

The Saskatchewan Hay Report

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Forage Crop Development in 2003

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After two years of drought, the 2003 forage crop has been growing for some time. Many had hoped that production would be impressive in 2003 to assist in replenishing depleted pasture and hay supplies. Although fall, winter and spring precipitation has helped considerably to recharge moisture in many areas of the province, forage growth has been rather slow in many areas of Saskatchewan this year. Every growing season is unique, but some of the below factors may be influencing the Saskatchewan forage crop this year.

Low Spring Temperatures - Cool temperatures, late snows and some frost damage earlier in spring slowed forage growth and development. Nighttime temperatures at or below freezing significantly reduces the rate of forage development.

Nutrient Deficiencies – Some forage stands have shown signs of nutrient deficiencies this year. In alfalfa, environmental stress reduces nodulation in legumes and can cause subsequent reduction in nitrogen fixation. Some alfalfa growing on poorer soils have shown symptoms of potassium deficiency, with these symptoms disappearing as temperatures increased. Some nutrients' availability is hampered by low soil temperatures.

Saskatchewan Haying Progress

(for the week ending June 23, 2003)

SAFRR Crop Report No. 12

Haying progress is just getting underway in many regions with four per cent of the 2003

Drought Effects – Hay and pasture crops over the past 2 or 3 seasons have had considerable stress imposed on them due to drought, high levels of use, and reduction in litter levels. These stresses have undoubtedly reduced plant vigor, and forage stands will require some time to recover.

Grasshoppers – Grasshopper levels in many areas of the province have increased dramatically over the last couple of years. Grasshoppers were very active late in 2002. This late season feeding has a detrimental impact, particularly on crested wheatgrass. Delayed growth, reduced vigor and plant mortality in 2003 are the results.

Timing of Precipitation – Nearly all grass species are heading out early this year. Abundant late season precipitation encourages seed production in the subsequent season, due to enhanced reproductive tiller formation in the fall. Beginning in August, considerable precipitation was received in the fall of 2002. The onset of heading limits further production of forage growth in some species.

Alfalfa Flowering – Considerable variation in flowering of alfalfa has been observed this year. Alfalfa has greater flowering in areas with limited moisture.

hay crop cut and one per cent baled or silaged. General haying



activity began by the last week of June. Quality is expected to be good to excellent in most southern regions with the exception of parts of the southeast where drought is causing the hay crop to deteriorate. Quality is only expected to be good throughout many parts of east central and northeast

regions. West central and northwest regions can only expect fair to good quality hay crops. Insect and other pests have been a problem in the spring of 2003 with reports of grasshoppers, lygus bugs and Richardson ground squirrels damaging crops.

Table 1 – Provincial Hay Summary (First Cut)

	1st Cut %		Quality **					
	Uncut	Cut	Baled/Silaged	Excel	Good	Fair	Poor	NR
South	95.2	3.5	1.4	23.5 (24)*	56.9 (58)	8.8 (9)	0.0 (0)	10.8 (11)
Central	94.9	4.0	1.1	6.4 (6)	54.3 (51)	19.1 (18)	1.1 (1)	19.1 (18)
North	95.3	3.2	1.5	3.4 (2)	43.1 (25)	22.4 (13)	6.9 (4)	24.1 (14)
Prov.	95.1	3.6	1.3	12.6 (32)	52.8 (134)	15.7 (40)	2.0 (5)	16.9 (43)

* number of producers reporting **quality statistics are for the week ending June 22, 2003 (no report available for the week of June 29, 2003)

Maintaining Soil Fertility Levels in Established Hay Crops

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A key factor in the slow growth and development of many forage stands this year may be low soil fertility levels and nutrient availability. This was probably exacerbated by cold soil temperatures and other stressors such as drought. In alfalfa, environmental stress reduces nodulation in legumes and can cause subsequent reduction in nitrogen (N) fixation. Some alfalfa growing on poorer soils had symptoms of potassium deficiency this spring (see above article by Michel Tremblay). However, most of these symptoms disappeared as temperatures increased. Many grasses, particularly smooth brome grass, appeared yellowish (most likely N deficiency) this spring and some stands even had purple margins

(probably P deficiency). Some of this can be related to cold stress with the plants unable to take up sufficient nutrients for sustained plant growth. However, much of it is probably related to soil type and low levels of available nutrients in the soil.

In the Canadian prairies, N and P are the most commonly deficient nutrients, while K and S may also be deficient for certain crops and soil conditions. Most soils are adequately supplied with micronutrients and deficiencies of micronutrients are rare for perennial forages. Large amounts of N, P, K and S are required for high forage yields. When forages are harvested as hay, nutrients are removed from the field and are not returned to the soil unless manure is reapplied to each field from which the forage was removed. Requirements for these nutrients are highest for legume forages. Without adequate fertilizer, three to five years of continuous forage production can deplete soil nutrient reserves and cause a nutrient deficiency. The lack of tillage when perennial forages are grown also slows the

rate of nutrient release from the soil. If a nutrient is lacking in the soil, it can cause reduction in plant growth. Nutrients contained in fertilizers are applied to make up the deficiency between nutrients needed for optimum growth and the nutrients available from the soil, but the effectiveness of fertilizers on forages in increasing dry matter yield and economic returns is dependent upon the levels of nutrients in soil, climatic conditions, soil type and forage type.

Grass forages respond very well to N fertilizer on most soils and dry matter yield increases from N application are much greater in moist areas than in dry areas. Protein content in grass forage can be improved with N application. The results of field experiments conducted in central Alberta (Black Chernozemic and Gray-Wooded soils) indicate that large initial one-time applications of N produce less sustained production of forage than the equivalent amount of N applied annually over a period of several years. Splitting annual application into two or three increments may not necessarily increase dry matter yield, but it tends to distribute forage production over a longer portion of the growing season. Early spring broadcast application of N usually results in higher dry matter yield than autumn or late spring applications. Urea is usually less effective in increasing dry matter yield than ammonium nitrate, but its efficiency can be improved markedly by banding it below the soil surface (providing the banding operation does not cause any serious damage to grass stand and fertilizer is completely covered with soil). In a field study on Black Chernozemic and Gray-Wooded soils in central Alberta, coulter-type disc drill apparently caused little disturbance to soil and plant roots.

The findings of field experiments on Black Chernozemic and Gray-Wooded soils

in central Alberta suggest that seeding alfalfa in mixed stands with brome grass can generate savings in N fertilizer costs (for pure brome grass stands) equivalent to about 100 kg N ha⁻¹ or more and increase net returns and energy use efficiency, without any detrimental effect on forage yield and quality. Forage yield increase and economic returns from N fertilization of grass-legume mixtures are influenced by the percentage of legume in the mixed stands and initial nitrate-N in the soil. Addition of N fertilizer to mixed stands reduces the proportion of legume in the stand.

The magnitude of dry matter yield increase from P fertilizer is associated with the level of extractable P in soil. Pure grass stands often respond less to application of P fertilizer than pure legume stands. In a field study on P-deficient soils in Manitoba, P application to alfalfa increased dry matter yield, protein and P content in forage. The findings of a field experiment on a P-deficient Black Chernozemic soil in central Alberta suggested that residual effect of single application of P fertilizer to forage stands can last for 5 to 10 years. The single initial P applications produced dry matter yield, protein yield, P-use efficiency, recovery of applied P and net economic returns similar to annual P applications. As P and K do not move freely in the soil, placement of these nutrients below the soil surface is more important than in the case of mobile nutrients such as N and S. In a P fertilizer study on alfalfa in central Alberta, disc-banding at 15 cm spacing produced greater forage yield (by about 850 kg dry matter/ha) than surface-broadcasting.

Legumes (especially alfalfa) have higher requirements for K than grasses. In a field study in Manitoba, K fertilization has been shown to increase dry matter yield, protein and K content in forage and reduce winterkill of alfalfa. However, it is not

known whether the reduction in winterkill of alfalfa is due to K or Cl.

Sulphur fertilization increases dry matter yield, protein and S content in forage on S-deficient soils. Elemental S fertilizers may cost less per unit of S than sulphate-S fertilizers, but their effectiveness depends on how quickly they oxidize in soil to sulphate form that plants can use. The results of field experiments conducted on a Gray Wooded soil in central Alberta suggest that some elemental S fertilizers can be as effective as sulphate-S fertilizers in increasing forage yields on perennial grasslands, but it may take 3 or more years (depending on the soil-climatic conditions) for this to happen. Therefore, if growers commit to an elemental S program, by using elemental S as a maintenance S source over a period of several years, it may be a viable option. However, if an immediate correction of S

deficiency is needed, sulphate-S fertilizer is the only option.

Rejuvenation of old forage stands using N fertilizer is a more effective method to improve dry matter yield and forage quality than most mechanical methods. Aeration and other mechanical methods of rejuvenation show little benefit, while sod seeding forages into unproductive stands is most effective when pasture growth is suppressed.

Main points to consider when fertilizing perennial forages are: a) soil test on a regular basis and apply fertilizers according to soil test recommendations, and b) whenever possible, band the fertilizers (particularly P, K and urea-N) into the soil for most efficient use of nutrients. Alternatively, rates of these fertilizers should be increased to compensate for lower efficiency when surface-broadcasting is used.

2003 Market Outlook & Hay Prices

(to June 30, 2003)

Phil Curry, Saskatchewan Forage Council, Melfort

Hay prices have not recovered from the unprecedented highs that peaked by the second week of August 2002, and have remained soft through the spring of 2003. Several factors have caused this and will lead to steady, but lower hay prices in 2003.

The drought of 2001 and 2002 – The effects of this drought continue to be felt in 2003 in northern and central areas of Alberta and Saskatchewan. Northeast Saskatchewan is traditionally a hay surplus area but will again be in a deficit situation this year. Stressed alfalfa and grass crops have led to increased winterkill levels in alfalfa. Many of these will need to be re-seeded. Despite a promising spring, moisture reserves are being used up quickly and the hay crop is

only fair to good in central and northern areas and is even going backward in several areas. Timothy production is poor in east central areas due to drought and first cut production may not make premium grade. Production of alfalfa for dehy will be average or slightly below normal for 2003 in the production areas surrounding many of the plants. The exception to this is the Arborfield plant which is reporting above-average first cut yields of 1.7 T/acre.

Many cow/calf producers secured ample supplies of salvaged crop from last fall's dismal harvest, but quality and storage problems will cause producers to try to secure grass and alfalfa hay from this year's crop. Green feed for hay or grazing will again be more common this year particularly in the northwest. In short, the prolonged effects of several years of drought have led to a situation where there is no surplus hay anywhere in many parts of the prairies.

Normally this would lead to a strengthening of hay prices, but many producers will not be in a position to have hay to sell.

Consequently, hay prices should not be as strong as 2002 as producers will try to salvage what they can from local hay supplies.

The closure of the U.S. border to Canadian cattle – The longer the border remains closed to Canadian cattle, the more likely the effects now seen in the feedlot and packing industries will spill over to the cow/calf producers. Many are starting to think about keeping more hay around in anticipation of having to feed more animals in the fall. This view is also starting to develop in southwest and south central areas where moisture levels and the hay crops are excellent. Many of these producers who might have marketed this surplus hay to the U.S. or to other parts of Saskatchewan and southern Alberta are now retaining their hay or marketing it closer to home. This is also partly due to the lower hay prices elsewhere and decreased demand from feedlots. Good-excellent grass/alfalfa or alfalfa hay is selling in the southwest areas for \$70 - \$80/ton.

The high Canadian dollar and weakened U.S. and Asian demand – The increasing value of the Canadian dollar has had a drastic effect on prices for Canadian hay. Last year, alfalfa demand for alfalfa delivered to dehydrating plants such as Elcan Forages at Broderick, was \$150/MT. This year it is \$80/T. Premium timothy was selling for \$230-\$250/T in 2002 and this year is at \$180-\$200/T. In addition to the high Canadian dollar, demand in the U.S. is not as strong due to above average crops in the Pacific Northwest. Asian markets will continue to be soft throughout the summer due to hot/humid weather and dairy producers there that are just maintaining

their herds on whatever hay is left in the system. Asian demand usually picks up in the fall.

Imports of U.S. corn – U.S. corn continues to flood into the Canadian and prairie market to address the current feed deficit in the cattle and hog industries. According to AAFC's Market Analysis Division, an estimated 2.7 million tonnes of corn will be imported into western Canada this year. This is an increase from 2.04 m T last year. Slightly lower levels will be imported into eastern Canada, 1.6 m T compared with 1.84 m T last year. The breakdown by province is as follows:

- Alberta: 1.3 m tonnes (fed to cattle)
- Saskatchewan: 280,000 tonnes (fed to cattle)
- Manitoba: 1.1 m tonnes (fed to hogs)

The effect of corn imports will be to limit the ceiling price for feed grains such as barley and will also limit the high prices we saw for alfalfa and grass hays in 2002.

Prices for hay at the June 27, 2003 hay auction at *Vold, Jones & Vold Auction Co. Ltd.* (Ponoka, AB) are as follows:

- Grass/alfalfa or alfalfa hay (good quality)
- rounds (1200 lbs) – no sales reported
- small squares (50 - 60 lbs) \$1.00 - \$5.25/bale (depending on size and quality)
- med-large squares – no sales

June prices for hay F.O.B. plant from *Elcan Forage Inc.* (Broderick, SK):

- Alfalfa (good quality) - \$80/Tonne
- Alfalfa/grass (good quality) - \$70/Tonne
- Timothy (premium quality) - \$ 180 - \$200/Tonne

Montana Hay Report

(Friday, June 27, 2003)

Justin Lumpkin, USDA Market News Service, Billings, MT.

Hay trade continues to be slow with only a few reported sales of new crop alfalfa. Producers in the northern part of the state are starting to swath their hay, other areas are baling already. Alfalfa: Couple of loads of new crop 75-80 (U.S. \$), new crop contracted in the field 40-45; Good quality old crop alfalfa few reported sales at 50.

Grass/alfalfa mix Fair to Good old crop 45-55, some 65.

Alfalfa: Lge. Rnd./Sq. - Good 75-80 (U.S.\$)
Alfalfa/grass 45-65

Grass: No reported sales

Timothy: Sm. Sq. - Premium 150

Alfalfa Relative Feed Value (RFV):

Supreme over 185; premium 170-185;

good 150 -170; fair 130-150; low < 130.

Grass Hay Crude Protein Scale: Premium over 13; good 9-13; fair 5-9; low < 5.

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On a positive note:

Trucking prices have fallen back to normal rates after the high prices seen in 2002. Rates as high as \$4.00 per running mile were observed in 2002. Some of the more established trucking companies, such as Titan Transport in Saskatoon, are charging \$2.50/running mile plus a 5% fuel surcharge = \$2.65/running mile – a lot more tolerable than last year. Other trucking firms charge on a per/loaded mile basis.. Producers should definitely shop around for the best rate possible and stick with reputable firms.

The Saskatchewan Hay Report is published monthly from July-October by the Saskatchewan Forage Council and is available online at www.saskforage.ca. Comments and suggestions are appreciated. If you wish to be placed on an electronic mailing list or have articles and suggestions for upcoming issues, please send them to the editor:

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