Saskatchewan Forage Market Report

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This report determined current market prices and trends for forage products in Saskatchewan as of January 15, 2014 through the use of various sources and contacts. The goal of this report is to provide as much information as possible about the 2013 forage crop and the future of the 2014 forage crop in Saskatchewan. At the time of completion, all information gathered and utilized was as current as possible and is represented in an analytical, professional manner for use by the Saskatchewan Forage Council. The Saskatchewan Forage Council, and the report authors, has presented this information in an effort to reflect industry trends as accurately as possible, however it does not guarantee and accepts no legal liability arising from or connected to the accuracy, reliability or completeness of any material contained in this report.

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1) Executive Summary

The spring of 2013 left a lasting impression on forage and livestock producers, as extended winter weather led to a slow start for all crops and caused winter feed supplies to dwindle throughout Saskatchewan. Average to above-average forage crop yields in 2013 were a relief to producers looking to build supplies for the 2013-2014 winter feeding season, and many livestock producers have been reluctant to sell forages until they can better gauge how winter conditions will affect this year's stocks.

Forage prices have been mixed in late 2013 and early 2014, with variations in pricing based on quality and demand. High quality hay such as pure, second-cut alfalfa is in demand but there is little on offer, which has resulted in price increases since the January 2013 report. Although asking prices for mixed hay and grass hay have increased in the past year, buying and settled prices have declined, likely due in part to variable quality. Late forage harvest and rainfall during haying season have led to quality concerns in some areas. In fact, a survey conducted by the Saskatchewan Ministry of Agriculture indicates that energy levels in the 2013 hay crop are lower than anticipated.

Demand for hay into to the US has eased somewhat, as several states including Montana, North Dakota and South Dakota are no longer experiencing drought. The US Midwest and parts of the south continue to endure dry conditions and are still looking for reliable supplies of good quality forage. Large, square bales of high quality hay are still in demand, although there is now less demand for mixed hay in round bales.

Hay transportation costs have increased slightly in early 2014, due mainly to higher fuel prices. Hay transporters report that costs will need to increase in order for this business to remain profitable and to compete with grain transportation, which tends to be faster to load and unload and consumes less fuel than transporting a bulkier product like hay. Some hay transporters have exited the business in response to these concerns; and existing transporters have been kept busy filling this void.

2013 has seen a decline in grain and oilseed prices along with record production in Saskatchewan. It will be of interest to industry stakeholders to observe if relatively stable forage prices and strong cattle prices may act to slow or reverse the trend of forage acres being converted to annual grain and oilseed crops.

2) Recap of 2013 Growing Season in Relation to Forage Production

A long and snowy winter followed by a late spring gave forage crops a slow start in Saskatchewan in 2013. With snow still on the ground at the end of April, soil temperatures were slow to rise and some fields could not be accessed until late May.According to the Saskatchewan Ministry of Agriculture 2013 Final Crop Report, average hay yields on dry land in 2013 were 1.7 tons per acre (alfalfa and alfalfa/brome hay), 1.3 tons per acre (other tame hay), 1.2 tons per acre (wild hay) and two tons per acre (greenfeed). On irrigated land, the estimated average hay yields are 2.3 tons per acre (alfalfa hay), 3.4 tons per acre (alfalfa/brome hay) and four tons per acre (other tame hay and greenfeed). Regional dry land hay yields for 2013 are listed in Table 1.

Table 1. 2013 Saskatchewan Dryland Hay Yield Estimates (tons/acre)

Region	Report Date	Estimated 2013 Hay Yield	Long-Term Average for Region*
Tisdale	Oct 15	2.3	1.6
Prince Albert	Oct 15	2.3	1.5
North Battleford	Oct 15	2.1	1.4
Kindersley	Oct 15	1.6	1.1
Outlook	Oct 15	1.6	1.4
Watrous	Oct 15	1.6	1.4
Yorkton	Oct 15	1.6	1.5
Weyburn	Oct 15	1.7	1.3
Moose Jaw	Oct 15	1.7	1.3
Swift Current	Oct 15	1.4	1.4
Provincial Average		**1.79**	**1.38**

Source: Saskatchewan Ministry of Agriculture Regional Forage Specialists and Crop Reports
**Long-term yields based on combined available Saskatchewan Ministry of Agriculture data, 1984 to 1997 and 2008 to 2013*

Forage yields were above average in 2013, providing a much-needed replenishment for feed supplies on livestock operations following the difficult winter of 2012/2013, however; intermittent showers in some parts of the province during the 2013 haying season resulted in quality issues either due to moisture in windrows or advanced maturity at cutting.

Saskatchewan Ministry of Agriculture Regional Livestock and Forage Specialists undertook a feed sampling project in the fall of 2013. Specialists sampled 202 forage sources from on-farm hay supplies and had feed analyzed for nutritional quality. Although this is a small sampling, it appears to reveal a general trend in forage quality in Saskatchewan, where much of the baled hay was either rained on or cut at a later maturity than desirable. The results from this feed sampling project are listed in Table 2 below.

Table 2. 2013 Saskatchewan Forage Crop Nutritional Quality

Feed Type	Number of Samples	Total Digestible Nutrients (TDN) % (Dry Matter)	Crude Protein% (Dry Matter)
Alfalfa-Grass Hay	126	53.2	11.5
Alfalfa Hay	34	52.5	14.9
Cereal Greenfeed	24	58.6	9.6
Grass Hay	18	55.1	9.2

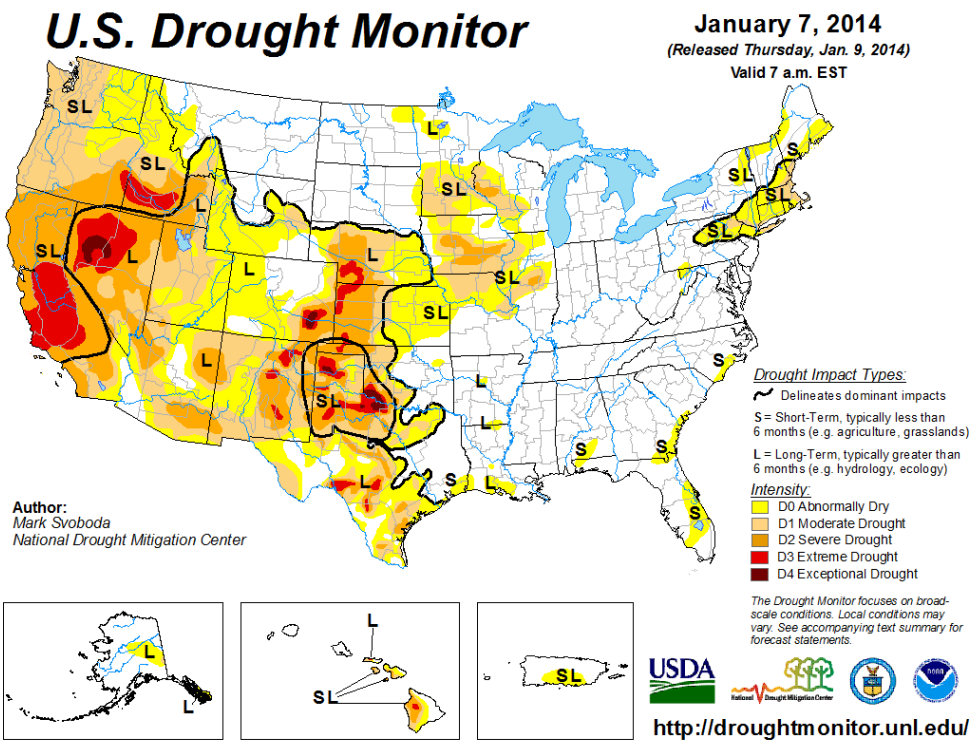
Source: Saskatchewan Ministry of Agriculture Regional Forage and Livestock Specialists

While protein levels in hay look to be adequate, energy (TDN) levels in sampled forage are lower on average than expected in many regions of SK. Based on the feed survey, it appears that some producers may need to provide supplemental energy to livestock this winter, particularly as calving season approaches. Whether these low energy levels in hay will affect forage prices or demand for alternative energy sources for supplementation is still unknown.

The Final Crop Report (October 21, 2013) indicated that topsoil moisture on hay and pasture land in the province are 60 percent adequate and, 25 percent short and 14 percent very short, with only 1 percent of pasture/hay reported as surplus. The driest parts of the province at the time of reporting were the west-central and northwestern regions.

Drought conditions have eased somewhat in the northern United States, lessening demand for hay in Montana and North and South Dakota. Drought persists further south in Kansas, Nebraska, Oklahoma and parts of Texas as well as in California and Nevada. Producers willing to negotiate with buyers in these southern states and transporters willing to haul hay across many states have found that there is still a demand for forage from dairies and feedlots in these regions. The most recent USDA drought map is pictured in Figure 1, below.

Figure 1. USDA Drought Monitor Map for January 7, 2014



In January 2013, the average buying price of alfalfa-grass hay in Saskatchewan was $72/tonne, with less forage on offer than in past years when hay supplies were abundant. By comparison, the average buying price in January 2014 is $67/tonne, a decrease of $5/tonne. Average asking prices have increased for mixed hay over the same period, with a similar amount of mixed hay on offer in 2013 and 2014. Pure alfalfa hay prices have increased by about $5-$10/tonne since January 2013 as there is little on offer this year.

According to The Saskatchewan Ministry of Agriculture's *Cattle on Farms* statistics report for July 1, 2013 estimated cattle and calves on Saskatchewan Farms at 2.89 million head, down one percent from the July 1, 2012 estimate. Both beef cows and beef herd replacement heifer inventories are down 1% since 2012, while steer inventories have increased 5% since July 2012. It is anticipated that lower feed grain costs may improve cattle feeding margins and if producers

remain optimistic about cattle prices, there may be increased beef cattle herd retention. If cattle markets remain strong and grain and oilseed surpluses lead to further depression of prices, there may be a slight shift toward forage acres in upcoming years. Agricultural producers in Saskatchewan will be watching these markets closely when considering how to best utilize acres in 2014.

Indications are that straw is more available than in past years. Cereal crop production above the 10 year provincial average has resulted in more straw on hand for mixed agricultural producers and more straw advertised for sale. Pulse crop production is also above the 10 year average. Although few prices have been discovered for pulse straw, pulse growers with livestock may be making use of this feed source on farm.

3) Field Pest Impact and Projections for Forages

The 2013 Grasshopper Forecast map, produced by the Saskatchewan Ministry of Agriculture and Saskatchewan Crop Insurance Corporation predicted very light to no infestations of grasshoppers in the 2013 growing season. Reports from forage producers and SMA Regional Forage Specialists indicate that grasshoppers did not cause significant forage crop damage in 2013. The 2014 Grasshopper Forecast predicts similar grasshopper infestation levels in 2014, with the exception of a few isolated regions where higher levels are anticipated. The forecast indicates that although the cool, wet spring conditions of 2013 were not favourable for grasshoppers, the hot and dry conditions experienced in late summer and early fall did allow adult grasshoppers to grow and lay eggs. An area in the northwest near Meadow Lake is predicted to have severe grasshopper infestation, causing a potential risk to crops. Light to very-light infestations levels are expected in the Swift Current and Estevan region of the province in 2014. The 2014 Grasshopper Forecast and map and the 2013 Saskatchewan Disease and Insect reports are included in Appendix B.

Alfalfa weevils were a pest of concern in 2012 hay crops, decreasing yields in central and southern parts of Saskatchewan. The 2013 crop year brought reports of limited alfalfa weevil infestation in southern Saskatchewan, but less damage occurred than in 2012. Regional Forage Specialists reported that alfalfa weevils impacted hay crops in specific locations but the effects were not as widespread as in 2012. Pure alfalfa crops were most affected in the south and reports from the southwest indicate that the alfalfa plant bug also had some limited impact on hay yields in isolated areas. Central and northern Saskatchewan reported little incidence of feeding by alfalfa weevils or other pests in 2013. The 2013 alfalfa weevil hatch did not occur early, as it did in 2012, which may been the reason there was less economic impact to forage crops. It appears that the cool, wet spring conditions of 2013 may have slowed down forage pest levels, giving growers an opportunity to harvest forage crops before insect levels became problematic.

Ergot levels in wheat have been rising recently, and ergot is common in bromegrass and native wheatgrasses, and appears to be more prolific on years with cool, wet conditions such as the spring of 2013. Forage Specialists have been seeing cases of ergot in tame and native grasses as well as in greenfeed hay this year, and some have been noting a rise in inquiries about ergot from producers. Ergot hasn't been monitored or evaluated to any extent in forage crops in Saskatchewan but is sporadic throughout the province and can have a negative impact on animal health if present in high concentrations in any feed. The SMA Provincial Forage Specialist

also noted that downy mildew has been found in alfalfa stands in central and northwest Saskatchewan in 2013, likely also due to the late snow melt and cool conditions experienced in spring. Downy mildew will bear watching in forage crops in 2014 if similar spring conditions occur.

4) Current Saskatchewan and Neighbouring Transportation Costs

Forage transport rates in Saskatchewan have increased slightly in the past year. Long haul rates have increased by $0.67/loaded mile since the January 2013 report and the average short haul rate in Saskatchewan has increased by about $10/hour in the same time period. Transporters cite fuel rate increases as the driving factor behind transport rate increases. Natural Resources Canada reports a 10 cent per liter increase in average retail diesel price between January 1, 2013 and January 1, 2104 (www.nrc.gc.ca). One Saskatchewan hay transporter noted that he has added a fuel surcharge to his price in order to account for changes in fuel costs. If fuel prices decrease, he will decrease the fuel surcharge accordingly.

Reports from Northern Saskatchewan continue to reveal a shortage of hay transport services. Transporters from central Saskatchewan have indicated that they are receiving inquiries about hay hauling in Prince Albert and surrounding areas. Northern Saskatchewan transporters appear to be exiting the industry or hauling grain instead of hay, citing faster and easier loading and unloading as well as increased demand for grain hauling throughout the province. A number of transporters also noted that hauling hay bales consumes more fuel than hauling grain due to the bulky nature of hay, making it less cost-effective if similar rates are charged for hay and grain transport.

Table 3. Transportation Costs for Forages in Saskatchewan

Location	Rate in $/loaded mile (long hauls)	Rate in $/hr (short hauls)
Northeast	6.00	125.00
Northwest	-	125.00
West	6.00	123.00
Central	6.64	133.00
East	7.12	123.75
South	6.50	135.00
Provincial Average	**6.48**	**127.08**

A survey was also conducted in neighbouring provinces to help shed light on hay and feed transportation costs in Alberta and Manitoba. This information provides a gauge on transportation costs for hay being exported out of province, an important variable in overall forage price determination. Throughout Alberta and Manitoba current rates are reported in the range of $6.00-$6.72/loaded mile, and $110-$150/hour for short hauls. A number of hay transporters in both Alberta and Manitoba have exited the hay transport industry in the past few years, creating a challenge in discovering average prices per region. Some report difficulties finding sufficient business in this industry and others commented that hauling hay is less cost-effective than hauling grain, similar to the Saskatchewan situation. There is still work for transporters willing to haul hay to the US Midwest from Manitoba. Exporters in Manitoba

estimate transport costs at $50-$70/ton ($55-$77/tonne) for transport to Midwestern US states such as Kansas and Nebraska.

Table 4. Transportation Costs for Forages in Alberta (AB) & Manitoba (MB)

Location	Rate in $/loaded mile (long hauls)	Rate in $/hr (short hauls)
Alberta	6.72	133
Manitoba	6.00	110
Average	**6.36**	**125**

There is still a demand for hay in the US market, and hay producers often look to brokers or experienced transporters who understand the permit and other legal requirements of transporting hay across multiple states. While northern states are no longer in desperate need of hay, areas further south are still experiencing drought and buyers are looking to form relationships with hay producers who can provide a reliable supply of quality forage. Sources in southern and central Saskatchewan report that while hay does continue to be shipped outside Saskatchewan to the US, hay is not moving south to the degree it was in 2013. The demanding winter conditions of 2012/2013 took their toll on Saskatchewan livestock producers and many will wait to be sure they have a sufficient supply for their own operations before looking to sell excess hay for export.

5) Current Saskatchewan Forage Prices

Table 5 reports the current prices for various types of forages in Saskatchewan derived from this survey. Numbers presented are collected from various sources including the fall 2013 and winter 2013/2014 Saskatchewan Ministry of Agriculture Feed and Forage Listing Service, hay and straw listings in the Western Producer from November 2013, weekly through January 15, 2014, as well as contact with the major feedlots in Saskatchewan (lot capacity of 1,000 to 30,000 head), auction marts and hay growers/brokers throughout Saskatchewan.

Forage prices discovered in late 2013 and early 2014 exhibit an interesting trend as compared to average prices in the January 2013 Forage Market Report. Asking prices for grass hay and mixed hay have increased by $24/tonne and $18/tonne, respectively, while buying prices for the same classes of hay have decreased by $3-$5/tonne during the same period. Prices (buying, asking and settled) for first- and second-cut alfalfa have generally increased in the past year and there is little alfalfa on offer this year. These trends, as well as reports from buyers and sellers appears to indicate that prices have increased for good quality feed, but that there is a quantity of hay of uncertain nutritional quality on offer that is being purchased for a lower price than sellers are asking. With much of the 2013 hay crop put up late or having been rained on, buyers are wary of nutritional content of hay. This concern appears to be warranted in light of the feed survey conducted by SMA Regional Forage Specialists which indicates energy levels are lower than expected in the 2013 hay crop on average. Stakeholders in the forage industry will be watching winter conditions closely to determine the effect on hay trading as we move into the late winter and spring of 2014.

Grass- A good quantity of grass hay was on offer in Saskatchewan in 2013 and early 2014. Asking prices varied greatly based on quality and local demand for this product. Good quality

grass hay is in strong demand from auction markets, and they will pay a premium for this producer. Auction marts also purchase mixed hay for older animals, but prefer feed to be free from alfalfa and of high quality for young calves. Grass hay buying prices for auction marts include delivery and often also include unloading and stacking at their facilities. Horse owners often look to purchase good quality grass hay, and many advertisements for this commodity indicate that is has little to no alfalfa and is "good quality horse hay". The number of advertisements discovered targeting this market has increased in the past year, and this may partly explain the dramatic increase in weighted average asking prices since last January 2013. In this report, average asking price was $82/tonne, while the asking price one year ago was only $58/tonne. Whether sellers are realizing the prices they are asking for is unknown, although buying prices (mainly obtained from auction marts) have decrease by $3/tonne in that same period.

Table 5. Saskatchewan Forage Prices as of January 15, 2014

Forage Type	# of Traders	Quantity (T)	High ($/T)	Low ($/T)	Weighted Average ($/T)
Grass Hay	18	3488	92	65	79
Alfalfa (1st Cut)	10	3293	123	71	88
Alfalfa (2nd Cut)	6	598	140	110	123
Alfalfa-Grass	27	10347	170	60	72
Greenfeed	3	448	77	65	69
Organic Hay	2	440	66	58	63
Clover**	1	26	58	58	58
Cereal Straw	15	5933	50	28	45

LEGEND: T = tonne (all prices in CDN $ per metric tonne ($/T))
***2012 forage crop*

Certified Organic Hay- Only two prices were discovered for organic hay sales in 2013/2014. Both prices were lower than the average price of every other class of hay with the exception of clover. There does not appear to be a demand for certified organic hay, and growers report that this product is being used on farm for feeding organic livestock or is often sold as commercial hay. There is a demand for certified organic alfalfa hay for use in pellets, but alfalfa processors report difficulty in sourcing 100% alfalfa hay to process this product. Moving to pure alfalfa stands rather than mixed hay or cereal crops may be a profitable alternative for organic producers located near processing facilities.

Greenfeed- More greenfeed was found on offer in 2013 than in 2012. There has been some availability of greenfeed in advertisements and reported by some auction markets. The late

start to the growing season of 2013 as well as depressed crop prices may have provided an incentive to produce more greenfeed in Saskatchewan than in the past few years. 2013/2014 greenfeed asking prices remain similar to last year's asking prices despite the decrease in grain prices. Buyers have noted that prices for greenfeed as well as other types of hay have remained strong despite depressed feed grain prices, likely because there is not as much hay on offer as there has been in the past.

Clover- Clover hay is not a commonly traded feed source in Saskatchewan. As in the January 2013 report, only one asking price was discovered for clover hay. The asking price for this clover hay was low relative to other forage asking prices ($58/tonne) and was hay from the 2012 forage crop. This lower price is consistent with the 2013 asking price of $59/tonne, indicating that demand is not strong for this product. Average clover seed prices in this survey were only slightly lower than alfalfa seed prices, and as clover is a biennial crop this makes it less desirable in terms of tonnes of forage produced per dollar of input cost.

Straw- Reports from around Saskatchewan are that straw has been easier to access in 2013 and early 2014 than it was in the past few years. A large grain crop in the province has allowed producers more opportunity to bale or purchase straw. Auction marts and feedlots generally reported having sufficient straw on hand, although some note that it is always a challenge to acquire enough straw, and that it is important to form relationships with grain farmers who will sell straw for a number of years. With a late harvest in many parts of Saskatchewan, straw offerings did not begin to appear until October or November of 2013, however more straw was discovered on offer in this report than in the previous year. Average straw asking prices declined from $50/tonne to $38/tonne since the January 2013 report, although actual buying price increased from $41/tonne to $48/tonne in the same time period. Simple average prices have declined by $7/tonne since the January 2013 report. A few buyers paying higher prices for large quantities of straw in southern Saskatchewan increased the 2014 weighted average actual buying price above what is being paid in most parts of the province.

Small Square Bales- Small square bales, weighing 40 to 80 pounds are convenient for acreage owners or those with small scale equipment who require lesser amounts of feed. Small square bales represent a different market than large round or square bales and are priced accordingly. Quality of hay was variable in 2013 and this is reflected in the wide range of prices discovered for this product. One hay grower reported selling good quality, second cut alfalfa square bales weighing 80 lbs. for $6/bale (approximately $165/tonne). Small square hay and straw bale prices for December 2013 and January 2014 are listed in Table 6 below.

Table 6. Square Bale Asking Prices in Saskatchewan 2013/2014

Forage Type	Average Price $/T*
Alfalfa Hay	(0 offers)
Alfalfa-Grass Hay	167 (9 offers)
Grass Hay	187 (4 offers)
Greenfeed	149 (2 offers)
Straw	100 (5 offers)

**Prices in $ per metric tonne ($/T)*
Listing sourced from Kijiji, Western Producer, SK Agriculture Feed Listings and contacts at auction marts around SK.

Standing Forages- Standing forage prices in the September 2013 Forage Market Report varied based on the quality of standing hay on offer and on local demand for feed. The few advertised prices discovered in 2013 ranged from $2/T to $25/T. Rates were as low as $18/T for low quality grass, while high-yielding alfalfa-grass mixture rates were $44/T. Many standing forage agreements on private lands are long-standing arrangements between neighbours or acquaintances, making accurate price discovery difficult for this commodity.

Silage- As feed barley prices decreased in 2013, silage pricing decreased accordingly. Most feedlots base barley silage prices on a formula using the current price of feed barley or the feed barley price at the time silage was harvested. Feedlots also reported an increase in use of corn silage in 2013 in addition to or in place of barley silage. Corn silage is priced in a similar manner to barley silage and based on corn grain prices. Most feedlots contacted indicated that they make their own silage and with high crop yields in 2013, most have adequate silage supplies in place. Barley and corn silage prices ranged from $35/tonne to $50/tonne, depending on the method used to price the silage and averages were $45/tonne for barley silage and $40/tonne for corn silage. It appears that more feedlots opted to grow corn silage in 2013, with some small feedlots reporting that they only used corn silage, and some feeding both corn and barley silage. Prices listed are generally not buying or selling prices, but instead the price used in the feedlot ration as this commodity is bulky and difficult to transport.

Dairies or small feedlots continue to be the main producers and consumers of alfalfa silage. Generally, this product is not traded but produced for use on the dairy or feedlot. For that reason, price discovery is difficult and only price was found for this forage.

Dehy Alfalfa- Alfalfa processing plants in Western Canada produce a variety of sun-cured products (made from baled alfalfa) and dehy products made from standing alfalfa. The dehy products tend to demand higher prices as more nutrients are retained when the pellets or cubes are made from standing hay than from baled hay. These processors may also produce blended pellets containing both timothy and alfalfa depending on forage availability.

Table 7 provides average dehy product prices in Saskatchewan for the 2013 crop.

Table 7. Saskatchewan Dehy Product Prices for 2013 Crop

Product Type	Price $/T
*Dehy Pellets	263
**Sun-cured Pellets	240
***Cubes	230

(prices in $ per metric tonne ($/T))

**Dehy Pellets – alfalfa pellets made from standing alfalfa*
***Sun-cured Pellets – alfalfa pellets made from baled alfalfa*
****Cubes-alfalfa cubes made from baled and standing alfalfa*

Prices range from $220-$260/tonne for sun-cure and $245-$280/tonne for dehy pellets. Alfalfa cubes average $230/tonne and certified organic pellets are selling for a premium at $315/tonne. Standing alfalfa purchased for dehy production cost an average of $50/tonne, with a range of $40-$60/tonne. Processors report that demand is good but the lack of rail car availability this

winter has caused difficulty with shipping products to buyers. Exporters depend on the rail lines to access foreign and domestic markets, and availability of rail cars is of vital importance to exporters looking to provide a consistent supply to buyers. Record grain and oilseed crops in Saskatchewan in 2013 have caused an increased demand for rail cars to move commodities. There is a strong demand for all alfalfa pellets from the US and foreign markets, but processors indicate that currently there is good availability of dehy products.

Export Timothy- Timothy prices are driven by demand in export markets including the United States, Asia and the Middle East. In Asia and Middle Eastern countries, demand is increasing for animal protein and dairy products as incomes increase and standards of living improve. A limiting factor to increased livestock production in these regions is the limited land base to produce a source of fibre required by ruminants. High quality timothy hay is an excellent source of this fibre and is therefore in great demand in these markets. (S. Zahir, *Timothy Hay Business in Alberta: Business Models and Supply Chain Issues*, 2013). The equine industry also creates a demand for timothy and plays a factor in setting higher prices for timothy than for other forage crops grown in Western Canada.

Saskatchewan processors grow timothy to sell and for processing into cubes and continue to market timothy cubes within Canada or to the United States. All classes of timothy are currently being processed for sun cured cubes at this time, with the exception of second cut premium timothy, which is selling for $200/tonne. Sources in Saskatchewan estimate the price for standard, first cut timothy at $150-160/tonne.

Table 8 shows the average prices paid for 2013 timothy crop delivered to Alberta and Saskatchewan plants.

Table 8. Timothy Prices for 2013 Crop in AB & SK

Timothy Quality Level	Price $/T
Horse Hay or Supreme	-
Premium	263
Choice or Low Premium	270*
Standard	192
Utility	130

(prices in $ per metric tonne ($/T))

**No Saskatchewan prices found for choice or low premium. Lower Saskatchewan price included decreased average premium price. Alberta only premium average is $295/tonne.*

Alberta processors have been paying $290-$300/tonne for premium timothy and report that there is little to no supreme timothy available for sale. This is an increase of $72/tonne as compared to premium timothy hay prices in the January 2013 Forage Market Report. The timothy crop was very late in Alberta and very little timothy was put up in July. While there is an adequate supply of timothy hay, very little is of the quality required for export. Processors

report the price of utility timothy at $130/tonne as compared to $121/tonne on average a year ago. Alberta processors continue to export primarily to Asian markets, and participate very little in the domestic market.

In the international timothy market, sources report that prices have risen for top quality timothy hay, while low quality timothy is bringing a lower price than in 2012. Prices as high as $300/tonne for premium timothy in large square bales have been reported this winter. This is due in part to the abundance of low quality timothy that was grown in 2013, with much of the crop being rained on or over-mature.

6) Regional Forage Pricing Trends

South-west and south-central: The October 2013 Final Crop Report from the Saskatchewan Ministry of Agriculture reports a yield range of 1.4 to 1.7 tons/acre in the south-west and south-central regions for the 2013 hay crop. Supplies of hay, straw and grain are adequate on farms in this area as good forage production in 2013 helped to increase stocks. Early cold temperatures and snowfall have led to increased feed supplies being used in December and early January than expected. Hay traders in the region note that less hay is on offer than usual, in part due to fears of another long, cold winter which would again consume feed stocks.

According to the Saskatchewan Ministry of Agriculture Regional Forage Specialist and other sources in the region hay quality is comparable to other years, although some was cut later than is desired for optimum quality.

Fall pasture conditions were good to excellent, with some areas receiving rain prior to freeze-up. The Final Crop Report lists moisture conditions on hay and pasture land at 88% adequate, 10% short and 2% very short in the south-west and south-central regions.

Forage prices are similar to the provincial average, with asking prices ranging from $70-90/tonne depending on type and quality of hay. Fewer livestock producers appear to be opting to sell hay to US buyers this year. If winter conditions become milder there may be more willingness to sell some surplus feed, but currently many producers are taking a “wait and see” approach so that they are not caught short of feed in the spring of 2014.

Southeast: Reports from the southeast SMA Regional Forage Specialist and other forage industry sources are that there is some hay trading in the region, but most producers have adequate supplies of forage for winter feeding requirements. There were ample opportunities to bale straw this year and straw supplies are also adequate in this region.

Quality of feed was average to slightly below, with rain in some parts resulting in later than usual forage harvest and lower energy values in hay. Most areas received ample rain, however the area immediately surrounding Weyburn was short on hay and pasture topsoil moisture in the fall of 2013. Pasture conditions were very good going in to winter in some areas, but in dry areas much of the available pasture may have been grazed off, depending on how pastures were managed.

Reports from exporters in the region indicate that the export market has backed off as US drought conditions have eased. There is still a demand for alfalfa hay in large square bales for

export but the more commonly produced round bales of alfalfa-grass blend hay are not as likely to find a market or to fetch high prices that were seen in 2013.

West-central: The SMA Regional Forage Specialist and other sources in the west-central region indicate that forage yields were above average in 2013. According to the Saskatchewan Ministry of Agriculture final crop report for 2013, dry land alfalfa-brome hay yielded 1.6 tons/acre on average in 2013, as compared to a long-term average of 1.1 tons/acre.

The west-central region avoided some of the rain showers that caused quality issues in hay in many parts of Saskatchewan. In some areas the hay crop was put up late, resulting in lower feed quality and high fibre content, which may result in a need for supplementation of livestock being fed this winter.

Winter to date has seen above-average snowfall and fairly cold temperatures, meaning that slightly more feed is being used than was anticipated. Historically this region does not grow a great deal of forage for export, and sources in the area report that limited hay has been trading locally. One forage grower in the region observed that good quality alfalfa hay he had for sale was all sold quite quickly at $100/tonne, and he could have sold more to buyers from Alberta if he had sufficient supplies to meet the demand. Mixed hay asking prices for the region are reported at $70-80/tonne.

Pastures were in good condition despite dry fall weather and with spring snow melt, it is expected that there will be sufficient moisture for good hay and pasture growth in 2014.

Central: The Ministry of Agriculture Regional Forage Specialist reports that hay supplies within the region are short to adequate. The central region reported average to slightly above-average hay yields and with very little to no carry over from the previous year, producers may find themselves in short supply of hay if winter conditions remain colder than normal and persist. Straw continues to be a challenge to source within the region; however most producers do have an adequate straw supply on hand.

Forage testing for nutritional quality in this region revealed that although protein in feeds in adequate for the nutritional needs of a pregnant cow, about half the hay tested in the central region will require energy supplementation to meet the needs of that same cow. Additionally, cold temperatures and extreme wind chills experienced in December and January have led to increased pressure on feed supplies and have required some livestock producers to supplement energy or to source additional supplies.

Portions of the central and west-central regions reported soil moisture conditions as short to very-short on pastures and hay land in the fall of 2013. These areas will be looking to spring runoff from snowfall to get pastures off to a good start this spring.

There is not a lot of hay trading in the central region currently. Sources in central Saskatchewan report alfalfa hay prices in the $85-100/tonne range and mixed hay trading for $75-85/tonne. It appears that producers are either reducing herd size or forgoing herd expansion to compensate for a limited feed supply. The length and severity of winter weather yet ahead will largely dictate feed price movements.

East-central: In the east-central region, the SMA Regional Forage Specialist reports that most producers have access to a large quantity of straw; however, hay yields were similar to or slightly lower than last year and there is not an abundance of hay in the area. Feed quality overall tends to be slightly lower than normal. Like many regions in Saskatchewan, ergot has appeared in hay and greenfeed as well as many combined cereal crops and there has been renewed interest from producers in this topic. There are reports of some livestock producers experiencing feed shortages in the region, and there does not appear to be much forage on offer in the region to purchase. Sources in the area report higher than normal sales of bred cows in December and January, an indication that some producers may be choosing to sell cows rather than purchase additional feed.

Although the topsoil moisture map indicates that there is generally adequate moisture in east-central Saskatchewan, the Regional Forage Specialist reports that there was little regrowth on pastures grazed after mid-July and many cattle were left on pastures in the fall longer than desirable as producers were busy with late fall work and reluctant to start their winter feeding regimes in November. Forages in this region will require good spring runoff and timely rains to get a good start in 2014.

Northeast: The SMA Regional Forage Specialist as well as other sources in Northeast Saskatchewan report that supplies of hay and straw are adequate in this region. Cold weather early in winter, along with snowfall may result in producers feeding more hay and grain than normal but producers anticipate that feed supplies will be sufficient to last until spring. To avoid rain in July, most hay in the northeast region was cut and baled later in the season than usual, resulting in lower protein and energy content in much of the hay. Pastures were in good condition going into winter and with average snow cover and spring rainfall, pastures will have a good start in the spring of 2014.

There is little hay trading in the northeast region, as producers are tending to keep excess hay to replenish stocks. If winter conditions ease, more hay may begin trading later in winter or in early spring. Hay acres have continued to decline in this region in favour of annual crops. With record crop production and depressed grain and oilseed prices in 2013, it will be interesting to note if there is any change in this trend away from forage production.

North-central: Supplies of hay and straw were reduced by the difficult winter of 2012/2013 and pastures suffered as producers were forced to turn livestock out earlier than anticipated. The story in north-central Saskatchewan is similar to that in other areas, with producers holding on to any surplus hay that was grown in 2013 in order to ensure an adequate supply for the winter of 2013/2014. Very little hay is trading in the region, and although there have been advertisements of forage for sale in both round and small square bales, many these same advertisements have appeared every month from September 2013 to January 2014, indicating that the prices may be too high for quality of forage on offer.

The north-central region saw adequate to very short of topsoil moisture as of October 2013, with better moisture conditions on the eastern side than the western side of the area. Hay yields were above average in the region, with fairly good quality hay produced south of Prince Albert and more rain showers affecting hay quality north of Prince Albert.

North-west: The north-west region had adequate supplies of hay and straw going in to winter. Snow arrived in the region in early November of 2013 and has persisted, along with cold temperatures in December and early January 2014. The north-west region was short to very-short of topsoil moisture for hay and pasture land as of October 2013 and will depend on snow fall and spring rain to improve moisture conditions for the 2014 growing season.

As with many other parts of Saskatchewan, many livestock producers have opted to hold on to surplus hay and rebuild supplies after the difficult and lengthy winter of 2012/2013. There are reports of livestock producers experiencing shortages of feed in January 2014, and these producers are reportedly sourcing hay in local markets in the northwest for the most part. Asking prices in the region range from $75-100/tonne for hay, depending on quality and type of hay on offer.

7) Current Alternative Feedstuff Prices

A variety of by-products and alternative feed sources are processed in Saskatchewan which can offer lower-cost replacements or supplementation to traditional forages. Feedlots and backgrounding operations are some of the largest customers of these products, and often have advance contracts with processing facilities to purchase by-products. In general, prices for these commodities are based on the current market prices for forages and feed grains. As feed grain prices have declined over the past 12 months, prices for grain by-products have dropped as well. Prices also fluctuate based on nutritional quality of the alternative feeds, which vary with the quality of grains or oilseeds being processed. Alfalfa pellets are the only alternative feedstuff included in the survey that have not declined since last January, due to export demand and stable alfalfa forage prices over that time period. Table 9 lists average prices and availability of alternative feed sources in Saskatchewan.

Screenings- Grain merchants and terminals report that they tend to have repeat customers or waiting lists for buyers and that screenings move very quickly. Some grain merchants offer all screenings to a number of long-standing repeat customers. At other locations, screenings are offered week by week based on availability. Feedlots and feed mills in close proximity are the major buyers for this product as demand is strong and it is inefficient to transport screenings and particularly chaff. Prices for both heavy wheat/durum or barley screenings as well as for light refuse have decreased from last year's prices. Average wheat/durum heavy screening price was $225/tonne in January 2013 and has dropped $65/tonne to $160/tonne in January 2014.

Canola meal & Canola pellets- When canola is crushed to make oil, the product remaining is canola meal, a good source of protein. Canola meal is sold in bulk form as mash or made into pellets. As of October, 2013, the Canola Council of Canada reports the average Canadian price for canola meal was $355.59/tonne, down $13.93/tonne from the October 2012 price. Of the total supply of canola meal produced in Canada, approximately 85% is exported (mainly to the US) and only 15% used domestically. Canola prices have declined in the past year, with Saskatchewan Agriculture reporting a price of $386.28/tonne on January 1, 2014 as compared to $594.03/tonne one year ago. The current reported meal and pellet price of $347/tonne for Saskatchewan processors is down $6/tonne from the January 2013 price.

Table 9. Alternative Feedstuff Prices and Availability

Commodity	Price	Details	Availability
Screenings	$160/T	#1 cracked wheat or durum	Limited to no availability, Varies by week
Screenings	$40/T	Light screenings, mainly chaff	Limited availability at some locations, all contracted at others.
Screenings	$70/T	Barley screenings	All contracted
Canola meal and pellets	$347/T	36% CP min.	None Jan/Feb/Mar
Alfalfa pellets	$220-260/T	15-16% CP	No availability some locations, good availability one location
Grain pellets	$143-204/T $171/T avg.	12-18 % CP 65-80% TDN	Mid-February earliest availability at most locations
Fortified grain pellets	$135-210/T $186/T avg.	12-18% CP 65-80% TDN with Rumensin™, vitamin/mineral mix	Mid-February earliest availability at most locations
Wet Distillers grains			No availability, not being produced
Dry Distillers grains	$240-250/T	36% CP 76-77% TDN	Most contracted at least 3 months, some spot contracts
Distillers syrup	$36/T	31% CP 82% TDN	All contracted

LEGEND: T = tonne (prices in $ per metric tonne ($/T))
Based on survey of companies in Saskatchewan as of January 15, 2014

Alfalfa pellets- Alfalfa pellet prices have not declined and remain similar to last year's average price of $240/tonne. Demand for this product from export markets has kept prices strong even as feed grain prices have dropped. Prices listed in the table are for sun-cured pellets, made from baled forage. Dehy pellets made from standing alfalfa tend to have a higher nutrient content and are priced $20-25/tonne higher than sun-cured pellets (see Table 7). *Hay and Forage Grower* lists Kansas and Nebraska prices for alfalfa sun-cure pellets at $238-315/ton (equivalent to approximately $262-347/tonne CAD) as of mid-December 2013 (http://hayandforage.com/marketing/cold-weather-heats-hay-sales).

Fortified grain screening pellets- Grain screening pellets are produced by a number of sources within Saskatchewan, with products on offer for feedlot, background, cow/calf, range and finishing operations. Pellets may be fortified with vitamins, minerals and ionophores such as Rumensin™, or purchased without these additives. On average, the additional cost of the fortified package is about $15/tonne, although costs vary depending on the formulation. For both the plain and fortified pellets, prices have dropped considerably in the past year. The average price for grain pellets has moved from $208/tonne in January 2013 to $171/tonne in January 2014. Good availability of grain and lower grain prices have resulted in decreased pellet prices, although demand for this product remains strong. There is little availability of pellets currently, with most facilities now booking into mid-February. Grain terminals are having difficulty accessing enough rail cars to ship the huge crop that was grown in Saskatchewan this

year and are generally not accepting new grain deliveries. Until there is more movement of grain, production of grain screening pellet orders will continue to be delayed.

Distiller's Grain Products- These by-products consist of the bran and fibre left over when grains are processed to produce ethanol. Wet distiller's grain, distiller's syrup and dried distiller's grain are available at different energy processors in Saskatchewan. As grain prices have decreased in the past year, ethanol by-products prices have also gone down. Distiller's syrup in Saskatchewan has declined $18/tonne over the past year, and dry distiller's grain has declined $30/tonne on average. In general, these processing facilities report that their by-products are contracted in advance for shipment both within Canada and to the US and they are not actively looking for buyers.

Feed Grains- Prices for feed grains have been decreasing in the past year. The Saskatchewan Ministry of Agriculture lists average Saskatoon feed wheat price at $129.49/tonne on January 8, 2014 as compared to $263.08/tonne one year ago. Although the posting does not have listings for Canadian feed barley, they describe a drop of $105.21/tonne USD in corn prices since January 8, 2013 and a decrease of $64.30/tonne USD for feed barley prices based at Minneapolis as of January 8, 2014 (http://www.agriculture.gov.sk.ca/markettrends). At these prices, it may become more economically viable for those in the livestock industry to supplement lower quality forage with feed grains than it has in recent years.

8) Adjoining Jurisdictions Forage Price Trends

Forage price and availability in neighbouring provinces and states can have an impact on Saskatchewan forage prices despite the cost of transporting hay. Although hay demand has eased in nearby states such as Montana and North Dakota, those willing to ship hay further south to drought areas in Kansas, Nebraska and Texas are still able to receive a premium, particularly for good quality feed. Many US dairy producers are still having difficulty sourcing consistently high-quality feed for their rations after the drought in 2011 and 2012. Trade with neighbouring jurisdictions is more likely for buyers and sellers located close to borders, or for those with specialty products in demand for processing or export, such as high quality timothy hay. USDA reports from late December 2013 describe a trend of slipping hay prices of about $3/ton ($3.3/tonne) from November to December of 2013 (http://usda01.library.cornell.edu/usda/current/AgriPric/AgriPric-12-30-2013.txt). The US average all-hay price for December 30, 2013 was $168/ton ($185/tonne).

Growing conditions were similar in Alberta and Manitoba to those experienced in Saskatchewan in 2013. A delayed spring, with cool soil temperatures gave forages a late start and provided adequate or excessive early season moisture. Hay production was average in Alberta and Manitoba, with quality issues related to rain in some areas. Manitoba reported adequate to surplus soil moisture on pastures and hay fields going into winter, while Alberta reports indicate that soils are short of moisture in many regions. The Alberta Agriculture October 22, 2013 Crop Report indicated that hay quality was good to excellent, with 85% of hay production coming from the first cut and 15% from a second cut. Forage supplies appear to be adequate in both Manitoba and Alberta. Straw supplies are also adequate due to the excellent cereal harvest in the past year.

Alberta and Manitoba hay offerings showed a large price variation depending on region and quality. Most alfalfa hay listed in both provinces was second cut hay, which may be one explanation for the high asking prices listed for alfalfa. In Alberta, certified weed free hay was offered in many of the advertisements, and tended to add a premium to the price. According to Alberta Agriculture and Rural Development, the weed free designation indicates that *"…the field was inspected following minimum standards and found to be free of species regulated by the Alberta Weed Control Act and North American Weed Free Forage Certification Standards. There are 95 species that are designated under the Alberta Certified Weed Free Hay Program."* (http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/prm1325). Forage producers participating in this program have their hay inspected at least ten days prior to cutting and if certified, will receive a certificate and a source for specially marked twine to indicate the weed free certification.

Table 10 shows the forage prices from listings in Alberta, Manitoba, Montana and North Dakota. Prices from the Alberta government listing were sourced only from the eastern side of the province and only from the western side of the province from the Manitoba government listing. Listings from Montana and South Dakota reflect those from northern counties.

Table 10. Forage Prices in Adjoining Jurisdictions

Forage Type	Alberta Listing	Manitoba Listing	Montana State Listing	North Dakota State Listing
Alfalfa	$118-231/T (7 offers)	$132/T (1 offers)	$127-165/T (3 offers)	$145-173/T (4 offers) $105/bale (1 offer)
Alfalfa/grass	$55-136/T (9 offers)	$68-127/T (7 offers)	$48-180/T (14 offers)	$81-145/T (6 offers) $42-68/bale (4 offers)
Grass	$101-110/T (2 offers)	$55-68/T (2 offers)	$69-92/T (3 offers)	$81-98/T (3 offers) $26-63/bale (2 offers)
Straw	$30-67/T (8 offers)	$26-58/T (5 offers)	No listings	$32-42/bale (2 offers)
Greenfeed	$60-137/T (3 offers)	$72-88/T (2 offer)	No listings	$74/bale (1 offer)

As of January 15, 2014 All prices converted to Can $/tonne.

The USDA weekly hay reports monitor settled prices for hay across auction houses in individual states. For the week ending January 3, 2014:

Table 11. Montana, South Dakota, Wyoming USDA Weekly Hay Report Prices(January 3, 2014)

	Montana	South Dakota	Wyoming
Alfalfa			
Premium	$210	-	$210
Good-Premium	$210*	-	-
Good	-	$105-116	$152-158
Fair-Good	$126-137	-	$131
Alfalfa-Grass			
Good-Premium	-	-	$147-158
Fair-Good	-	$95	-
Timothy Grass			
Premium	$252-263*	-	-
Fair-Good	$189-210*	-	-
Fair	$158-$189*	-	-

All prices converted to Can$/tonne. FOB stack in medium to large square bales and rounds unless otherwise noted.
*Small square bales

Hay Quality Designations - Physical Descriptions (USDA):

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

North/South Dakota – Little market activity has been reported in North Dakota in December and January. After experiencing drought in 2012, producers have been rebuilding feed stocks as moisture conditions improved in 2013. South Dakota livestock numbers have been drastically affected by an unexpected blizzard in early October that killed upward of ten thousand head of cattle as well as thousands of sheep (http://www.agweek.com/event/article/id/22032/). To a

lesser extent, North Dakota and Wyoming producers lost livestock in the same blizzard. What impact, if any, these losses will have on forage quantity and price has not yet been quantified.

Montana – The USDA reports that Plentiful hay supplies are pressuring the market, especially the lower qualities. Abundant grass hay was put up last summer which is providing a much needed boost to depleted hay stocks after the previous dry year.

Wyoming: January reports indicate that compared to three weeks ago comparable sales were 10.00-25.00 per ton ($11-$28/T) lower, however the limited offering of Supreme and Premium alfalfa sold with a higher undertone. Demand was moderate for the first through fourth cutting alfalfa offered, along with some grass hay. On auction, hay was consigned from central and eastern Wyoming, and western Nebraska.

9) 2014 Provincial Forage Market Projections

Provincial hay yields were estimated as average to above-average across Saskatchewan in 2013, although nutritional quality of hay was below average due to over-maturity at harvest and rain events during haying season. The Saskatchewan Ministry of Agriculture 2013 Final Crop Report stated that most livestock producers had adequate feed on hand for the 2013/2014 winter, however; recently there have been reports from areas around the province that some producers are experiencing minor feed shortages and looking to source hay locally. Prices have increased for high quality hay, while actual buying prices for average to low-quality mixed hay have decreased slightly since January 2013. Winter conditions and abundance of the 2014 forage crop will likely dictate whether prices will rise or fall for forages in the upcoming year.

There continues to be market opportunities for hay being transported to the Southern or Midwestern US. However; since the drought has eased in northern states, buyers have been able to be more selective in looking for higher quality forage and there is less opportunity to sell large, round mixed hay bales. Forage growers interested in selling to the US market will likely be most successful with large square bales of pure alfalfa or other high quality forages.

Fall moisture conditions were near normal for 60% Saskatchewan pastures. Northwest and north-central regions of the province reported being short to very-short of moisture, particularly near the Battlefords. According to Environment Canada, precipitation is predicted to be above seasonal averages in January, February and March of 2014 in Saskatchewan and the other Prairie Provinces. If current conditions persist, it is likely that there will be adequate spring soil moisture in most areas of Saskatchewan.

Please refer to Appendix A for maps of Hay and Pasture Topsoil Moisture Conditions, Percent of Average Precipitation and for the Environment Canada Precipitation Anomaly Outlook for Early 2013.

Grain and cattle prices as well as perception of marketing opportunities for these commodities will likely have an impact on the number of acres of forage seeded or maintained in forage in the upcoming growing season. After record grain and oilseed crop yields in 2013 and a decline in annual crop prices some producers may consider adding forage acres to their rotations if this option appears profitable. Demand for forages in the domestic market and for export to states

in need of hay supplies may provide an opportunity for farmers interested in selling hay rather than annual grain crops.

10) Forage Seed Prices

Table 12 presents an inventory of commonly purchased forage seed prices compiled by surveying the major retail companies in the province. Three classes of forages are presented: grass, legume and native species. All prices are for certified #1 seed unless otherwise stated. The native seed prices that are provided from retailers are generally spot prices as prices can fluctuate from day to day depending on availability.

Table 12. Forage Seed Prices in Saskatchewan as of January 15, 2014

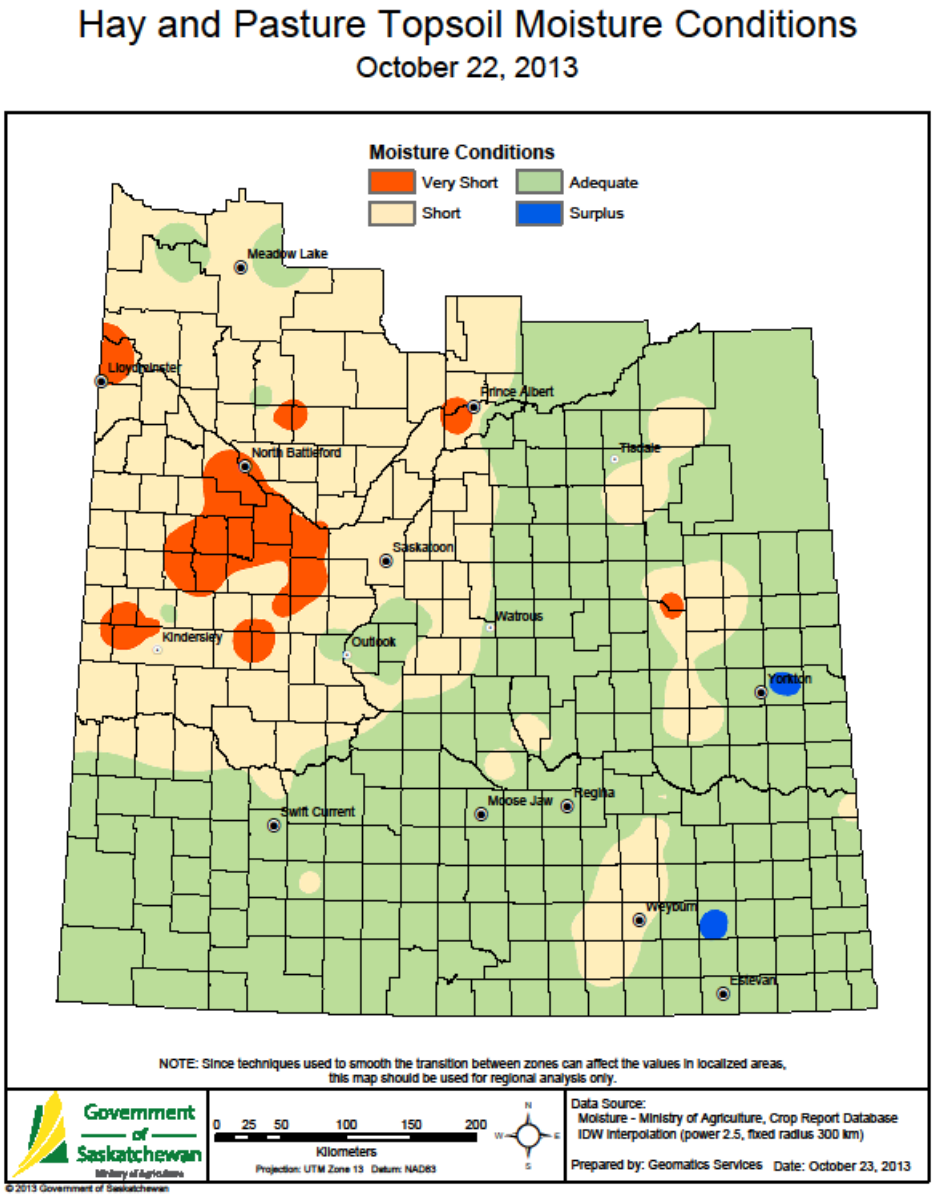
Class	Species	Average Price $/lb	High	Low
Grasses	Carlton Smooth brome	3.96	4.19	3.49
	Smooth brome (common)	3.82	3.99	3.59
	Fleet Meadow brome	3.76	4.09	3.55
	Meadow brome (common)	3.52	3.59	3.45
	Hybrid brome	4.28	4.56	3.79
	Russian Wildrye	6.93	7.69	6.29
	Tall Fescue	2.75	2.89	2.68
	Fairway Crested wheatgrass	4.59	5.49	4.19
	Kirk Crested wheatgrass	3.66	3.99	3.39
	Crested wheatgrass (common) (only one company reporting)	2.75	2.75	2.75
Legumes	Alfalfa hay type	4.36	4.49	4.19
	Alfalfa pasture type	4.03	4.09	3.95
	Alfalfa (common)	3.73	3.89	3.45
	Cicer milk vetch	4.27	4.49	4.19
	Sainfoin	3.05	3.25	2.96
	Alsike Clover	3.23	3.59	2.94
	Sweet Clover	2.99	2.99	2.99
	Sweet Clover (common)	2.56	2.79	2.29
Native	Western Wheatgrass	11.42	13.96	8.50
	Northern Wheatgrass	12.11	13.89	8.50
	Slender Wheatgrass	3.97	4.88	2.23
	Green Needlegrass	11.68	12.81	10.25
	June Grass	32.82	35.00	31.13
	Canada Wildrye	17.83	21.31	14.00
	Purple prairie clover	45.19	50.72	38.00

(prices in $ per pound ($/lb))

Appendix A: Forecast Maps for Soil and Weather Conditions

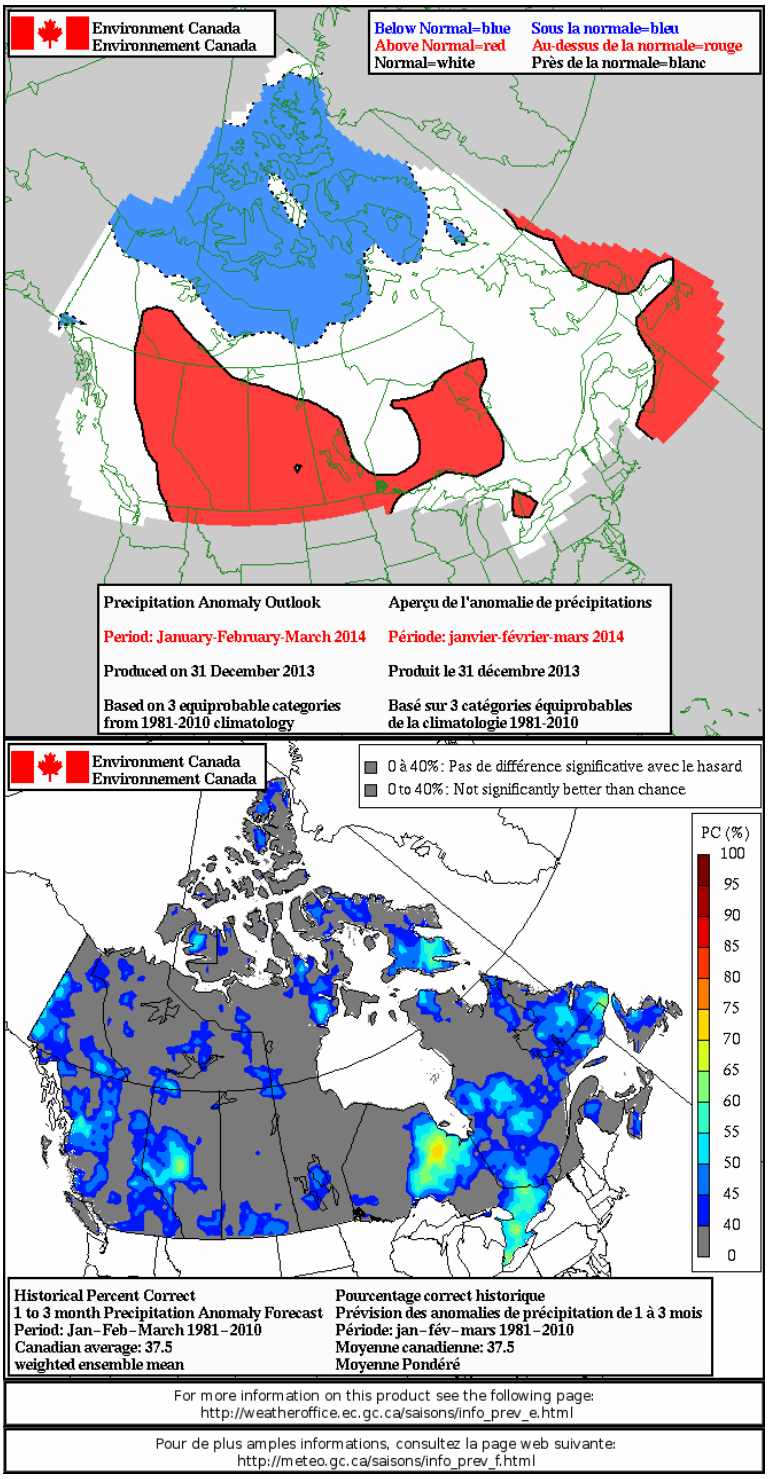
2013 Hay and Pasture Topsoil Moisture Conditions

2014 Precipitation Outlook



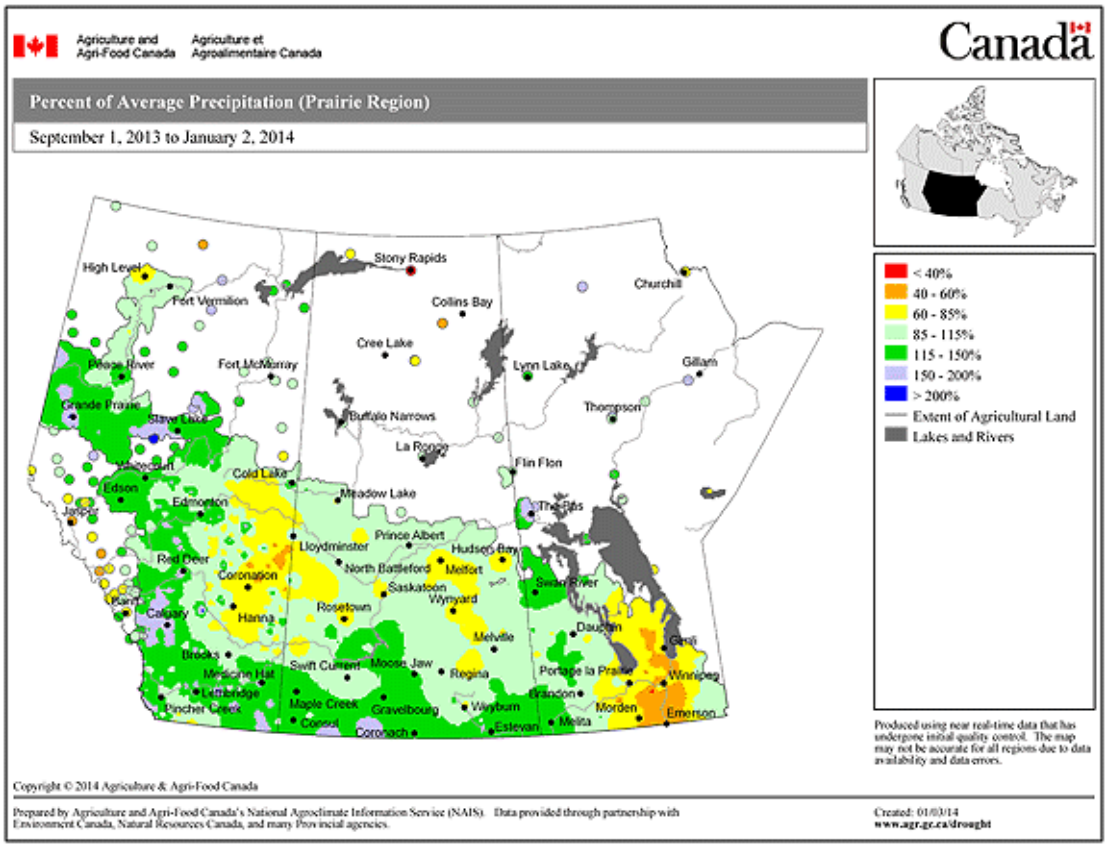
Precipitation Anomaly Outlook for Jan-Feb-Mar 2014

December 31, 2013



Source: Environment Canada

Prairie Region Percent of Average Precipitation September 1, 2013-January 2, 2014



Source: Agriculture and Agri-Food Canada

Appendix B: Forage Insect and Disease Data

2014 Saskatchewan Ministry of Agriculture Grasshopper Forecast and Map
2013 Saskatchewan Insect Report
2013 Saskatchewan Plant Disease Committee Forage and Turf Report

Grasshopper Forecast
http://www.agriculture.gov.sk.ca/Default.aspx?DN=b07d649b-9449-42a9-b2ef-30489d2fbde3

January 2014

The risk for grasshopper infestations in 2014 appears low for most of Saskatchewan based on adult grasshoppers observed during the annual grasshopper survey. There were pockets of higher populations identified in southwest Saskatchewan and some severe levels noted around Meadow Lake and Good Soil, in the Northwest Region. The 2014 forecast map is based on adult grasshopper populations observed in August and September of 2013 at more than 1,100 sites.

The intention of the survey is to estimate the number of mature grasshoppers capable of reproduction and egg-laying prior to winter. The extended winter and cool spring climatic conditions in 2013 did not favour grasshoppers. However, prolonged dry, warm weather during the growing season and into October allowed for the successful development and egg-laying of some grasshopper species.

In addition to the adult grasshopper counts, Agriculture and Agri-Food Canada (Saskatoon) conducts a grasshopper egg survey in the fall to estimate embryo development in eggs for use in models to predict hatching dates the following spring. They reported that was not difficult to find grasshopper eggs this year compared to recent years' surveys suggesting there is potential for an increase in grasshopper numbers.

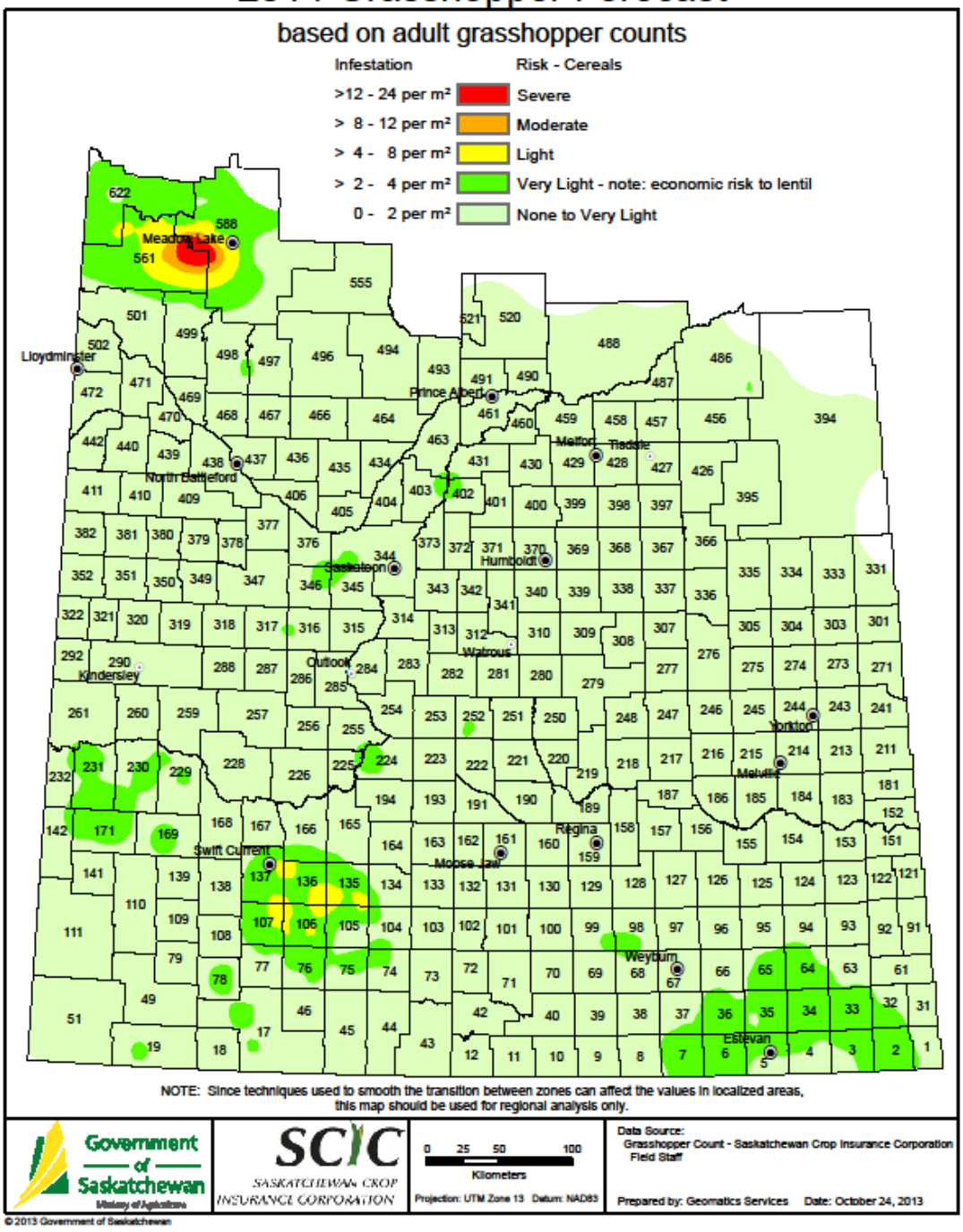
Keep in mind that not all grasshoppers are crop pests. The grasshopper survey is intended to consider annual species because they have a greater potential for rapid increase in populations. Grasshoppers that are already winged adults before June have coloured wings or make audible sounds are considered "non-pest" species. Many of this group usually take two-years to complete their life-cycle and do not tend to increase to economically damaging numbers.

The survey and risk map are intended to provide general information on risk levels. The actual severity of grasshopper infestations in individual fields may differ from the 2014 Forecast Map and will depend primarily on weather conditions in the spring. Hot and dry conditions will favour the growth and development of grasshoppers.

Growers should monitor for young grasshoppers in susceptible crops in the spring and early summer. In some crops such as lentils, flowering and pod development stages are especially vulnerable to grasshopper feeding. Therefore, there is the potential for economic damage with only two grasshoppers per square metre. Similarly in flax, at the green boll stage, control is recommended at two grasshoppers per square metre.

The 2013 fall survey was conducted by the Saskatchewan Crop Insurance Corporation.

2014 Grasshopper Forecast



2013 Saskatchewan Insect Report
Saskatchewan Insect Management Council
November 19, 2013
2nd Floor Board Room - AAFC
Saskatoon

Summary

Due to the extended winter and cool, wet conditions insect pressure was low in many areas and most crops in the spring. Generally it was over-wintering adult species such as alfalfa weevils and flea beetles that were first reported as significant pests in some areas. Bertha armyworm was an economic pest in canola but also other crops. Swede midge infestations affected canola crops in the northeast and late season infestations of grasshoppers were noted in several areas.

Cereal Insects: (estimated 2013 seeded area: spring wheat 9.590 (8.435 (2012)) million acres; durum 4.35 (4.10 (2012)) million acres; barley 2.60 (2.625 (2012)) million acres; oats 1.63 (1.315 (2012)) million acres).

Orthoptera: grasshoppers (various species) - two-striped (*Melanoplus bivitattus*) most dominant species in recent years for most of the Province. Higher than normal **grasshopper** populations were reported in the northeast in late July near Whitefox and Nipawin. Spraying was reported late in the season for grasshoppers in fall rye in the southwest (Fox Valley, Abbey) on (mid-September). Grasshoppers are usually most problematic in southern, drier regions and higher fall populations were noted in other areas as well. The fall grasshopper survey was done when grasshoppers have primarily reached the adult stage and capable of reproduction and egg-laying. A forecast map based on over 1000 sites observed by Saskatchewan Crop Insurance field personnel will be posted on the Saskatchewan Agriculture website.

Crickets were noted in high numbers causing economic damage (boll clipping) in flax in September.

Coleoptera: Chrysomelidae – (*Oulema melanopus* L.) - cereal leaf beetle – Surveys for cereal leaf beetle have been conducted by Agriculture and Agri-Food Canada with most effort concentrated in the Southwest Region of Saskatchewan near the Alberta border. There has also been monitoring in the northeast and east central (Moosomin / Langenberg) area. No significant populations were observed though some typical feeding damage was observed.

Diptera: Cecidomyiidae - *Sitodiplosis mosellana* (Gehin) - wheat midge – Heat accumulation (Degree Days) was slow to develop and wheat midge emergence was delayed in 2013. Parts of southern Saskatchewan usually observe the start of midge emergence in the last week of June. However this year as of late June no parts of Saskatchewan had achieved sufficient heat units for the start of emergence of the midge adult flies. Excessive moisture in areas resulted in cooling effects and slower degree day development. The susceptibility of the wheat crop did not necessarily coincide with peak midge emergence in many cases. Use of wheat midge tolerant varieties also reduced the impact of this insect pest.

<u>Oilseed Insects:</u> (estimated 2013 seeded area: canola 10.320 (11.220 (2012) million acres; mustard 235,000 (240,000 (2012)) acres; flax 860,000 (775,000(2012)) acres

Coleoptera: Chrysomelidae: Alticinae – *Phyllotreta cruciferae* (Goeze) – crucifer flea beetle, striped flea beetle, hop flea beetle – Flea beetles were a concern early in 2013 particularly with young seedlings and slow growing conditions. Research has shown that seed treatments work best under warm, dry soil conditions but flea beetle feeding pressure was not significant in most areas in the spring. There have been several reports of high numbers of flea beetles congregating in canola fields this fall. Since these will be the over-wintering generation of beetles that cause the damage to seedlings in the spring it suggests these insects could be a problem in 2014.

Curculionidae: Ceutorhynchinae – *Ceutorhyncus obstrictus* (Marsham) – cabbage seedpod weevil – The cabbage seedpod weevil was a major insect pest in canola in 2013. Due to the late seeding and high numbers of weevils present, there were many questions related to canola crop staging with respect to timing of chemical application and potential tank mixing with fungicides for sclerotinia. The most severe infestations were reported in the southwest as in most years. However, spraying for high populations was reported in the South Central Region, from northwest of Moose Jaw, south to Assiniboia. Cabbage seedpod weevils were present in fields east of Regina in the 2013 survey (coordinated by AAFC) but not at economic levels. The weevil has been found in the North Battleford area in past surveys but never in high numbers. In the 2013 survey cabbage seedpod weevils were noted in higher numbers north of the South Saskatchewan River in a transect running through Kindersley, Rosetown.

Chrysomelidae: *Entomoscelis americana* Brown - red turnip beetle – Economic infestations of red turnip beetle were observed in the southeast in June. Although the red turnip beetle is an occasional pest there were also problems in a few fields in 2012. There are currently no registered control options.

Phylum Mollusca: Class Gastropoda – Subclass Pulmonata – terrestrial slugs - Slugs were observed in high numbers in canola in the Watrous area in 2013. Sluggo (active ingredient ferric phosphate) is a molluscicide registered for slugs. Although not likely economically viable for full field application, it may be an option for smaller areas such as field margins or moist areas where high populations of slugs exist.

Lepidoptera: Plutellidae - *Plutella xylostella* (Linnaeus) - diamondback moth - The potential risk of **diamondback moths** is monitored through evaluating wind trajectories, pheromone traps and in-field observations. Traps were set up by cooperators in April but no moths were found until the latter half of May. The trap data corresponded with data related to wind currents provided by Environment Canada for the Prairie Pest Monitoring Group, coordinated by AAFC (Saskatoon). There appeared to be no favourable winds (south to north airflow) from the southern U.S. and northern Mexico until the last two weeks of May and diamondback moth was not a major pest in 2013.

Noctuidae – cutworms various species (most common species – *Euxoa ochrogaster* (Guenee) - redbacked cutworm in eastern regions, *Agrotis orthogonia* Morrison / pale western cutworm in western regions, *Feltia jaculifera* (Gn.) dingy cutworm) – Cutworms were not a serious problem in 2013. After outbreak levels in 2010-11 cutworm populations have been on the

decline. One indicator was that as part of a major cutworm research project, the Ministry of Agriculture submitted well over 100 cutworm samples in 2012 and only one in 2013.

Noctuidae – Hadeninae – *Mamestra configurata* Walker - bertha armyworm – The bertha armyworm moth pheromone trap counts were very low in June but greatly increased the first week in July, peaking before the middle of the month. A map of the accumulated numbers of male moths from the traps was posted and updated weekly on the Saskatchewan Agriculture website. Some high trap counts did not correspond to field scouting numbers. However, spraying for the bertha armyworm larvae was reported to some degree in most areas where canola was grown. Infestations were also reported from the southwest where bertha armyworm is an uncommon pest. Bertha armyworm reported also caused damage in pea and flax crops. Depending on the timing of the infestation, various insecticides were applied for control of bertha armyworm infestations. Coragen (chlorantraniliprole) was used for late infestations due to the shorter pre-harvest interval associated with the product.

Homoptera: Cicadellidae – leafhoppers - After a record year in 2012 with aster yellows affecting canola and other crops, the disease was not high prevalent in 2013. The disease is vectored by the **aster leafhopper.** As with diamondback moths, winds from the south, favourable to bringing in the moths and leafhoppers, were not observed until the latter half of May. This was over a month later than in 2012 and reduced the number of generations and consequential population increase in 2013.

Cecidomyiidae - *Contarinia nasturtii* (Kieffer) - Swede midge - For the second year in a row, significant **swede midge** infestations were reported in canola in fields in northeast Saskatchewan near Nipawin and Carrot River. Typical damage was to canola flowers that were infested with swede midge larvae. There was spraying for this pest in 2013. However there are no reliable recommendations for timing of control for the swede midge. In Ontario this insect has been a pest of canola and brassica vegetables for several years. In vegetables multiple insecticide applications are required. Due to the multiple generations in a year the swede midge is difficult to control and multiple applications is not likely a viable economic option in canola. Research is required to determine management options under Prairie conditions.

Other Crops: (estimated 2013 seeded area: canary seed 210,000 (300,000 (2012)) acres; chickpea 205,000 (180,000 (2012)) acres; lentil 2.290 (2.430 (2012)) million acres; dry pea 2.210 (2.325 (2012)) million acres)

Dry Pea - Coleoptera: Curculionidae -*Sitona lineatus* (L.) – pea leaf weevil - A 2013 Saskatchewan pea leaf weevil survey was conducted in late May to mid-June. Feeding damage is used as an indicator of the weevils' presence in an area. The range of this insect continues to move eastward in southern regions. The most intensive feeding is in the southwest but in 2012 feeding notches on pea leaves were noted just north of the South Saskatchewan River. In 2013 evidence of the weevil feeding was noted in both Rural Municipalities 228 and 259 (West Central Region). The eastern edge of the pea leaf weevil range appears to be about mid-way between Swift Current and Moose Jaw and south to near the U.S. border. Aside from infestation levels, actual yield loss from weevil feeding will depend on the level of infestation but also the level of nitrogen present in the soil.

Forage Insects:

Coleoptera: Curculionidae – *Hypera postica* (Gyll.) - alfalfa weevil - Alfalfa weevils have been on the increase for the last few years and were found actively feeding in late May in south central Saskatchewan (Moose Jaw area). There were subsequent reports of higher infestations in the S.E. (Yellow Grass, Minton, Coronach) and southe central to S.W. (Hodgeville, Gravelbourg) areas. In the S.E. it was noted that the most affected fields were pure alfalfa stands with some fields having as high as 20% yield and quality loss before they were cut. It was estimated that 1-5% of pure alfalfa stands were sprayed for the alfalfa weevil.

There was no formal survey of insects in forages in 2013. However as part of a Pest Management Centre funded project coordinated by Agriculture and Agri-Food Canada, Regional Forage Specialists collected alfalfa weevils from May to July in several districts. The project is intended to develop a Degree Day bioclimatic model for the alfalfa weevil.

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Saskatchewan Plant Disease Committee FORAGE/TURF REPORT
December 10, 2013, Saskatoon, Saskatchewan

General Comments

Diseases were thought to be more prevalent than normal in central and south-east Saskatchewan in 2013; however there were no reports of fields devastated by them. Prevalence of alfalfa downy mildew may have been higher than normal given the late/wet spring and high relative humidity; however no comparison from previous years is available.

Blossom Blight was probably the main disease along with a lot of leaf diseases. Fortunately most seed producers are spraying for the problem so even in years like this the disease is mainly on fields that had not been sprayed.

Spring black stem and leaf spot can become a problem when spring conditions are wet and cool. Such conditions the last few years have resulted in inoculum build-up.
Perennial crops like alfalfa exist in an environment that has many interacting factors that influence productivity. Alfalfa weevil was less of a concern in 2013 compared to previous years. South-central Saskatchewan experienced the highest alfalfa weevil damage, with other areas reporting low numbers and damage. However, if this pest continues its northwest spread, the weevil may be a greater concern in 2014.

Snow mold severity on fine turf was substantially higher than normal because the snow cover came early and persisted late into the spring. However, cool wet conditions in spring were ideal for turf growth and most fine turf recovered quickly.

The Sask Ag Crop Protection Lab received the following forage disease samples:

CROP	SYMPTOM/ DISEASE	CAUSAL AGENT	NUMBER OF SAMPLES
Alfalfa	Winter crown rot/	*Typhula* sp	1
	snow mold	*Microdochium nivale*	1
	Common Leaf spot	*Pseudopeziza medicaginis*	1
	Downy mildew	*Peronospora trifoliorum*	6
	Anthracnose	*Colletotrichum trifolii*	1
	Chemical damage		1
			1
Red Clover	Spring black stem	*Cercospora zebrina*	1
	Powdery mildew	*Erysiphe polygoni*	1
	Leaf spot	*Pseudopeziza* sp	1
Crusted wheat grass	Stem smut	*Ustilago hypolytes*	1
Slender wheat grass	Leaf spot	*Pseudoseptoria bromigena*	1
Ryegrass	Head smut	*Pyrenophora bromi*	1
	Environmental	*Utilago bullata*	1