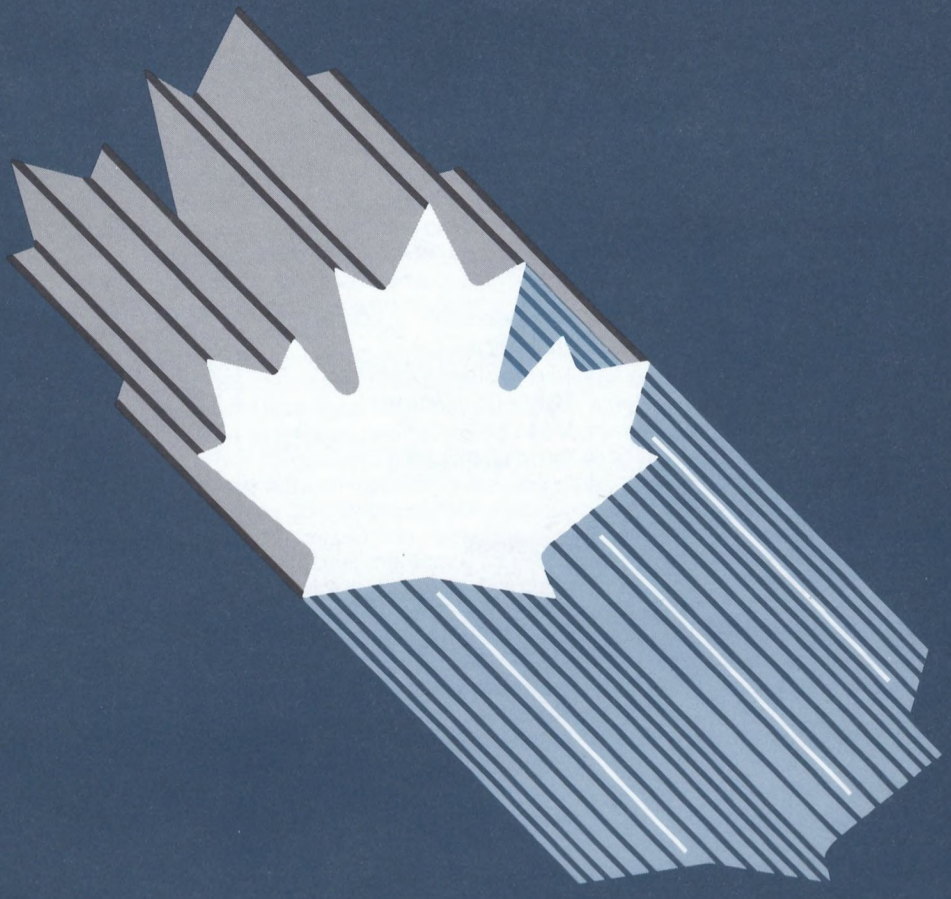
INDUSTRY PROFILE



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INDUSTRY PROFILE

ANIMAL FEEDS

1988

FOREWORD

In a rapidly changing global trade environment, the international competitiveness of Canadian industry is the key to survival and growth. This Industry Profile is one of a series of papers which assess, in a summary form, the current competitiveness of Canada's industrial sectors, taking into account technological and other key factors, and changes anticipated under the Canada-U.S. Free Trade Agreement. Industry participants were consulted in the preparation of the papers.

The series is being published as steps are being taken to create the new Department of Industry, Science and Technology from the consolidation of the Department of Regional Industrial Expansion and the Ministry of State for Science and Technology. It is my intention that the series will be updated on a regular basis and continue to be a product of the new department. I sincerely hope that these profiles will be informative to those interested in Canadian industrial development and serve as a basis for discussion of industrial trends, prospects and strategic directions.

Minister

Canada

1. Structure and Performance

Structure

The feed industry includes establishments primarily engaged in manufacturing complete feeds and pre-mixes (composed of vitamins, minerals and, sometimes, medications) and feed supplements (composed of pre-mixes and protein concentrates), but excludes those producing dehydrated alfalfa and pet food. Animal feed manufacturing is the largest grains and oilseeds processing industry in Canada, with total sales of approximately $2.6 billion. In 1986, the Canadian feed industry involved an estimated 550 production establishments and employed about 9400 people.

The feed industry is made up of organizations with annual sales ranging from less than $5 million to $125 million. Excluding on-farm mixing operations, there are at least 100 known feed manufacturers, although only about five operate plants in more than two provinces. Fewer than 10 organizations account for about 70 percent of the total production in the country. In addition to individual firms, farm co-operatives are very significant participants, accounting for about 35 percent of total shipments. Franchising and the use of brand names are common marketing tools.

The industry purchases more than $2 billion worth of a wide variety of inputs, many of which are by-products from other food industries. By-products from the flour milling, malting and brewing industries, as well as screenings from grain cleaning, are included in animal feeds. The feed industry is the largest domestic purchaser of grain. It is also a major purchaser of items such as meat meal, bone meal and tallow from meat packers, fish meal from fish packers, and soybean, canola and linseed meals from vegetable oil processors. Other important inputs include vitamins, minerals and animal health products. As a result, vertical integration with oilseed processing, meat packing and grain handling interests is common, particularly among the larger firms.

Feed grains, particularly corn and barley, make up about 60 percent of most complete-feed rations (by volume). Swine and poultry feeds account for about 70 percent of complete-feed rations sold.

The feed industry is primarily domestically and locally oriented. Bulk manufactured-feed exports are largely confined to local cross-border movements between neighbouring U.S. states. These exports originated mainly from Ontario and Quebec and were valued at $36 million in 1986. Small quantities — less than 10 percent of all exported manufactured feeds — are shipped to European, Latin American and Pacific Rim countries. This contrasts with the 1986 value of $153 million in exports of semi-processed feed ingredients, which were shipped to a much wider range of countries.

Total imports of both manufactured feeds and semi-processed ingredients amounted to $260 million in 1986, of which manufactured feeds and medicated feed supplements made up only $61 million. Significant amounts of ingredients such as soybean meal, molasses, vitamins, trace minerals and animal health products are imported. The United States was by far the largest supplier of both feed industry inputs and manufactured feeds.

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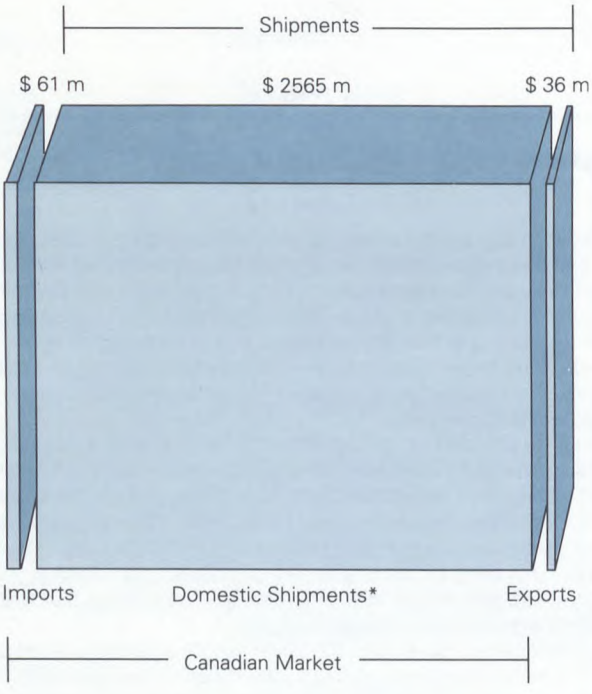


Imports, Exports and Domestic Shipments 1986

** Estimate*

The industry is primarily Canadian-controlled. There are three major U.S.-based firms with subsidiaries in Canada which are mainly involved in the manufacture of supplements and complete feeds. Four other multinationals are involved in pre-mix production. Two other firms are controlled by United Kingdom business interests. Foreign ownership tends to be more prominent among firms making the higher-valued pre-mix products and specialty feeds.

On a geographical basis, 70 percent of feed production is in eastern and central Canada. The West accounts for the remaining 30 percent. Most manufactured feeds are sold within a 100-kilometre radius of a plant, although higher-valued specialty feeds and ingredients are traded over a much wider area.

In order to provide effective customer service, the regional distribution of feed mills parallels that of livestock and poultry across the country. The industry is located primarily in Ontario, Quebec and Alberta, although there are feed plants in every province. Production costs vary from one region to another. They are lowest in the Prairies and Ontario where feed grain supplies, the principal ingredient of animal feeds, are most plentiful.

Some integration of feed manufacturing with livestock and poultry raising does exist, although this may not be as far advanced in Canada as it is in the United States or elsewhere. As a result, Canadian feed mills tend to produce a wider range of feed products than some of their more specialized foreign counterparts.

Performance

Demand for feed is directly related to livestock and poultry production. While shipments have increased steadily since the early 1970s, substantial restructuring has occurred. The total number of plants has been declining steadily, while individual plant capacities have increased dramatically. The number of establishments have decreased from 719 in 1973 to about 550 in 1986. Nevertheless, the value of shipments has increased from $974 million to $2.6 billion during the same period, as livestock populations grew.

Larger automated mill equipment is costly and, in an effort to conserve scarce financial resources, firms have been selective in choosing their sites when considering whether to upgrade or close a plant. As a result, firms have closed some of their smaller, older facilities in order to centralize their operations into fewer, larger facilities at the best possible locations for access to raw materials and to markets for finished products. The major strategic consideration behind local feed plant investment is the desire to maintain or increase market share.

The steady growth in shipments was interrupted between 1981 and 1983. Cattle populations decreased, red meat consumption declined and the demand for milk and eggs became static. More on-farm mixing of animal feeds and improved feed conversions by animals also contributed to a slowdown in demand. A serious over-capacity developed in all parts of the country, with many plants operating at about 60 to 65 percent of capacity.

Feed industry profit margins and production levels have improved again since the 1982-83 recession. Lower feed grain prices, together with improvements in market prices for hogs and beef cattle, have brought improved profits for livestock farmers. Strong poultry sector demand for feed, due to continued consumer preferences for white meat, has also been a contributing factor.

Since the purchase of ingredients is the single most important factor affecting production costs, firms must pay close attention to price movements on commodity markets. With low margins, firms must also pay close attention to inventory and purchasing practices. The industry has a wide range of plant sizes with a corresponding disparity in the level of technology in each. Similarly, cost structures and profitability vary significantly from plant to plant and firm to firm, depending on developments in supplier and end-user industries (i.e., grains, oilseeds, livestock, etc.).

Employment has been slowly declining as feed mills either close down or become increasingly automated. In 1986, the industry employed approximately 9400 people, compared to 9683 people in 1980.

2. Strengths and Weaknesses

Structural Factors

Proximity to the customer is a key factor affecting competitiveness. With the exception of some high-valued or specialty products like vitamin/mineral micro-mixes, milk replacers or fish feeds, feed products are bulky and of low value, and cannot afford long-distance transportation costs. The industry has a highly developed network of feed mills across Canada designed to provide service to the local end-user to minimize these transport costs.

In both Canada and the United States, production and marketing tends to be regionally and locally oriented. A few Canadian mills do service international markets, but even this function tends to take the form of local cross-border trade. U.S. imports are primarily high-value items such as medicated feed supplements which can withstand transportation costs. With virtually no vitamin production and a limited pharmaceutical fine chemical industry, many of these additive items must also be imported.

Both Canada and the United States are major producers of feed ingredients which represent about 80 percent of feed production costs. In both countries the availability and prices of local grains and proteins affect feed production costs in a given area. Feed mills in ingredient-deficient regions like the New England states or, in the case of Canada, the Atlantic provinces and British Columbia, can have feed costs 25 percent higher than the surplus regions of North America, like the U.S. mid-west, the province of Ontario and the Canadian Prairies.

Although economies of scale are important in the production process, the tendency to serve the local markets places some constraints on the economies of scale that can be achieved. Multi-purpose plants producing a fairly wide range of products also constrain the length of production runs, more than may be the case with some specialized U.S. plants. The quality of Canadian products and the level of technology used is quite comparable to that found in the United States or elsewhere.

The increase in on-farm mixing has led to a shift in demand towards pre-mixes and feed concentrates from which farmers can prepare complete feeds using their own grains. On-farm mixing is predominant in areas of good grain production, since grain makes up approximately 60 to 70 percent of a complete ration. In grain-deficient areas the demand for commercially prepared complete rations is stronger. But the trend to on-farm mixing is aggravating an excess-capacity problem in the industry; in effect, for manufacturers, on-farm mixing represents a serious long-term competitive consideration in both Canada and the United States.

Environmental and safety regulations can be stricter in Canada and result in a higher investment cost in plant and equipment than is the case in the United States. These regulations lead to slightly higher fixed costs for Canadian manufacturers. However, these costs vary from region to region as regulatory requirements are not always under federal jurisdiction.

Trade-related Factors

As countries engaged in livestock and poultry production generally have their own feed manufacturing industries, international trade is largely in feed ingredients rather than in finished products.

With a few exceptions, Canadian and American customs duties on animal feeds and ingredients for incorporation into such feeds are either duty-free or set at minimal rates usually not exceeding five percent *ad valorem*.

In addition, a countervailing duty on imports of U.S. corn has been in effect since November, 1986. Currently, this duty is 46 cents per bushel. British Columbia feed users and manufacturers have been exempt from the payment of this duty. Countervail duty is also applicable on the corn content (by weight) of animal feeds, although corn gluten, whether or not contained in feed, is not subject to countervail. Imported corn that is incorporated into animal feed for re-export, is eligible for duty drawback.

Most feed ingredients may be imported into Japan duty free, while European Community (E.C.) customs duties are often high. Variable import levies and other subsidy schemes also have been set up to protect E.C. feedstuff production.

World markets for feed ingredients have become increasingly affected by government intervention. E.C. subsidies have made that market more self-sufficient and a major grain exporter. U.S. farm legislation greatly influences the supply and prices of feed ingredients through a system of acreage-reduction incentives, price supports, commodity-loan programs and export policies. The *U.S. Agricultural Security Act* of 1985 was designed to lower American feed-ingredient prices and thus improve the U.S. position in world markets.

Canadian federal legislation requiring import licences for wheat, barley and oats restricts their import for use in feed. Such licences are granted only when a Canadian importer can provide evidence that similar items are not available in Canada and, as a result, are seldom granted. This licensing also applies to processed feed products containing 25 percent or more of wheat, oats or barley or any combination of these by weight, thereby providing the industry with some import protection.

Canadian feed manufacturers must also obtain a Canadian Wheat Board (CWB) export licence if the ration to be exported contains more than 25 percent of wheat, oats, barley or any combination of these. Exported grain, including that in feed rations, must be purchased from the CWB and not from the private trade. Manufacturers wanting to use these grains in their feeds for export face some restrictions. They cannot price feed in export markets freely, since they cannot shop around for their grain inputs. Nor can they freely import grains for incorporation into feeds for sale in the Canadian market.

Technical regulatory requirements, which vary from country to country, tend to discourage trade in manufactured feeds. In the case of the United States, some of these regulatory requirements vary between states. For trade in medicated feeds there are additional considerations. Each country also has its own regulatory process for approving feed-additive drugs. This process can result in different procedures and requirements relating to the use of the same drugs.

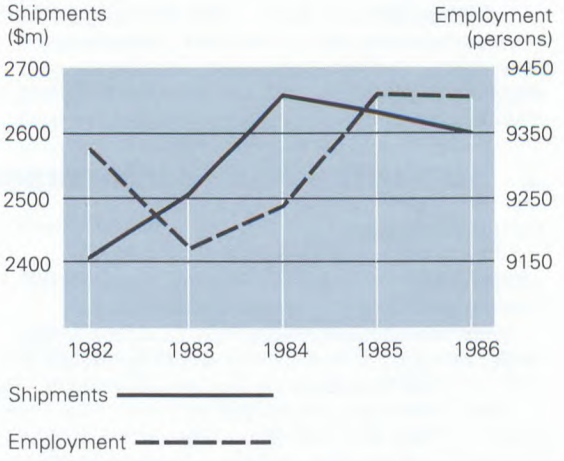
The Canada-U.S. Free Trade Agreement (FTA) could require Canada to eliminate the import licences, not only on feed grains, but also on manufactured feeds containing more than 25 percent wheat, oats, barley, or any combination of these. This would occur at some future point, if there is concurrence that the level of government support programs in the United States for wheat, oats or barley is equal to or less than the level of government support for those grains in Canada.

The agreement also provides for future FTA negotiations to bring into harmony a wide range of technical regulations that exist in both countries on labelling, content guarantees, testing methods for feeds, feed mill inspection procedures, establishment of equivalent manufacturing-practice regulations for medicated feeds, tolerances for contaminants and drug residues in feeds, and agreement on the kinds of additives and drugs to be allowed in feeds and controls on their use.

Technological Factors

The close linkages between the performance of the livestock and poultry production and animal feed sectors provides incentives for the feed industry to pay close attention to developments in nutrition research, animal health, veterinary medicine and biotechnology. Adoption of new technologies often mirrors those occurring in the United States or elsewhere.

Nutrition research has resulted in the development of improved feed products which result in greater palatability, improved feed conversions and faster weight gains. Veterinary science, animal health and biotechnology research is producing an array of new pharmaceuticals, growth hormones and drug implants.



*Total Shipments and Employment**

** Data for 1986 are estimates.*

While diffusion of the latest feed-plant manufacturing technology (i.e., automation) is well under way in Canada, there are still significant differences in the level of technology used. Plant operations have become increasingly capital-intensive as a result of the following developments:

- As farm sizes increase and farmers automate their feed-handling systems, manufacturers have seen an increase in demand for bulk feed over bagged products, resulting in less labour;
- The development and acceptance of pelleting machines not only has allowed for easier handling of feeds, but also has reduced dust and wastage at the feed plant and at the farm; and
- There is an increased use of computers by nutritionists in calculating least-cost feed formulations, and by plant managers in controlling the operation of the mill itself.

There is no major difference in the utilization of new technology between Canadian and foreign firms operating in Canada. Neither are there significant barriers to obtaining new technology, however, new products must meet technical health and safety requirements before being offered for commercial sale.

Other Factors

The *Canada Feeds Act* and regulations, administered by Agriculture Canada, specifies that feed manufacturers meet certain technical product-standards requirements before offering their feeds for sale on a commercial basis.

The Health Protection Branch of the federal Department of Health and Welfare approves and regulates the use of drugs and medications in feeds. These regulations also apply to imported feeds.

Programs which enhance the viability of animal agriculture also affect the feed industry. For example, supply management and stabilization programs in the livestock industry affect market demand for feed, as well as the degree of vertical integration in the industry.

3. Evolving Environment

Total demand for animal feed in Canada is likely to grow slowly. Consumer demand for milk, meat and eggs in Canada is limited by Canada's population growth, which is expected to be considerably less than two percent annually. Competition between firms will continue to be severe. With tight margins, careful inventory and purchasing practices on inputs will be important.

Further integration of livestock and poultry raising and feed production and the trend toward on-farm mixing will likely continue to put pressure on the industry. Any further growth in the trend to on-farm mixing will increase demand for pre-mixes at the expense of complete feeds. The industry is becoming aware of the need to provide more advisory services to its clients as the demand for nutrition consulting increases and end-users become more sophisticated.

Government intervention and subsidization of cereals and oilseeds, along with weather conditions, are likely to remain the major factors in determining both the supply and pricing of major feed ingredients.

Scientific developments in biotechnology, nutrition and animal health and veterinary science will continue to have an impact on feed products, animal feeding methods and livestock raising generally. Genetic engineering also has the potential to produce superior types of livestock and poultry, which could have a dramatic (but as yet undetermined) impact on the industry.

The FTA is not expected to have a significant, immediate impact on the industry. Over the longer run, some harmonization of technical feed and drug regulations in both countries, and the potential for the removal of Canadian import controls on feed grains (such as barley) and feeds containing higher levels of such grains than is currently the case, could result in some marginally increased two-way trade in feed products. However, industry performance will continue to be tied to the future performance of Canada's livestock and poultry industry under an FTA environment.

4. Competitiveness Assessment

Feed production and marketing is basically a locally oriented activity with little international trade in manufactured feeds. The Canadian feed industry is competitive in the domestic market and has enjoyed some limited success in nearby export markets, primarily in the U.S. border states. Technical regulations, prices of inputs, their availability and locational considerations are the major factors limiting two-way trade in feeds between Canada and the United States.

Offshore export opportunities are limited because of high transportation costs for bulk products, as well as subsidized competition from other exporters such as the United States and the European Community.

The overall impact of the Canada-U.S. Free Trade Agreement is likely to be largely neutral. International trade tends to be greater in feed ingredients than in finished products and this is not expected to change under the FTA. The prospect of some regulatory changes over the longer term may result in some incremental increases in two-way trade in feeds. The FTA could have some limited regional effects on the feed industry as a result of greater access to the U.S. red-meat market, stimulating livestock production in Canada.

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PRINCIPAL STATISTICS

SIC(s) COVERED: 1053 (1980)

	1973	1982	1983	1984	1985	1986
Establishments	719	570	568	567	554	550[e]
Employment	9 132	9 330	9 169	9 244	9 403	9 400[e]
Shipments ($ millions)	974	2 404	2 505	2 660	2 623	2 600[e]
Shipments (pre-mixes, supplements	760	1 110	1 108	1 134	1 150[e]	1 175[e]
complete feeds	4 865	6 381	6 259	6 465	6 400[e]	6 400[e]
other feeds)*	84	233	213	223	225[e]	225[e]
Gross domestic product (constant 1981 $ millions)	121.2	354.0	356.4	387.6	366.0	353.7
Investment ($ millions)	25.0[e]	86.9	72.6	78.0	82.3	87.3

TRADE STATISTICS**

	1973	1982	1983	1984	1985	1986
Exports ($ millions)	3	33	33	34	32	36
Domestic shipments ($ millions)	971	2 371	2 472	2 626	2 591[e]	2 565[e]
Imports ($ millions)	6	43	44	48	47	61
Canadian market ($ millions)	977	2 414	2 515	2 674	2 638[e]	2 626[e]
Exports as % of shipments	0.3	1.3	1.3	1.3	1.2	1.4[e]
Imports as % of domestic market	0.6	1.7	1.8	1.8	1.8	2.3[e]

Source of imports (% of total value)		U.S.	E.C.	Asia	Others
	1982	98	1	—	1
	1983	96	3	—	1
	1984	89	4	2	5
	1985	91	1	6	3
	1986	92	3	4	1

Destination of exports (% of total value)		U.S.	E.C.	Asia	Others
	1982	73	3	8	16
	1983	85	5	5	5
	1984	93	1	3	3
	1985	91	1	4	3
	1986	92	3	4	1

(continued)

REGIONAL DISTRIBUTION — Average over the last 3 years

	Atlantic	Quebec	Ontario	Prairies	B.C.
Establishments – % of total	5	35	33	23	4
Employment – % of total	4	31	39	20	5
Shipments – % of total	5	30	34	20	7

MAJOR FIRMS

Name	Ownership	Location of Major Plants
Canada Packers-Shur Gain Division	Canadian	All across Canada
Parrish and Heimbecker, Ltd.	Canadian	All across Canada
Maple Leaf Mills Ltd.	United Kingdom	All across Canada
United Grain Growers	Canadian	Four western provinces

e Estimated
* Volumes in thousands of tonnes
** Excludes semi-processed ingredients