Saskatchewan Hay & Pasture Report

June 29, 2015
Volume 16 Issue 2

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Inside This Issue:

Note from the Saskatchewan Forage Council

June brings us the second edition of the 2015 Hay and Pasture Report. The 2015 growing season has brought challenging conditions: late spring frost and dry conditions in many parts of Saskatchewan and damaging wind and hail in some areas. Reports from around the province are that hay fields generally look poor and many are concerned about having adequate forage supplies for the upcoming year. The Agriculture and Agri-Food Canada (AAFC) accumulated precipitation map from September 1, 2014 to June 18, 2015 indicates that most areas of Saskatchewan have received between 150-300 mm of precipitation in that period, with Western Saskatchewan receiving less than the eastern portion of the province. The majority of the Province reported below-normal precipitation over this period. To view these and other AAFC maps, click here.

Read on to learn more about adding legumes to annual crop rotations, planning for and managing pastures during drought, alfalfa in perennial pastures and more. Every issue of the Report also contains the most recent Saskatchewan Agriculture Crop Report and a summary of forage market information from Saskatchewan and surrounding jurisdictions.

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) annual AGM and field tour was held June 23 near Lanigan, SK in partnership with the Western Beef Development Centre (WBDC) Field Day. There was a huge turnout for this popular event and the day was filled with research news for those in the beef and forage industries.

Photo: Dr. Bruce Coulman updates visitors on annual and perennial forage crop research. June 24, 2015.

Speaker and well-known grazier Jim Gerrish discussed "What Really Matters in Grazing Management". Prior to the SFC AGM, speakers from the WBDC and (Prairie Agriculture Machinery Institute (PAMI) highlighted ongoing and

completed research and projects and an afternoon bus tour allowed attendees to view research in the field. The WBDC website will be updated soon with recordings of the presentations that took place at the field tour. Watch the SFC website for links to the recordings and information from the AGM.

Saskatchewan Agriculture Crop Report

(For the period ending June 22, 2015)

Some areas in the province received rainfall last week, which helped address topsoil moisture conditions; however, significant rain is still needed in many areas to help crops, hay and pasture develop, according to the Saskatchewan Agriculture Weekly Crop Report.

Topsoil moisture conditions remain dry despite the recent rain. Provincially, topsoil moisture conditions on cropland are rated two as per cent surplus, 46 per cent adequate, 38 per cent short and 14 per cent very short. Hay land and pasture topsoil moisture is rated as one per cent surplus, 33 per cent adequate, 42 per cent short and 24 per cent very short. Much of the hay is in poor condition and there are concerns about feed shortages. The Ministry of Agriculture has a Forage, Feed and Custom Service listing for producers to advertise and source feed products: www.agriculture.gov.sk.ca/FeedForageListing.

Farmers are busy controlling pests, hauling grain and beginning to cut hay.

Better Soils through Forage Legumes in Annual Crop Rotations

Nadia Mori, PAg-Regional Forage Specialist, Watrous, Regional Services Branch

Incorporating perennial forages for two to three years can interrupt or at least lessen destructive disease cycles, because their growth habits are so different.

Forage legumes such as alfalfa have long been recognized for their importance to long-term soil health. Incorporating perennial legumes into an annual crop rotation can provide a break in grain crop disease cycles, help lower water tables and improve soil fertility.

Diseases such as fusarium, blackleg and clubroot can be challenges in tight annual crop rotations. Incorporating perennial forages for two to three years can interrupt or at least lessen destructive disease cycles, because their growth habits are so different. Weeds such as wild oats and green foxtail are also often less dominant in annual crops following alfalfa. As well, alfalfa is a large user of soil water and areas that have been suffering from excess moisture can benefit from alfalfa's ability to absorb water. The perennial root system of alfalfa can help lower water tables and contribute to the reduction of top soil salinity. Producers should note that, although alfalfa can help reduce soil moisture levels, it can only tolerate complete flooding for one to two weeks.

One of the largest economic factors in considering the inclusion of forage legumes in annual crop rotations is their ability to biologically fix nitrogen (N). The amount of nitrogen fixed by legumes varies substantially depending on species, soils and environmental condition. Research suggests that the N fertilizer benefit could range from 80 to 150 kg per hectare in high moisture areas. In the semiarid Brown Soil zone, the benefits are reduced to 35 to 70 kg per hectare. The mineralization of the terminated forage legume allows the release of the fixed nitrogen for subsequent annual crops.

Incorporating forage legumes is not just a matter of trying to reduce the requirements for commercial fertilizer. The extensive root system of perennial forages adds significant amounts of organic matter which may be depleted in annually cropped soils. Organic matter plays a critical role in the soil's water-holding capacity, structure, and resistance to compaction and erosion. Soils high in organic matter are also less prone to crusting. Compared to shallow-rooted annual crops, the deep perennial root system can also improve water infiltration. Besides the numerous benefits on subsequent annual crops, the incorporation of forage legumes also allows crop diversification and the spreading of economic risks.

For more information:

- Contact a Regional Forage Specialist at a nearby Saskatchewan Agriculture Regional Office;
- Call the Agriculture Knowledge Centre at 1-866-457-2377; or
- Visit the Saskatchewan Agriculture website at www.agriculture.gov.sk.ca.

Rangeland Management Before, During and After Drought

University of Arizona, Cooperative Extension Publication, Larry Howery, School of Renewable Natural Resources

Ranchers depend upon the natural production of rangeland grass and other forage plants to feed their free-ranging livestock. In reality, ranchers utilize domestic livestock to market the forage that is produced on the range. When you think about drought management from this viewpoint, it becomes obvious why it is important to have an understanding of how drought affects rangeland forage production, and more importantly, how your management practices can help buffer the consequences of drought when it comes.

Drought Affects Individual Plants-General Plant Response

Drought or water stress affects virtually every physiological and biochemical process in plants (Hanselka and White 1986). As water stress progresses, cell division slows down, enzyme levels decline, and chlorophyll formation may cease. Leaf stomata close, slowing transpiration and photosynthesis, which in turn, slows shoot and leaf growth. Buds of perennial grasses may be damaged to such a degree that they cannot produce shoots (i.e., forage) in subsequent years. Seed heads may not develop, or, extra-dry soil conditions may prohibit seed germination altogether. In extreme cases, carbon dioxide assimilation ceases, senescence is induced, and plants die.

Root and Shoot Growth

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the processes of photosynthesis, transpiration, and respiration. During drought, healthy root systems are essential to extract remaining soil moisture. Under extreme drought conditions, however, limited soil moisture may be inadequate to support shoot growth. When shoot growth is limited, adequate carbohydrates (i.e., plant food) may not be manufactured to replace roots that normally die back a little each year. The combined effect of drought is a downward spiral where roots are unable to extract moisture and minerals from the soil, which, in turn, limits shoot growth and food production of plants. In severe cases, wide-spread plant death may occur across parched landscapes.

MANAGEMENT BEFORE DROUGHT

Advance Planning is Critical

Planning for the "next" drought must occur in advance because management options decline as drought intensifies. The primary goal in every drought management plan should be to protect rangeland plants before and during drought years so that fast recovery can be achieved in years of higher precipitation. Each individual operation should tailor a drought management plan in accord with the ranch's unique vegetation, topography, and management objectives.

Stocking Rate

Stocking rate, because of its relation to grazing intensity and frequency, is considered the most important of all range management decisions (Holechek et al., 1998). Stocking rates should be calculated to leave enough standing residual vegetation (i.e., plant material from previous year's growth) after the grazing season to protect the soil and ensure sustainable forage production. Although it is obviously impossible to grow forage without rain, residual vegetation and associated litter (i.e., detached plant material) can improve the effectiveness of rainfall received and reduce drought impacts in several ways. To illustrate, after a raindrop reaches the soil surface it either: 1) soaks into the soil (infiltration and percolation), 2) evaporates, or 3) runs off. Infiltration and percolation are critical to forage production because water must penetrate the soil profile before it can be used by a plant's root system. Residual vegetation facilitates infiltration and percolation by reducing evaporation losses (i.e., residual vegetation lowers soil surface temperatures), protecting the soil from erosion (i.e., residual vegetation provides more soil cover and less bare ground), and providing a favourable micro-climate for seedling growth (i.e., residual vegetation is a source of organic matter). The converse is true for over-grazed areas. Hence, residual vegetation left ungrazed is not wasted because it enhances the ability of the land to endure drought conditions and to be more productive in the long-term.

Photo: cows on native range

Grazing System

Every grazing management plan should include a proper grazing system that promotes stable or improved range condition. Grazing system decisions, like stocking rate decisions, are site specific and must consider the unique vegetation, topography, and management goals and objectives for the range. Grazing systems should be planned to give grazed areas periodic deferment or rest, and to set aside ungrazed areas to be used during drought emergencies. No grazing system will be biologically or economically sustainable if stocking rates exceed forage supply.

Watch for Drought Signs

No one can predict droughts. Even meteorologists, with all their sophisticated equipment, have difficulty pin-pointing when droughts will occur within a particular geographical region. Drought is not obvious during the initial stages, but is easily observed after reaching full impact. Good managers recognize potential drought signs and take action before this occurs. This process begins with keeping good records to track monthly trends in a few key environmental variables. View the full article to learn more about monitoring rainfall, soil moisture and plant growth.

MANAGEMENT DURING DROUGHT

Ranchers should consider a variety of management options to minimize the effects of drought. The more options you have, the greater flexibility there will be to survive drought conditions. Following is a summary of drought management suggestions (adapted from Hanselka and White 1986, unless otherwise indicated). Although there is no "cookbook" approach to drought management, many of these points are range management principles that can be applied to all ranches. Other suggestions may not be practical for some operations for a variety of reasons (e.g., legality, costs, and benefits). No one knows better than the ranch manager what will or will not work on a particular ranching enterprise. The following is merely a laundry list for consideration.

Rangeland/Forage Management

1) **Continue to monitor and maintain plant vigor and range condition to the extent possible.** Drought increases the rate of natural die-off of plant roots. However, healthy vigorous perennial grasses with a good root system suffer less damage and maintain production longer into drought. They also recover more quickly once rainfall occurs.
2) **Monitor utilization of preferred plants (sometimes called "key forage" species).** Moderate use of key forage plants can serve as a warning to determine when livestock moves or adjustments are needed. Careful monitoring of utilization levels of these plants can help avoid the critical mistake of over-utilizing an entire pasture when plants are drought-stresses.
3) **Provide adequate, accessible, good-quality water**. Poor quantity and quality of water can decrease animal distribution, intake, and performance. A well-designed pipeline system with a good source of clean water is the best way to ensure that adequate water is strategically located throughout the range. Consider hauling water to areas with adequate forage if good quality water is not available during drought (Bartlett et al., 1994).
4) **Use emergency forage that has been set aside for drought conditions**. Rest pastures specifically for this purpose. Buy and store hay or other feeds while plentiful and inexpensive. Keep in mind that high rainfall years may present an opportunity to seed abandoned fields or barren areas with adapted forage plants that can be used during emergency drought conditions.

Every drought will result in a different set of circumstances so it pays to monitor each situation and adjust your management practices accordingly.

Livestock Management

1) **Develop an annual (flexible) timetable for making decisions on stocking rates, livestock movements, range improvement practices, supplementation, and marketing in relation to seasonal patterns in forage production and quality.** Evaluate several options pertaining to each of these factors. For example, you may need to drastically alter your grazing management plan during drought by moving animals out of pastures early, or by reducing your herd, but you may be able to graze pastures that have received localized rainfall. Every drought will

result in a different set of circumstances so it pays to monitor each situation and adjust your management practices accordingly.

2) **Use range management techniques to distribute livestock more uniformly**. Herding, drifting, and strategic placement of salt, supplements, along with water developments, and strategic fencing can be used to promote better animal distribution.
3) **Determine the amount of money that can be spent on animal feed and supplements.** During extreme droughts, determine if it is economical to implement "substitute feeding" of hay or other supplements in a drylot. This relieves grazing pressure on plants that are already stressed and reduces energy expenditure of animals searching for scarce rangeland forage. See Sprinkle (1998) for recommendations on rangeland supplementation during drought.
4) **Select and cull cows and replacement heifers on the basis of behavioral characteristics.** Some individual animals use only a very small amount of the available range, while others use the range more extensively (Howery et al., 1996). These behaviors are apparently passed from mother to offspring and may be used as a basis to select or cull cows and replacement heifers based on desirable and undesirable behavioral traits (Howery et al., 1998).
5) **Once drought is recognized, reduce the herd as soon as possible so it is in balance with forage supply.** Market prices tend to be highest at the beginning of a regional drought. If stocking has historically been heavy, the number of animals removed will probably need to be greater than in areas where light or moderate stocking has been implemented.

To view the full publication, including information on management after a drought as well as literature cited, click here.

Will Swath Grazing in Late Summer Help Maintain Alfalfa in Rested Perennial Pastures?

Dr. Reynold Bergen, Beef Cattle Research Council. Reprinted from the April, 2015 Canadian Cattlemen Magazine with permission from the publisher.

Background: Numerous studies have shown that maintaining 40% alfalfa in a forage stand is the most economical way of improving soil fertility, forage yields and animal grazing performance. Unfortunately, alfalfa drops below the 40% threshold level after several years of grazing.

Alfalfa drops out of perennial pastures partly due to over-use during the grazing season. Hay producers do not usually cut their alfalfa fields when the plants are preparing for winter dormancy (beginning of August to the first killing frost). This helps alfalfa withstand future stresses such as low temperature, future defoliation and disease, and enhances alfalfa persistence into subsequent growing seasons. However, cattle producers will often continue to graze alfalfa-containing perennial pastures during this time.

Seeding annual cereals earlier (mid-May) and swath-grazing from late July to early September could allow grass-alfalfa pastures to rest during the late summer period. This may increase in the carrying capacity of the overall grazing system without any additional input costs. The Canadian Journal of Animal Science recently reported the results of a six-year project conducted at AAFC Brandon by Dr. Obioha Durunna and coworkers, entitled "Effects of resting perennial pastures during the sensitive pre-dormancy period in western Manitoba: Pasture productivity and beef cattle performance".

Objective: To determine whether resting perennial pastures during the critical late-season period benefits overall stand health, plant growth, root growth, water use efficiency, alfalfa persistence, animal performance, system energy balance and economic benefits and costs.

What they did: A series of grass (meadow brome) and grass-alfalfa (meadow brome plus Spredor 3 or 4) paddocks that had been established eight to 26 years previously were grazed by 224 cow-calf pairs over six seasons (2006 through 2011). Early- (mid-May) and late- (mid-June) seeded annual cereals were swath grazed (oats in the even years and barley in the odd years). All perennial paddocks were rotationally grazed from early June until late July. At this point, each paddock was divided by a cross-fence, and half of each perennial paddock continued on the rotational grazing program. The other half of each perennial paddock was rested until fall, while those cow-calf pairs swath grazed the early-seeded cereals.

Photo: alfalfa-brome field in summer

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.

All calves were weaned when the forage supplies got low in either the perennial or swath-grazed paddocks. The dry cows from the perennial paddocks then swath grazed the late-seeded annuals, while the dry cows from early-seeded swath grazing moved back to graze the rested half of each perennial paddock.

Animal performance, forage yield and quality, overall stand health, plant growth, root growth, water use efficiency, and alfalfa persistence were monitored. Profitability and energy use efficiency will be analyzed to indicate whether this practice will reduce production costs.

What they learned: Resting during the pre-dormancy period didn't have clear benefits for the grass-alfalfa stands. The grass-alfalfa stands contained around 15 per cent alfalfa at the start of the trial in 2006, and still contained around 15 per cent alfalfa at the end of the trial in 2011. Because the alfalfa plants didn't have a chance to set seed and start new plants (because they were all grazed every year), the only way the proportion of alfalfa could have increased would be if their creeping roots had developed new shoots. If this happened, it wasn't enough to significantly increase the proportion of alfalfa in the mixed stand.

Calves that stayed on the rotationally grazed paddocks for the entire summer gained 15 lbs. more than calves that spent the second half of the season on the early-seeded swath-grazing paddocks. Similarly, although cows that stayed on the rotationally grazed paddocks for the entire summer maintained their body weight, the cows that moved to the early-seeded swath-grazing paddocks for the second half of the summer lost 1.25 lbs./day while their perennial paddocks were being rested.

What it means: This study demonstrated that resting pastures during the late-summer period was not an effective way to increase the proportion of alfalfa in old mixed

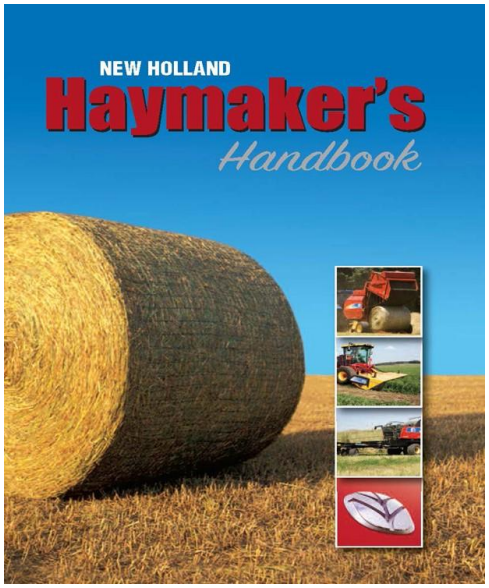
stands. Further research would be needed to learn whether this strategy may help alfalfa persist in younger stands, and whether these benefits would offset potentially negative impacts on cow and calf performance during the rest period.

Footnote: AAFC closed the beef and forage research program at Brandon in the spring of 2013. An announcement at the Manitoba Beef Producers annual meeting in early February revealed that MBP, AAFC, Manitoba Agriculture, Ducks Unlimited and the Manitoba Forage and Grassland Association have developed and funded an initiative to keep the Brandon pasture and forage research sites available for industry-led beef and forage research and demonstration projects. This is an exciting opportunity for producers, researchers, academics and extension experts to work together on projects that will directly benefit Prairie beef and forage producers.

The Beef Research Cluster is funded by the National Checkoff and Agriculture and Agri-Food Canada with additional contributions from provincial beef industry groups and governments to advance research and technology transfer supporting the Canadian beef industry's vision to be recognized as a preferred supplier of healthy, high-quality beef, cattle and genetics.

Processed Hay and Nutritional Value

Reprinted from Manitoba Forage and Grassland Association (MFGA) eBulletin, May 13, 2015



Today's hay markets value the quality of the forage being sold. Cost wise, hay has always been one of the least expensive sources of feed for livestock. And it can be as high in feeding value as many concentrates. However, hay production frequently varies in quality more than any other North American agricultural product. Protein and other nutrient losses that occur after hay is cut frequently amount to 30% or more. Research has shown that, with new production varieties and preservation methods, much of this loss can be prevented.

To learn more about making quality hay, check out the Haymakers Handbook, developed by university and New Holland experts in hay and forage. This book covers topics from start to finish for making hay. From growing and harvesting to packaging and feeding -this book is a useful tool for anyone in the hay business.

Stop by your local New Holland dealer or click here to order your book today.

Saskatchewan Hay Market Report

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

For the week ending June 19, 2015 the Ministry of Agriculture Feed and Forage listing contains one listing for pasture to rent (no pricing indicated). Two advertisements for standing forage were listed (no pricing indicated) and one listing for oats seed at $3.50/bushel. Two listings were found for those looking for baled forage for sale. Good quality mixed hay was requested and one buyer was willing to pay $150/ton. Kijiji Saskatchewan contains a number of ads for both buyers and sellers of both baled and standing hay, although very few ads list prices. With little hay trading and

uncertainty as to the volume and quality of the 2015 forage crop, pricing forage is a challenge at this time of year.

USDA Market News Service Hay Report

For the week ending June 19, 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: First cutting is under way as many farmers are trying to dodge rain showers in order to get first cutting down. Rain showers fell throughout much of the week in central and southern Montana, giving added moisture to pasture and range, but providing a slight nuisance to farmers trying to put up hay. Hay supplies are nearly depleted for all very high quality alfalfa hay. However, there remains some middle of the road old crop hay that continues to move at steady money. Demand for Alfalfa hay continues to be light. This week the US drought monitor increased the land area in abnormally dry and moderate drought status. Most of this land is in the northwest and southwest corners of the state, where the western drought has inched its way east. Light demand was seen for grass hay marketed within the state as steady prices move hay on an as need basis. Good demand was seen for hay to ship to other areas of the country, particularly drier regions, both east and west. All prices are dollars per ton and FOB unless otherwise noted.

Prices are for the week ending June 19, 2015

	Eastern Wyoming	Western Nebraska	Montana
Alfalfa			
Supreme	-	$195	$200**
Premium	-	-	-
Good	-	$130	$120-130 $138-150**
Fair	$85	$80	$90-130
Utility	-	-	-
Grass	-	-	$90-120* $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*

Wyoming, Western Nebraska, and Western South Dakota Hay Report

Compared to last week: All classes traded steady on very light demand. First cutting Alfalfa is being knocked down with a window of dryness. A storm blew through on Tuesday that brought hail and heavy rains for Eastern Wyoming and Western Nebraska. Reports of hay that wasn't knocked down was stripped according to contacts in these regions. Fields are too wet to enter for harvesting haylage. According to NOAA, the three month forecast puts all reported areas in a below normal temp and above normal precipitation. All prices dollars per ton FOB stack in large square bales and

rounds, unless otherwise noted. Most horse hay sold in small squares. Prices are from the most recent reported sales.

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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Financial Support for the Saskatchewan Hay & Pasture Report Has Been Provided by Saskatchewan Crop Insurance Corporation