

Paper 17

EXPORT MARKETING OF BARLEY

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INTRODUCTION

Over the past ten years New Zealand has become increasingly involved in the export of barley, in some years earning over \$10 million. It is likely that this trade will become increasingly important. This paper assesses this country's role in the international market for barley, and the potential for expansion. Our involvement has arisen largely from changing internal circumstances rather than from a major increase in international demand for feed grains. It is important in this situation to ensure that New Zealand producers are aware of conditions in the international market, and can handle this trade. This paper also discusses the general structure of international feed grain markets, the projections for growth in the trade as a whole, and likely future market conditions. The final section of the paper discusses the relevance and efficiency of the current marketing institutions in New Zealand.

TABLE 1: Major coarse grain production¹ (millions of tonnes).

County	Year Beginning October		
	1979	1980 ²	1981 ³
U.S.	238.7	198.4	248.9
U.S.S.R.	81.2	80.5	77.0
Western Europe	91.1	94.8	88.2
China	83.0	82.5	82.0
Eastern Europe	63.3	61.6	62.5
Canada	18.6	21.8	25.7
Argentina	10.6	21.1	18.6
South Africa	11.7	14.9	11.8
Australia	6.2	5.1	6.7
Thailand	3.6	3.5	4.2
Other	133.4	142.7	144.0
Total	741.4	726.9	769.6

¹Coarse grains include maize, oats, sorghum, barley, rye, millet, and mixed grains.

² Preliminary.

³ Estimated as of 16 February 1982.

Source: United States Department of Agriculture.

THE INTERNATIONAL GRAIN MARKETS

The first point that must be realised in discussing exports of New Zealand barley, is that this product is only one of a large number of feed grains, or as they are more commonly called, coarse grains, which are widely traded throughout the world for feeding livestock under intensive production systems. The extremely large market includes maize or corn, barley, rye, millet and "mixed grain".

The present world production of coarse grains is estimated at around 770 million tonnes. Of this, 100 million tonnes is expected to enter world trade, and total world stocks at the end of 1982 may be around 108 million tonnes. Tables 1 and 2 show the major producers and traders. The United States is by far the largest producer of feed grains and also the major exporter. The U.S.S.R., the second largest producer, is often the single largest importer. Other less important exporters include Argentina, Western Europe, Canada and Australia. As would be expected, these countries are also involved in the international wheat trade. The major importers of feed grain, however, are largely industrialised countries supporting high levels of livestock production. These include Western and Eastern Europe and Japan. Many smaller countries are also involved. Major exporters deal with a wide range of countries, creating a highly competitive market (Fig. 1).

Because the grains are used to provide the carbohydrate component of livestock feeds, they are fairly easily substitutable. Of the total production of coarse grains, approximately half is maize, with barley the second most important at 22%. Some of the less important grains, such as sorghum, oats and rye, have specialised uses, but are also substitutes for barley or maize.

In marked contrast to many other agricultural products, trade in feed grains is relatively unhindered by trade barriers and domestic agricultural policies. This is not surprising, as in most countries feed grains are an input into agricultural production and thus the EEC and countries such as Japan, which have highly protected agricultural industries, provide free access for feed grains. This lack of trade intervention is another factor which adds to the highly competitive nature of the feed grain market.

TABLE 2: Major coarse grain exporters and importers¹ (millions of tonnes).

Item	Year Beginning July		
	1979	1980 ²	1981 ³
Major Exporters:			
U.S.	71.6	72.4	63.5
Argentina	6.6	9.9	14.1
Western Europe	5.5	7.3	5.1
Canada	4.8	4.6	6.3
South Africa	2.9	3.6	4.9
Australia	4.1	2.2	3.1
Thailand	2.3	2.2	2.6
Other	3.2	3.4	3.7
Total	101.0	105.6	103.3
Major Importers:			
Western Europe	23.2	21.0	22.9
Japan	18.9	18.9	18.8
Eastern Europe	11.4	10.6	8.6
U.S.S.R.	18.4	16.0	22.0
China	2.0	0.9	0.8
Other	27.1	38.2	30.2
Total	101.0	105.6	103.3

¹⁻³ See Table 1.

The competitive nature of this market is clearly seen in the way prices are determined. As most people are aware, the major grain markets are in the United States. The Chicago Board of Trade is probably the best-known, for the role it plays in determining both cash and future prices for all types of grain. The linkages in this market can be seen in Figure 2, which shows the close correlation between prices for different types of feed grain in the United States and Canada. It is also important to note that there are often strong linkages between wheat and feed grain prices. These linkages are caused by two factors: the partial substitution of wheat for feed grains, and the fact that the United States is the major exporter in both markets, and production is related through growing conditions in that country.

International grain markets are often very unstable, and respond rapidly to weather conditions or political disruptions. While this would appear to be an unsatisfactory situation, there is fortunately a certain amount of stability provided by the domestic agricultural policies of the United States and Canada. These will be discussed in a later section of the paper.

LONG-TERM OUTLOOK

Because of the importance of the feed grain trade in the agriculture of most countries there is considerable interest in long-term supply and demand of these products. Exporters are naturally concerned about the long-term

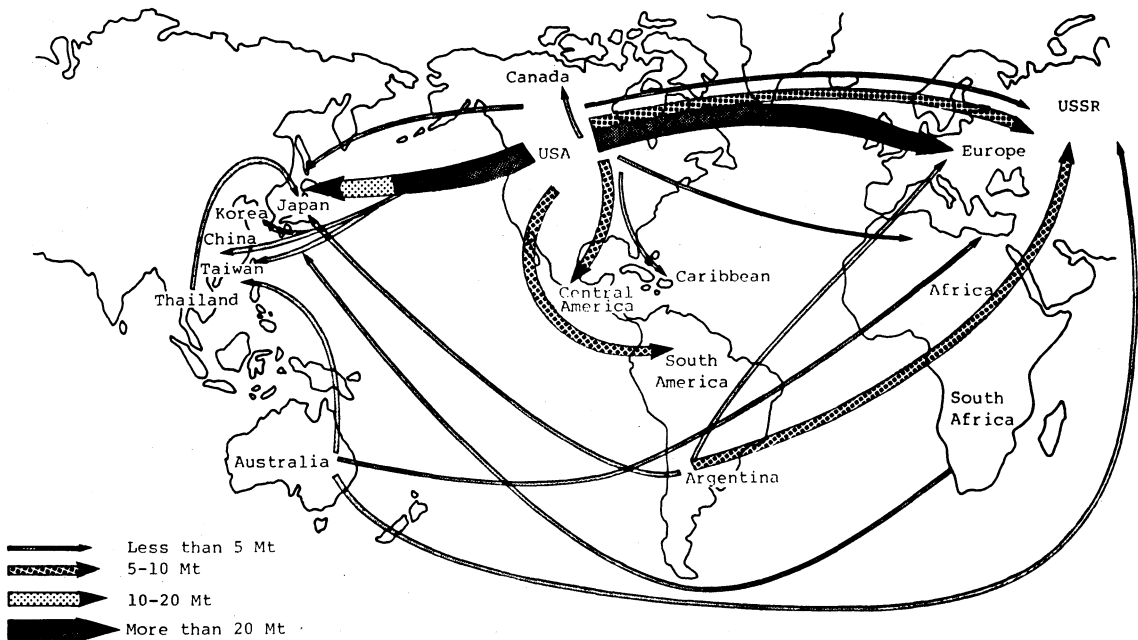


Figure 1: Flow of international trade in coarse grains: 1980-81 (Source: Bureau of Agricultural Economics).

viability of their markets, while importers are equally concerned about long-term access to supplies. Many institutions are evaluating the long-term outlook. There is, for example, a recent study published by a private research organisation in the United States (Wheeler *et al.*, 1981) which attempts to forecast levels of world livestock production and associated feed grain requirements. The first part of such an exercise must be to project world meat and milk production figures, assuming the availability of sufficient feed grains. Table 3 shows the changes in feed requirements necessary to meet the estimated 1985 consumption of livestock products. The major areas which are going to increase their demand for grains include the U.S., Canada, Japan, the U.S.S.R. and high-income countries in the Middle East and Asia. In overall terms, this study shows that by 1985 the total use of feed grains around

the world could be 30% higher than in 1978 (a growth rate of approximately 4%/annum). Although this increase may appear substantial, the study also showed that feed grain production would increase at the same time, probably resulting in modest price increases.

An alternative analysis of long-term prospects, presented by the United States Department of Agriculture (Royko *et al.*, 1978), projects the supply-and-demand situation for both grain and livestock in 1985. Here, the major difference is the more explicit incorporation of the likely effects of the changing supply-and-demand situation on prices. The study concludes that, "under most of the alternatives tested, the world has sufficient capacity, whether measured in terms of physical potential or economic feasibility, to meet the grain and overall food needs of an expanding, more affluent population at real

TABLE 3: Marginal adjustments in feed use to balance projected 1985 production with projected consumption¹ (thousand metric tons).

Regions	Total Adjustment ²				
	Grain	P. Meal	By-products	Forage	Other
United States	7,935	2,247	1,181	7,534	0
Canada	3,173	369	525	6,343	0
EC-6	647	243	1,050	25,855	0
EC-3	952	243	1,046	24,049	0
Other W. Europe	203	(28)	114	3,933	0
Japan	2,946	637	307	1,648	0
Oceania	52	(3)	35	98,486	0
South Africa	(208)	(41)	85	13,714	0
Eastern Europe	397	13	1,034	11,872	0
Soviet Union	14,499	521	10,659	119,360	0
China	468	(61)	8,584	(17,476)	9,377
Middle America	406	70	58	227	0
Argentina	526	11	95	29,841	0
Brazil	2,686	411	3,761	81,644	0
Venezuela	27	7	2	1,672	0
Other South America	94	22	17	30,897	36
High Income N. Africa	2,137	170	1,699	32,095	191
Low Income N. Africa	3,656	660	3,432	90,037	0
East Africa	0	12	144	9,700	27
Central Africa	76	130	624	87,504	338
India	(21)	73	854	45,533	0
Other S. Asia	(7)	(18)	(7)	14,304	(46)
Thailand	785	504	531	3,234	991
Other S.E. Asia	0	0	0	0	0
Indonesia	482	0	467	2,799	65
High Income E. Asia	2,869	220	726	420	0
Low Income E. Asia	(628)	(127)	(449)	280	(59)
Rest of World	1,691	214	1,919	25,553	45
World	45,845	6,498	38,580	751,059	10,966

¹ Part of the production of beef, poultry meat, and sheep and goat meat includes by-products of milk, eggs, and draft animal production.

² Grain, protein meal, by-products and other feeds are assumed to be 89 percent dry matter as fed. Forage is 20 percent dry matter as fed. The livestock-product adjustments are added to the projected 1985 production to balance with projected 1985 consumption levels (parentheses indicate reductions).

Source: Wheeler *et al.*

prices somewhat above 1970 levels, but below 1972-75 highs." In fact this study suggests that in real terms, prices would probably stay near present levels, but would be influenced by climatic fluctuations.

The study also points out that under existing policy, "the exporters as a group would probably face problems of restraining production, given the assumption that the major exporters continue to adapt their production policies to changing global supply and demand conditions. Production in the United States and Canada, in particular, is assumed to adjust downward so as to prevent the accumulation of large price-dampening stocks, and upward so as to take advantage of growth in world input demand, be it either long-term growth related to population and income changes, or short-term growth related to production shortfalls." These conclusions suggest the important role that domestic agricultural policies, especially in the United States and Canada, are likely to play in the future, and in order to understand the importance of these policies and their potential impact, it is necessary to look at the history of their development.

The major mechanisms currently used in controlling agricultural production in the United States were mainly developed in the 1960's. During this period, increases in the production of grain outstripped the growth in demand, leading to an accumulation of large surpluses. A policy evolved under which the farmers were paid a reserve price for the grain, and the surplus production was owned by the Commodity Credit Corporation (C.C.C.). These government stocks were burdensome, and in some years the stock exceeded one year's export supply. As can be imagined, the stocks depressed world prices, and towards the end of the 1960's concerted efforts were made to decrease these stocks through concessionary sales for food aid to developing countries. Throughout this period the support prices in the United States, and Canada which had adopted a similar strategy, were essentially setting the base level of prices in the world market.

With considerably lower levels of stock in the early 1970's, prices increased dramatically when the U.S.S.R.

entered the grain market in 1972. Since then the prices have remained higher than in the 1960's, but production has gradually increased and prices have fallen to lower real levels than in the 1972-73 period. Stocks have accumulated to significant levels in some years, but they have not been allowed to reach the levels of the 1960's. This has mainly been brought about by the decreased use of Commodity Credit Corporation stocks and an increased use of farmer-owned stocks. Under this scheme farmers are paid to hold grain on their farms for a minimum period of three years, or until prices have increased to a satisfactory level.

Although the policy mechanism is quite different, the Canadian grain industry also operates a system which accumulates stocks and provides a floor price. The creation of these policies has had an important effect on both stability and level of grain prices in the last decade. The manner in which these agricultural policies operate to stabilise the coarse grain market can probably best be appreciated by considering the current market conditions and recent policy changes.

THE CURRENT MARKET SITUATION

World coarse grain production in the 1981-82 season is estimated to be around 770 million tonnes, which is an increase of about 6% over the previous year, and a record level of production. This increase has come primarily from the United States where production has increased 25%, largely due to yield increases, but estimates are also up in other major exporting countries, including Canada and Australia. While production levels are expected to increase substantially, the most recent United States Department of Agriculture estimates suggest that the level of world trade will be approximately the same, or possibly even down on the previous year (Table 2). These projections show that imports in Europe are expected to decrease slightly in 1982, even though imports from the U.S.S.R. are likely to increase; it is anticipated that world stocks of grain will increase.

Because the United States is the largest holder of grain stocks in the world, with the largest commitment to

TABLE 4: Feed grains: area (millions of ha.) and prices 1977-81 (maize, sorghum, oats, barley).

Year	Area			Harvested for Grain	Yield t/ha Harvested	Index Average Price Received by Farmers ¹ 1977 = 100	Government Support Total Payments in Millions \$
	National Program	Set-aside and Diverted	Planted				
1977/78	36.0	—	52.4	43.9	4.68	102	570
1978/79	39.4	3.4	50.3	42.7	5.19	113	1023
1979/80	44.3	1.9	48.1	41.5	5.74	125	247
1980/81 ²	42.7	—	49.1	41.1	4.82	154	404
1981/82	42.5	—	50.0	43.3	5.74	—	363

¹ The marketing year for maize and sorghum begins 1 October; 1 June for oats and barley.

² Estimated.

³ Excludes support payments.

Source: U.S.D.A.

maintaining world price levels, it would be expected that most of the increase in stocks would occur there. This can be seen in the projected reduction in exports from the U.S. in Table 2. Likely adjustments in the U.S. are shown in Table 4, with the supply and disappearance of the U.S. feed grain crops and the substantial increase in stocks which is expected by the middle of 1982. There is some concern over the level of exports in 1982, particularly as estimates of the stock levels increased from 50 to 65 million tonnes between November and February. Anticipation of this production increase and decline in export possibilities appear to have led to the decrease in price over 1981-82. The current situation has led to some concern in the United States, and appropriate policy changes have been made.

The U.S. grain policies are somewhat complex, but very influential on a world scale. The four major components are:

- (1) The target price is announced annually for each type of grain and provides a basic price which is met by a deficiency payment from the Government.
- (2) The loan rate is also announced for each grain and is lower than or equal to the target price. The loan rate provides a floor for the grain market, in that a farmer is able to take a loan from the Commodity Credit Corporation at harvest time equal to the loan rate times his production of grain. When the producer comes to sell the grain he has two options. He can either sell the grain on the open market and pay back the loan, or he can if he wishes relinquish the grain to the Commodity Credit Corporation as repayment of the loan. The grain which is passed to the Corporation is held in reserve until prices increase to pre-determined levels.
- (3) A farmer-owned reserve scheme allows farmers to receive a loan rate higher than the regular loan, if they agree to hold their grain in storage for three years or until market prices rise to a satisfactory level.
- (4) Acreage reduction and diversion programmes have the aim of directly limiting the area which is planted to grain. In years when these restrictions are in operation farmers are required to take land out of grain production in order to be eligible to receive deficiency payments and make use of loans. To comply with the restrictions the land removed from production must not be mechanically harvested, but may be permitted to be used for grazing in certain months of the year.

This policy system is reviewed every four years, and the latest agricultural and food act was signed into law in December 1982. While the new act guarantees that target prices will increase by approximately 6% per year for the next four years, no such guarantee is made about the minimum loan rates, except that they can only vary between years by a maximum of 10%. The level of loan rate is by far the most critical parameter in this system as it fixes a series of floor prices for these products in the free market below which the farmers will not sell their grain. It effectively means that the United States is prepared to accumulate

stock of any product which cannot sell on the world markets at those prices. However, when the new policies were announced in January 1982, the United States Secretary of Agriculture also announced that an acreage-reduction programme would be used for the first time in several years. Under this programme all participating farmers are required to reduce their feed grain production in the 1982 harvest by 10%. This should mean that overall production will decrease and prices will stabilise for the 1982-83 season.

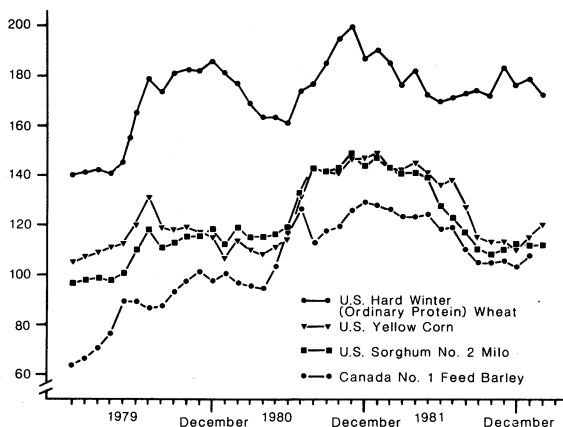


Figure 2: International grain prices (Source F.A.O.).

PROSPECTS FOR NEW ZEALAND EXPORTS

Early in 1982 New Zealand exporters were able to capitalise on the relatively high world prices, but in recent months prices have been falling and it is only the decline in New Zealand's exchange rate relative to the United States dollar which will keep New Zealand prices at a reasonable level for our current crop. Because of the increases in stocks of grains it is likely that world trade prices will stay at their present level, or perhaps drop even further in the 1983 season.

In some ways this could become an extremely critical period for New Zealand barley exports. If New Zealand can continue to export barley profitably at the current prices, then there is a very good long-term future in this trade. It could well become a very important part of New Zealand's diversification away from our traditional agricultural products. It is generally accepted that consumption of meat products increases faster than consumption of many other agricultural products as income increases. Although New Zealand is a major exporter of meat products, there are some difficulties that may reduce New Zealand's participation in this increased consumption. The first is that a considerable amount of the increased consumption is in poultry meat, which tends to be a domestic industry in each country and not a major part of the world meat trade.

TABLE 5: Feed grains: marketing year supply, disappearance (millions of tonnes) 1977-81.

Year ¹	Supply				Disappearance				Ending Stocks
	Beginning Stocks	Production	Imports	Total	Food Seed	Feed and Residual	Exports	Total	
1977/78	29.9	205.3	0.3	235.5	19.9	117.9	56.3	194.1	41.4
1978/79	41.4	221.5	0.3	263.2	20.9	135.9	60.2	217.0	46.2
1979/80	46.2	238.2	0.3	284.7	22.3	138.7	71.3	232.3	52.4
1980/81 ²	52.4	198.0	0.3	250.7	23.8	123.0	69.3	216.1	34.6
1981/82 ³	34.6	248.4	0.3	283.3	25.1	128.7	64.6	218.4	64.9
				(±8)	(±2)	(±6)	(±6)	(±11)	(±9)

¹ See Table 4.

² Estimated.

³ Reflects Crop Reporting Board estimate of root mean square error for production and comparable estimates of variability for other items. Chances are about 2 out of 3 the final outcome would fall within the ranges.

Source: U.S.D.A.

INSTITUTIONS FOR EXPORT MARKETING

Although it is possibly too early to judge, barley has recently provided one of the few successful exercises in developing an export trade in feed or oilseed products from New Zealand. A major part of this success has probably been due to the acknowledgement by farmers that prices in international markets are unstable. In the past, before a trade such as this could develop, it was considered necessary for farmers to be paid a contract price for production. Notable examples include the lucerne feed and linseed industries.

The preparedness of farmers to accept greater price risks has also been noticeable in industries such as meat exporting and domestic wheat production. This is an important factor because it will also make it easier and more likely that firms will become involved in marketing and trading. Under a contract system the price risk is probably forced unnecessarily onto the exporting firms, with the result that they are unduly conservative in setting contract prices to producers. In this situation, conservative pricing can become a double-edged sword for the firm involved in exporting, because decreased production also results in decreasing economies of scale for handling these products. The growth of the South Island Barley Society, in a manner very similar to the creation of meat exporting co-operatives, has shown that producers are prepared to accept a considerable proportion of the marketing risk, and that they consider exporters' offers to be conservative.

If market prices continue to fall, however, this could become an extremely critical period. At present prices remain reasonable, at least in comparison to wheat prices, and production appears to be increasing. In this situation exporting can become even more efficient, and it has been noted that barley shipments leaving New Zealand this year have been of record size. A critical situation will occur when market prices fall and the volumes to be exported

decrease substantially. At this stage, it is important that the institutions involved in the exporting of barley reconsider their marketing strategies. The fact that New Zealand wheat and barley prices are now more closely related to world market prices may help to some extent, particularly as the relative prices should remain fairly stable.

With the likely increased movements in both wheat and barley prices, it becomes extremely important that a wider range of product options be available to the New Zealand arable farmer. So long as both farmers and exporters are prepared to accept flexible pricing, there would appear to be no reason why they cannot work together in developing profitable exporting of a wide range of feed, grain, and oilseed products. To do this, it is imperative that arable farmers become better informed on the current international situation and opportunities for their products. At the same time, exporting firms must realise that farmers are increasingly prepared to share a proportion of the marketing risk in developing new export products. In order to foster the confidence which is necessary in an industry such as this, it is important that full and complete price information be given to farmers to allow them to make their own decisions about levels of output. A lack of confidence had developed in the past, possibly because

exporting firms were too conservative in pricing, but also because farmers were not prepared to understand the marketing situation. If these difficulties can be overcome then it is likely that New Zealand will become increasingly involved in exporting, not only barley, but also similar products.

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