swathed forage in the field can be affected by snow depth and drifting, freezing rain, wind and lower temperatures, all of which can reduce utilization (Kelln et al., 2011). However, this was not the case in the current study. Estimated forage dry matter intake (DMI) varied between the two systems with the greatest DMI (15% greater) being observed for cows in SPF system. Increased consumption of both forage and supplementation in the SPF systems in the current study could also be explained by the increased energy demand for field grazing during winter (NRC, 2000; Kelln et al., 2011; Krause et al., 2013). The maintenance energy requirements increase by 10 to 20% for grazing animals compared to cattle housed in drylot pens (NRC, 2000; Kumar et al., 2012). Soil nitrate levels were slightly higher in the SPF system while other soil nutrients were not significantly different between the two treatments.

Cow and Calf Performance

Initial BW did not much differ between the winter feeding systems (Table 2), however, cows in HAY wintering systems had greater BW change (71 lb) than cows managed in the SPF system (52 lb). No differences were observed between wintering systems for cow initial BW and final body condition score (Table 2). Cows in both systems were in good body condition (BCS = 2.6 to 2.8) throughout the study and at the end of the study period. Table 3 indicates that calf birth BW (94 lb) and calving interval (364 d) were not different between cows managed in the two systems. According to NRC (2000), optimal calf birth BW for mature Angus cows is 79.5 lb., which was exceeded in both systems in the current study. Overall, SPF and HAY systems were similar in beef cow performance and reproductive efficiency.

Economics of Winter Feeding Systems

Total cost associated with each system is presented in Table 4. Feed costs were 45% lower for cows managed in SPF ($0.64 cow/d) system compared to cows in the HAY ($1.17 cow/d) system. The SPF system had 12% lower total cost ($1.50 cow/d) than the DL system ($1.72 cow/d). Thus, the current study suggests that perennial stockpiled forage grazing systems can provide an economic alternative to drylot pen feeding systems allowing for reduced costs of $0.21/ cow per day associated with winter feeding expenses.

Implications

This study evaluating two different forage systems indicates that stockpiled perennial forage grazing in field paddocks can be an alternative management system for extending the grazing season during the fall and winter months in western Canada. Nevertheless, climatic conditions can affect the outcome of an extensive system, therefore when managing cows in SPF systems, producers need to be prepared to supplement animals according to winter conditions.

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Table 1. Effect of forage system on nutrient and dry matter intake y[1]

	Forage system[2]	
Item	**SPF**	**HAY**
Crude protein, %	9.9	9.0
Total digestible nutrients, %	50.9	51.3
DMI, lb/d		
Forage, lb/d	31.1	26.7
Barley grain, lb/d	2.4	0.2
Total diet intake, lb/d	33.5	26.9

[1]Average of 3 years.
[2]SPF = stockpiled perennial forage grazing HAY = round bale hay fed in drylot pens.

Table 2. Effect of forage system on beef cow performance[1]		
	System[Y]	
Item	**SPF**	**HAY**
Cow Performance		
Initial body weight, lb	1437	1423
Final body weight, lb	1489	1493
Body weight change, lb	52	71
Body condition		
Initial	2.6	2.6
Final	2.7	2.7
Change	0.1	0.1

[1]Average of 3 years.
[2]SPF = stockpiled perennial forage grazing; HAY = round bale hay fed in drylot pens.

Table 3. Effect of forage system on calf birth weight and calving span[1]		
	System[2]	
Item	**SPF**	**HAY**
Calf birth body weight, lb	95	93
Length of calving span, d	32	44
Calving interval, d	364	363

[1]Average of 3 years.
[2]SPF = stockpiled perennial forage grazing; HAY = round bale hay fed in drylot pens.

Table 4. Economic analysis of forage systems ($/hd/day)[1]		
	Forage system[2]	
Item	**SPF**	**HAY**
Feed cost	0.64	1.17
Direct cost	0.03	0.03
Yardage cost	0.83	0.52
Total cost	1.50	1.72

[1]Average of 3 years.
[2]SPF = stockpiled perennial forage grazing; HAY = round bale hay fed in drylot pens.

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BREEDING FORAGE VARIETIES

Beef Cattle Research Council (BCRC), revised March 25, 2015.

Pasture and hay/silage of perennial and annual forage crops provide the majority of feed for Canadian beef cattle. It is important that cattle producers have access to high yielding, high quality, and well adapted varieties to improve the economics of production. Canadian plant breeding programs have developed many improved varieties of a number of grass and legume species.

Over the long term, improving forage productivity is crucial for future competitiveness of the cattle industry. While it may be more profitable for a producer to obtain hay or pasture from another source in the short term (buy land or purchase hay), reducing the per unit COP is required (through improvements in yield and quality). Current competition for land from other crops is putting further pressure on the forage industry to increase margins or be converted into a more profitable commodity. This makes forage breeding a key piece to the long term health of the beef industry.

Long Term Investment

It can take up to ten years to develop a market ready variety. Continual investment in breeding programs can provide a rich source of new varieties suited to the local environment with incremental improvements in yield, longevity, disease and drought resistance. This requires

1. An ongoing investment in research capacity (both human capital and infrastructure) with varieties developed for the different Canadian soils and climate conditions,
2. Collaboration among regional breeding programs to identify varieties that perform well in other environments, and
3. A regulatory system that supports registration and commercialization of new varieties.

Maintenance of a regional testing system with at least major regions represented is important to support adoption as it provides producers with an indication of how varieties will perform in their area. Collaboration by breeders to test each other's varieties is a part of this, but there are more regions than breeders currently in Canada. Therefore, additional testing sights are required.

Having a new variety available is only step one. Seed must also be propagated for commercial use. This can be a bottleneck in the system if there are not enough registered growers willing to do this, in which case the investment in breeding never results in varieties that are available to producers. Forage seed acres have declined from close to 800,000 acres in 2001 to 326,500 acres in 2011. This is below the 1986-1996 average of 457,000 acres. While historically forage seed acres have represented 3-4% of total forage acres, they are now under 2%.

Finally, new forage varieties must be adopted by industry. This is a question of tech transfer and a variety gaining a reputation of performing well under typical production systems. Connecting breeding programs with forage specialists to provide seed recommendations can provide breeders with valuable feedback on what characteristics producers are looking for in their region, and what the most popular variety is.

The return on this investment takes equally long when longer periods between re-seeding are considered. Adoption of new varieties in some regions can take decades.

LOCATION	INSTITUTION	MAJOR FORAGES IN PROGRAM
Lethbridge, AB	Agriculture and Agri-Food Canada	Perennial legumes and grasses
Saskatoon, SK	University of Saskatchewan/Agriculture and Agri-Food Canada	Perennial and annual grasses
Swift Current, SK	Agriculture and Agri-Food	Native species
Vegreville, AB	Alberta Research Council	Native species
Ste-Foy, PQ	Agriculture and Agri-Food	Perennial legumes and grasses
Kentville, NS	Agriculture and Agri-Food	Perennial legumes and grasses

Table 1. Present forage breeding programs in Canada (2012)

There are no active private forage breeding programs in Canada; however, there are several private programs in the U.S., with the main focus on alfalfa. A number of Canadian seed companies test U.S. developed varieties and sign agreements to market these in Canada. A number of the alfalfa varieties being used in Canada were developed in the U.S.

Goals of the Canadian Forage Breeding Programs
Higher forage yield has been one of the main goals of almost all Canadian tame forage breeding programs.

Improved forage nutritive value has also been a goal of certain programs, although it has been difficult to make progress in this area due to the strong relationship between nutritive value and plant maturity. In addition, selection for higher protein or lower fiber leads to reduced forage yield.

Forage Legumes
For a number of forage legumes, persistence has been a key improvement goal. Legumes are generally more susceptible to winter killing and diseases, so winter hardiness and disease resistance have been important selection criteria to improve persistence. Some alfalfa breeding programs have focused on the reduction or elimination of bloat and the increase of rumen un-degradable protein. Other selection has been done for tolerance to stress conditions, such as drought and salinity.

Grasses
Goals of forage grass breeding programs have been varied, reflecting the large number of different grass species used for forage in Canada. Various programs have focused on:

- tolerance to stress conditions
- improved seedling vigor for easier establishment
- improved production per unit of nitrogen, and
- faster regrowth after cutting or grazing

Crosses have been made between different forage species to expand the area of adaptation and combine the good forage characteristics of two species in one. Although most grass species are winter hardy and persistent, some otherwise good forage species are marginally adapted to our cool climate, so winter hardiness is an important breeding goal for these species.

Native Forage
Native forages are often used for conservation plantings and reclamation of disturbed land. Wide genetic diversity is often important for these types of plantings, so breeders of native grasses have not selected as intensively in their programs as for tame forage species. Seed production and broad adaptation have been important goals.

Successes of Canadian Forage Breeding Programs
Many improved varieties have been released from Canadian forage breeding programs over the years. Examples of new varieties/types that had a significant impact include:

Meadow Bromegrass
Meadow bromegrass was released in Canada in 1980. Fleet and Paddock, the first Canadian developed varieties, released by AAFC Saskatoon in 1987, had higher forage and seed yield compared to traditional varieties. This led to meadow bromegrass becoming the leading pasture grass in western Canada, highly valued for its rapid regrowth throughout the growing season.

Winter hardy alfalfa
Agriculture and Agri-Food Canada (AAFC) Ste-Foy has a team of scientists working on the winter hardiness of alfalfa. This has led to the release of many persistent alfalfa varieties over the last 25 years. Some, such as the varieties Apica and Caribou, have been well adapted and grown across Canada.

Red clover
Red clover is an important forage species on wetter, more acid soils found in eastern Canada. Red clover is susceptible to many diseases, which makes it short-lived. The breeding program at AAFC Kentville has released a number of new red clover varieties that are more persistent than older varieties.

Cicer milkvetch
Cicer milkvetch is a forage legume that does not cause bloat in grazing animals, but its use has been limited by the difficulty of establishing good stands. Varieties released recently by AAFC Lethbridge, Oxley 2 and Veldt, have improved seedling vigor which makes stand establishment easier.

Current Research
Activities presently underway in Canadian breeding programs are expected to lead to the following new varieties within the next ten years:

1. Grasses with higher biomass production for energy purposes
2. Sainfoin with faster regrowth for use in mixtures with alfalfa
3. Timothy with higher production per unit of nitrogen
4. An alfalfa with condensed tannins in its leaves which would be bloat-safe
5. New dual purpose (hay/pasture) hybrid bromegrasses
6. Availability of seed of an increasing number of native species

Acknowledgements
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for contributing their time and expertise during the development of this page.

To view the full article, click here.

SPRING FROST DAMAGED ALFALFA

Joel Bagg, Ontario Agriculture, Field Crop News May 2013

Alfalfa frost damage can sometimes occur in the spring after growth has started, resulting in damaged growing points. Some wilting can be visible about 24 hours after frost or some yellowish or brownish discolouration 3 or 4 days later. The top of the stems will typically bend over with a "shepherd's hook". Damage is often minimal and plants will grow out of it, but some yield loss and development delay can result. Thin alfalfa stands are more susceptible to frost damage

"Light" Frost Damage
The extent of frost damage to the alfalfa will depend on the severity of the freezing. Temperatures in the plant canopy level are usually "layered" and higher than reported "air" temperatures. Soil temperatures, slope, wind and the microclimate within a field can all have an effect. In mild cases, leaves at the tops of the plants become wilted and discoloured, but plants should completely recover. If the "shepherd's hook" straightens, normal growth resumes. Frosts of as low as -3ºC can freeze leaf margins (resulting in white spots on leaves), but not damage stems or growing points.

"Heavy" Frost Damage
In more severe cases, alfalfa stems freeze to various degrees and growing points are destroyed. Growth of alfalfa is from the tip of the stem where the growing point is located within a dense cluster of unfolded leaves. Temperatures below -4ºC for 4 hours or more will damage growing points and stems will die. However, it would take a lot of hard frost to kill an entire alfalfa crown and this very rarely occurs

Frost-damaged alfalfa plants usually regrow and recover from:

1. Axillary buds on lower parts of the plant (if lower stems are not damaged), and/or
2. Newly formed crown buds

In most cases, axillary buds will become the main growing point if the terminal buds are damaged.

Forage Crop Impacts
Plants use up some of their root reserves for their initial spring growth. After growing points are frozen, these plants will then have to initiate regrowth from new crown or axillary buds. This will delay the growth and developments of the crop as well as use up more of the remaining root reserves. Healthy stands will recover more quickly. Depending on weather conditions, some first-cut yield reduction and a delay in maturity can be anticipated. Where damage is uneven across a field, there can be some unevenness in maturity. If possible, delay cutting of severely affected fields to allow rebuilding of root reserves and full recovery.

Should I Cut it Now?
There is usually no benefit to cutting frosted plants. Cutting will not enhance recovery and forage quality drops rapidly. Severe frost kills the growing points, the same as cutting does. Regrowth would have to come from new crown buds and may further weaken the stand. Yield will be extremely low with poor quality. In extreme cases, frozen alfalfa that is harvested can be at increased risk for high nitrate levels.

New Seedlings
Damage to new seedlings of alfalfa is usually minimal. Companion crops protect new alfalfa seedlings somewhat against frost damage. Alfalfa generally has excellent frost tolerance up to the cotyledon and unifoliate stage. Some frost damage can occur starting in the first-trifoliate stage. Only a few hours of temperatures below -4ºC can kill alfalfa seedlings at the beginning of the second-trifoliate stage. After contractile growth, where the cotyledons are pulled below the soil surface to form a crown, alfalfa becomes more tolerant again. Observe new seedlings for 3-5 days after frost. Plants will initially wilt back. If the entire plant dies back to the ground, it is dead. To survive and recover, one set of leaves must survive. Reseeding may be required if less than 15 – 20 viable plants per square foot survive.

Read more at fieldcropnews.com.

Saskatchewan Hay Market Report

Saskatchewan Ministry of Agriculture
www.agriculture.gov.sk.ca/FeedForageListing

For the week ending May 16, 2015, there are no listings for forage wanted or for sale on the Ministry of Agriculture Feed and Forage listing. A review of other sources (Kijiji, Western Producer) revealed listings for pasture available to rent at prices ranging from $0.67-$1.15/pair/day depending on forage quality and facilities/services provided with pasture. There were also a number of listings for those wanted to rent pasture or with pasture available that had no price associated with the listing. Baled forage listings only included small square bales, at $4-$5/bale for grass-alfalfa hay.

USDA Market News Service Hay Report

For the week ending May 15, 2015
The United States Department of Agriculture (USDA) collects a wide variety of information from hay markets across the country. Presented below is information from those jurisdictions closest to Saskatchewan. For complete USDA hay market listings, please visit the USDA Market News webpage.

Weekly Montana Hay Report
Compared to last week: Most hay supplies continue to dwindle down as farmers sell alfalfa at steady money. Many farmers are completely out of hay. Western dairies

have yet to crack their silence as no new contract prices have been seen. Demand for Alfalfa hay is light on very light supplies. Central Montana is receiving some much needed rain today and more is forecasted for the remainder of the weekend, which is a welcomed sight as the USDA Drought monitor has abnormally dry conditions now stretching across a large swath of eastern Montana. Short term demand for grass hay continues to improve in places with many ranchers needing to stretch out their feed. Range conditions are still not ready to sustain cattle in some places, this has some ranchers looking for extra hay to feed until pasture conditions are conducive for turnout. Light to moderate demand was seen for grass hay marketed within the state. Good demand continues to be seen for hay to ship to other areas of the country

Wyoming, Western Nebraska, and Western South Dakota Hay Report
Compared to last week: All classes traded steady on very light demand. According to the Wyoming NRCS Snow Surveys, last year at this time the weighted state basin index was at 140% with a low of 98% and a high of 172%. This year the weighted state basin index is at 59% with a low of 10% and a high of 95% of median. Spring is bringing much needed slow rains and cool temperatures. Pastures are green and the cows and calves should be out to pasture as soon as the ground firms up for trucks to unload. Some areas have had enough rain and cool enough temperatures that first cutting Alfalfa may be pushed back to second week of June before it is able to be cut. Most horse hay sold in small squares. Prices are from the most recent reported sales.

Prices are for the week ending May 15, 2015

	Eastern Wyoming	Western Nebraska	Western South Dakota	Montana
Alfalfa				
Supreme	-	-	-	$200**
Premium	-	-	$85	$150-155
Good	-	$130	$90	$120 $138-150**
Fair	$125*	$85	$60-65	$90-130
Utility	-	-	$45	-
Grass	-	-	-	$90-100*
Timothy	-	-	-	$160-240**
Straw	-	-	-	$35-40

All prices in U.S. dollars per ton FOB stack in large square bales unless otherwise noted.
Most horse hay sold in small squares.
** large rounds **small squares*

Hay Quality Designations - Physical Descriptions:

Supreme: Very early maturity, pre bloom, soft fine stemmed, extra leafy - factors indicative of very high nutritive content. Hay is excellent colour and free of damage. Relative Feed Value (RFV): >185

Premium: Early maturity, i.e., pre-bloom in legumes and pre head in grass hays; extra leafy and fine stemmed - factors indicative of a high nutritive content. Hay is green and free of damage. RFV: 170-185

Good: Early to average maturity, i.e., early to mid-bloom in legumes and early head in grass hays; leafy, fine to medium stemmed, free of damage other than slight discoloration. RFV: 150-170

Fair: Late maturity, i.e., mid to late-bloom in legumes and headed in grass hays; moderate or below leaf content, and generally coarse stemmed. Hay may show light damage. RFV: 130-150

Utility: Hay in very late maturity, such as mature seed pods in legumes or mature head in grass hays, coarse stemmed. This category could include hay discounted due to excessive damage and heavy weed content or mould. RFV: <130

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