

# Bi-weekly Bulletin

April 27, 2001

Vol. 14 No. 7

## FORAGE

Canadian forages are produced all across agricultural regions of Canada. In 2000, over 23 million tonnes (Mt) of tame hay was produced on almost 7 million hectares (Mha) of land. In addition to the tame hay area, approximately 4 Mha of land were used as tame pasture, and another 15 Mha were native pasture. In total, almost 40% of Canada's total farm area is set aside for grazing and growing forage crops. Since the beginning of hay exports to the United States (U.S.) nearly a half-century ago, Canada's reputation as a premier supplier of forages has continued to grow around the world. While processed alfalfa products production has fallen in recent years, the value of exports of alfalfa and hay in 2000, grew 18% from 1999 to \$152.8 million. The increasing popularity of the double compressed bale format has permitted the growth of hay exports to many other parts of the world.

### FORAGE CROPS

Forage is feed for livestock, including cattle, sheep and horses. Forages include both annual and perennial crops. Annual crops, such as cereals, peas, and corn are sown early in the spring and harvested from July to September, usually as silage. Perennial crops of grasses and legumes are sown alone, or with a companion crop and are typically harvested for four to eight years. These perennial crops are grown for pasture, harvested as green-feed, stored as hay or silage, processed into pellets or cubes, or compressed for domestic and/or export markets.

### FORAGE INDUSTRY

The forage industry in Canada is not homogeneous. The industry is actually comprised of several distinct sectors based on the end use of the forage crop. Many of the same forage species and varieties are used as amenity or turf species, for soil conservation, seed production for domestic and export uses, forage production for dehydration and other processes, and for grazing and stored feed for ruminant livestock. The latter is by far the largest sector of the industry and utilizes more than 80% of the total forage produced.

### LAND USE IN CANADA

Across Canada, more than 26 Mha are set aside annually for ruminant grazing and forage production. Of this, about 16 Mha are native pasture, 4 Mha are tame or seeded pasture, and 6 Mha are cultivated tame hay and fodder crops.

### AREA SEEDED TO TAME HAY

In 2000, 6.72 Mha of tame hay were harvested, with 4.8 Mha from western Canada and 1.9 Mha in eastern Canada. The tame hay harvested area has remained fairly steady throughout the 1990s, peaking at 6.9 Mha in 1994.

While there is no annual data available for tame hay production by species, the 1996 Statistics Canada census data reveals that approximately 67% of tame hay in western Canada and 40% in eastern Canada was alfalfa, or an alfalfa mixture.

### FARM CASH RECEIPTS

Farm cash receipts for hay reached \$163.7 million in 1999, more than 2 times the value of receipts obtained in 1991. As very little hay moves through traditional marketing

channels, the farm cash receipt total greatly underestimates the value of hay in the agricultural industry.

### TYPES OF TAME HAY

Tame hay can be divided into two classes, legumes and grasses. Within each class are numerous species. The main legume hay crops produced in Canada are alfalfa, clover, and birdsfoot trefoil, while the main grass crops include timothy and brome grass. Forages for export are comprised of three main types: alfalfa, timothy hay, and mixed hays. Mixed hays can be comprised of any types of legumes or grasses, but common mixtures include alfalfa, timothy, and orchard grass or timothy, clover, and orchard grass.

Factors such as soil type, salinity, flooding, desired season of use, crop

### CANADA: USE OF FARMLAND

	1991	1996
	million hectares	
Land in Crops (excludes tame hay)	27.67	28.53
Tame Hay	5.85	6.39
Summerfallow	7.92	6.26
Seeded or Tame Pasture	4.14	4.35
Unseeded Pasture	15.96	15.61

Source: Statistics Canada



rotations, longevity of species, end-use, quality, and yield potential should be considered when selecting an appropriate forage species.

## AGRONOMY

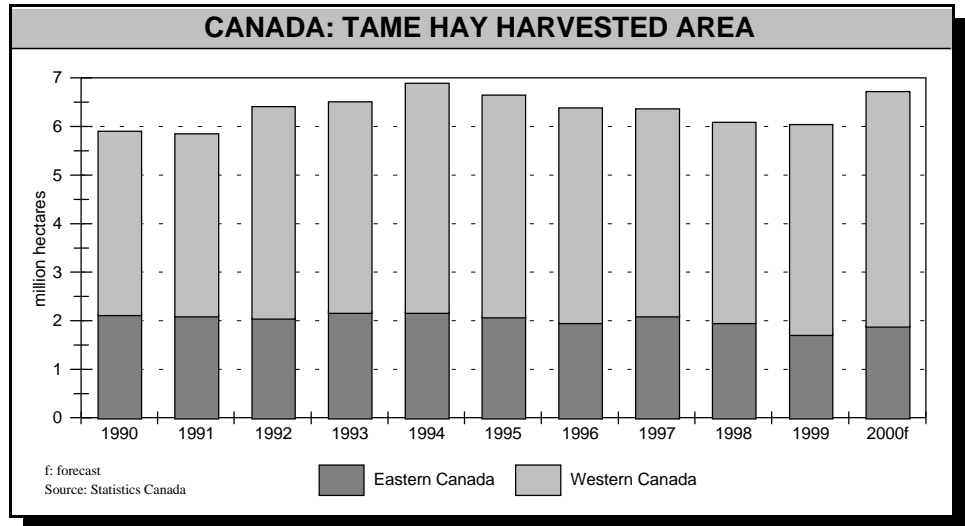
Perennial forages are key agents in soil conservation and soil improvement. They add more organic matter to the soil than most annual crops, as forage crops reduce cultivation and provide a permanent ground cover, reducing erosion. For these reasons, perennial forages are particularly well suited to marginal lands, sloped lands, waterways, and erosion-prone soils. Forages can also be used to control salinity, suppress weeds and disrupt plant disease cycles.

Because of their ability to contribute nitrogen to the soil, forage legumes, such as alfalfa, significantly reduce reliance on non-renewable energy to produce nitrogen fertilizer.

## PRIMARY PROCESSING OR HARVESTING

Forages in Canada are harvested from May through October, depending on the region and the species being harvested. Typically, forage crops intended for on-farm feeding are cut and allowed to field dry under natural sunlight and wind conditions. Then the hay will be baled for easier transportation and storage. Forage crops can also be harvested at a higher moisture content to be stored as silage, or to be further processed.

For export-destined hay, some processors use dehydration drums to dry the long fibre forage for processing and to eliminate the weather risk associated with field drying. There is approximately 150,000 tonnes (t) of dehydration capacity in Saskatchewan, 250,000 t in Alberta, and another 325,000 t elsewhere in Canada. The hay is then baled and stacked under a protective cover, usually a shed or tarpaulin covering. The hay is allowed to go through another curing period in storage. During this time, it will finish curing and then be available for export.



## FORAGE QUALITY

The climate and soils of western Canada are ideal for producing quality forage. Untimely rain and other challenges can however substantially reduce forage quality. Good management of the soil nutrient composition, seeding rates, the timing of cutting, raking and baling, and storage decisions all affect the quality of the harvested hay.

Buyers and sellers of tame hay should share the same definition of quality, which requires a feed test covering visual and chemical analysis. Through a visual appraisal, the hay is checked for mould, heat damage and leaf retention. Chemical feed analysis provides valuable nutrient information. A basic test measures moisture content, crude protein and the presence of minerals such as calcium, phosphorus, potassium and magnesium. A more detailed test looks at the **Relative Feed Value (RFV)**, a numerical indicator of forage quality, based on a combination of acid detergent fibre (ADF) and neutral detergent fibre (NDF).

One of the most important factors affecting forage quality is the state of maturity at cutting. Young, vegetative forage is higher in protein and energy than older, flowering material. Considerable management experience is required to find the optimal harvesting time, to maximize both quality and quantity of forage stands.

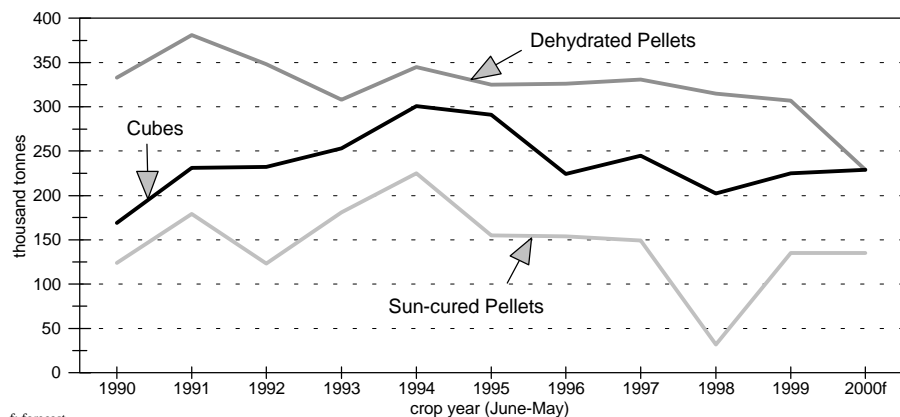
## MARKETING

While over 23 Mt of tame hay were harvested in 2000, most of the crop was destined for feeding on farms. Approximately 80% of the hay does not enter any formal marketing channels. Tame hay provides much needed fibre to dairy cattle, beef cattle, horses, sheep and goats, and many livestock producers grow tame hay as a valuable part of their on-farm integrated value-added chain.

The buying and selling of hay between producers and livestock feeders often happens through auctions. With the advent of the Internet, these auction exchanges have gone online. The Hay Exchange ([www.hayexchange.com](http://www.hayexchange.com)) offers a bulletin board approach for sellers to post notices of hay for sale. Each ad stipulates species, price, type of bale, delivery options, and if available, quality information such as the RFV. In addition to the Hay Exchange, the provincial governments of Alberta, Saskatchewan, and Manitoba provide similar hay listing services.

For hay intended for further processing, the processor works with the individual producers through a procurement team or a hay buyer. The hay buyer will maintain frequent contact with the grower throughout the year to ensure the grower has the latest information on buyer preferences and to provide feedback to the grower on the performance of their hay in the export market.

## CANADA: PROCESSED ALFALFA PRODUCTION



f: forecast  
Source: Alberta Agriculture, Food and Rural Development

Saskatchewan is currently about \$80/t, it is easy to appreciate the impact of transportation costs on exporting hay and its products.

### PROCESSED FORAGE PRODUCTS

The processed forage industry can be divided into two main sectors: processed alfalfa products and compressed hay products. Alfalfa products include dehydrated and sun-cured pellets and alfalfa cubes, which are all made from alfalfa. The compressed hay industry produces compressed hay, which is a product of either timothy hay, or an alfalfa mixture.

### PRICE DETERMINATION

The tame hay market is less structured than many commodity markets. With so many varieties of hays and grasses, and so many quality parameters to consider, each cut of hay must be priced individually. For sales between individuals, a hay listing service such as The Hay Exchange, or open out-cry auctions provide a forum for pricing. In the processed products market, the price the processor receives is largely dependent upon the demand from Japan, as Japan is the main importer of tame hay, densified hay, and alfalfa pellets.

In turn, processors typically work closely with a group of growers, and a relationship and pricing strategy will be formed over the four or five years that the crop is harvested. According to the annual survey of the Canadian Processed Forage Industry, by Alberta Agriculture, Food and Rural Development (AAFRD), average paying prices for 1999-2000 were \$105 per tonne (/t) green standing timothy, \$129/t baled timothy, \$80/t green standing alfalfa, and \$116/t for baled alfalfa hay.

Prices for alfalfa products have been collected by Unicoop Japan. Between January of 1998 and May of 1999, prices fell dramatically from a high of \$310/t cost insurance freight (CIF) Japan for cubes and \$260/t for pellets to about \$212/t for cubes and \$170/t for pellets. Since that time, prices have increased to about \$260/t for cubes and

\$225/t for pellets in August of 2000.

### HANDLING AND TRANSPORTATION

The baling of cut hay results in low density, bulky objects, which impede transportation over long distances. In 1995, the Western Grain Transportation Act (WGTA) was repealed and the rail transportation subsidy for agricultural commodities was removed as of the 1995-1996 crop year. This increased the shipping cost of all commodities, but particularly affected hay product shipments due to the low weight to volume and value to volume ratios.

When transporting forage products, only pelletized and cubed alfalfa products move by rail car. Bales and compressed hay products move by truck and intermodal systems, although some may move by box car. Publicly available rail car tariffs for alfalfa pellets show that to move alfalfa pellets from Tisdale, Saskatchewan (home of one of western Canada's alfalfa pellet processors) to an export position costs \$28.07/t to Thunder Bay, or \$38.08/t to Vancouver. Port handling costs are in the range of \$10/t. Shipping product to the US will cost the processor approximately \$1,250 per mid-size hopper car to Fort Francis, and an additional commercial tariff of, for example, \$3,300 per car to Fiona, Texas, for a total shipping cost of approximately \$55.50/t. Although the cost of transportation is significant to the U.S. market, the exchange rate advantage provides some incentive. Given the composite producer price for alfalfa in

### ALFALFA PRODUCTS

According to an annual survey by AAFRD, Canadian processed alfalfa production was up significantly for the crop year 1999-2000. Total production, consisting of dehydrated pellets, sun-cured pellets, and alfalfa cubes was estimated at 667,405 t, about 22% higher than the previous year, but still 23% less than the record production of 1994-1995. The surge in production was attributed to an increase in export shipments, which grew by 22% due primarily to a rebound in sales to Asia, which is recovering from the 1998 economic crisis.

For the year 2000-2001, processors are less optimistic about production, and estimate a 13% decline in production, to about 593,000 t. Among the factors cited for the expected downturn were a marked reduction in shipments, fewer contracted acres and closure of some processing facilities, due to decreased profit margins and increasing natural gas costs.

According to the Canadian Dehydrators' Association, there are approximately 30 member plants across the country, with the majority of processed alfalfa production located in western Canada, particularly in Saskatchewan and Alberta. Some alfalfa processing (mainly dehydrated pellets) is also undertaken in Ontario, Manitoba, and Quebec.

## COMPRESSED HAY PRODUCTS

AAFRD estimates that the total production of compressed hay in 1999-2000 was about 217,000 t, including approximately 155,000 t of compressed timothy

hay. Growth in this industry has been steady and strong since the first shipment of 17 t to Japan in 1981. While data for production in 1998-1999 was not available, processors foresee strong growth of about 27% for total production of 275,000 t in 2000-2001.

The compressed hay industry is also mainly located in western Canada, with a high concentration of compressed timothy hay being processed in Alberta. Access to irrigation, and better access to the West Coast export terminals, make Alberta better situated for processing opportunities.

## EXPORTING

Canada's forages are internationally recognized because of the large diverse land base, world class processing facilities, clean, natural growing environments, and leading edge infrastructure for transportation. In 2000, over \$152 million dollars worth of forage products were exported.

The processed forage product market is highly export oriented, as little processed product is fed within the country. "Canada is now, by far, the world's largest exporter of alfalfa pellets and next only to the U.S. as an exporter of alfalfa cubes. More than 80% of Canadian processed alfalfa products are exported" (Canadian Dehydrators Association, 1999).

Markets for processed alfalfa have predominantly been in the Pacific Rim countries of Japan, Korea, and Taiwan. A growing livestock industry, particularly dairy, and a shortage of land to grow forage crops has led to large quantities of forage imports by these countries.

## CANADA: FORAGE EXPORTS

	1997	1998	1999	2000	1997	1998	1999	2000
	Value (million CAN\$)				Quantity (thousand tonnes)			
Alfalfa (meal and pellets)	63.37	42.31	41.78	41.58	308.15	220.15	274.58	331.41e
Alfalfa (cubes)	34.73	20.58	15.96	22.60	147.76	92.67	83.27	110.07
Alfalfa (loose or baled)	20.61	10.20	16.34	16.41	81.63	38.73	60.59	76.37
Other Hay	<u>43.41</u>	<u>56.99</u>	<u>54.89</u>	<u>72.20</u>	<u>149.84</u>	<u>174.12</u>	<u>171.38</u>	<u>336.82</u>
<b>TOTAL</b>	<b>162.13</b>	<b>130.08</b>	<b>128.97</b>	<b>152.79</b>	<b>687.39</b>	<b>525.66</b>	<b>589.82</b>	<b>854.67</b>

e: estimate, AAFC, April 2001  
Source: Statistics Canada

The U.S. also imports a large amount of alfalfa products, and loose hay. Spot markets for alfalfa, hay, and their products continue to emerge from time to time, largely due to weather related feed shortage problems. These are highly competitive markets which often buy the lower quality products. Access to these markets can sometimes be difficult due to subsidized competition, specifically by the European Union, or the existence of non-tariff barriers. Recent spot markets have included Morocco, the Middle East, Portugal, Cuba, and Bermuda.

## ORGANIZATIONS INVOLVED IN THE FORAGE INDUSTRY

The **Canadian Hay Association** is a national organization dedicated to the producers, processors and marketers of long fibre forage products. It funds research programs, lobbies on issues such as tariffs and trade, transportation and farm safety nets and is working towards establishing National Grading Standards for timothy hay. For more information on the Canadian Hay Association, visit their website at [www.canadianhay.com](http://www.canadianhay.com).

The **Canadian Dehydrators' Association** is a non-profit association that works on behalf of the Canadian processed alfalfa industry. It represents approximately 30 alfalfa processors, and supports research programs, and aids in international marketing. They also lobby on issues such as tariff reductions, trade, transportation, and farm safety net programs. For more information on the Canadian Dehydrators Association, visit their website at [www.dehyassoc.ca](http://www.dehyassoc.ca).

In addition to these national associations, there are numerous provincial

organizations such as provincial dehydration organizations in Alberta and Saskatchewan and forage councils in most provinces. Many other companies are also involved in marketing Canadian forages, and they range from brokers to integrated organizations that control the quality of the product from the growing or harvesting stage all the way to the customer's warehouse.

**for more information please contact:**

**Deanna Harrison**  
Marketing and Trade Officer  
**Market and Industry Services Branch**  
Telephone: (204) 984-4409  
Fax: (204) 983-4583  
E-mail: [harrisonsd@em.agr.ca](mailto:harrisonsd@em.agr.ca)

Market Analysis Division Website:

<http://www.agr.ca/policy/winn/biweekly/index.htm>

The Bi-weekly Bulletin is published by the:  
**Market Analysis Division,**  
Strategic Policy Branch,  
Marketing Policy Directorate,  
Agriculture and Agri-Food Canada.  
500-303 Main Street  
Winnipeg, Manitoba R3C 3G7  
Telephone: (204) 983-8473  
Fax: (204) 983-5524  
Editor: Gordon MacMichael  
E-mail: [macmichaelg@em.agr.ca](mailto:macmichaelg@em.agr.ca)

Director: Maggie Liu  
Chief: Fred Oleson

To receive a free e-mail subscription to the Bi-weekly Bulletin, please contact Blair Cantafio at [cantafio@em.agr.ca](mailto:cantafio@em.agr.ca)

Information and articles in this newsletter may be reproduced with credit.

*Aussi disponible en français.*