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THE NEW ZEALAND FEED GRAIN INDUSTRY: PRODUCTION, MARKETING AND UTILIZATION

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ABSTRACT

THE NEW ZEALAND FEED GRAIN INDUSTRY:

PRODUCTION, MARKETING, AND UTILIZATION

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The New Zealand feed grain industry has expanded considerably over the last decade yet to date very little is known about the influence of both the economic and non-economic factors on grain production. Even less has been written about the marketing and utilization of these grains.

One objective of this study was to examine the functions and activities of the many participants in the feed grain industry. A secondary objective was to develop a model of feed grain supply for maize and barley crops which would reveal the reactions of producers to the changing economic and non-economic variables that were prevalent in the marketplace when actual production decisions were made.

From a grain producer's point of view many decisions have to be made. Initially the producer has to decide on one or several production alternatives in which to invest his limited resources. "Will I produce maize this year or will I buy more breeding stock?" is a typical decision that has to be made. There are several non-economic factors influencing production decisions at the farm level such as:

(1) constraints imposed by nature (delayed seeding, etc),

(2) cultural constraints (crop rotations, etc.),

(3) fixed factors involved in agricultural production,

(4) institutional constraints (price for wheat set by the New Zealand Wheat Board),

(5) uncertainty and imperfect knowledge (prices, etc.).

All of the above factors influence production decisions at the farm level.

The New Zealand feed grain industry is made up of many participants starting initially with the producer and his grain merchant. Grain merchants are involved in many activities such as:

(1) the establishment of annual feed grain prices,

(2) the management of the grain contracting system,

(3) the marketing of agricultural inputs and other services to the primary producer,

(4) marketing of feed grains to both the domestic and export markets.

The majority of the feed grains produced in New Zealand are produced under contract to a grain merchant. Approximately 95% of the maize and 80% of the barley acreage is contracted each year at specified prices subject to certain grading standards. In New Zealand there is no "formal" marketplace (such as a commodity exchange) for the establishment of feed grain prices. Prices are negotiated by the producer and his grain merchant on an individual basis with generally the same price quoted for each producer. As acres are contracted and it seems that production will not be sufficient for the expected demand, then a higher contract price is offered which hopefully generates the necessary production that is needed. All contract prices are equalized within a region by the individual grain merchant. Competitive grain merchants set their own prices but again prices tend to equalize within a region. Price differentials between regions generally account for the differing transportation costs of moving the grain from producer to end user.

Another participant in the grain industry is the grain broker. The grain broker brings buyers and sellers together. For example, somebody

has grain they want to sell while another needs grain. The grain broker contacts both and without the buyer knowing who the seller is, the sale is negotiated at a mutually agreeable price. Prices fluctuate depending upon supply and demand and the position of the grain (i.e. is it readily deliverable? transportation costs, etc?") The grain broker handles grain sales between merchants and also between merchants and feed manufacturers.

New Zealand grain has primarily two end sources - the domestic or the export market. The domestic market is divided into grain for stock feeding, industrial uses and for human consumption. A major participant at this stage is the feed manufacturer. He performs several important functions in the grain sector:

(1) participates in the establishment of prices,

(2) makes the necessary transport arrangements to move the grain from free-on-rail or ex-silo positions,

(3) manufactures and retails feed grains in bulk and bag form,

(4) provides technical and economic services for end users.

An attempt to quantify some of the relationships within the feed industry was carried out in the form of a supply response model. A simple linear regression model was used. A generalized model took the following form:

$$Q_t^* = a_o + a_i \frac{p_t^g}{p_t^c} - a_2 p_t^L + a_3 Z_t + a_4 T + a_t$$

where Q_t^* = acreage of grain in period t

p_t^g = price of grain in period t

p_t^c = price of the major competitive grain in the specific region in period t

P^L_t = price of major livestock alternatives in the specific region in period t

Z_t = non-economic factors in period t

T = linear trend variable

e_t = error term

a_o, a_1, a_2, a_3, a_4 = regression coefficients to be estimated.

The analysis was divided into two parts, the North Island and the South Island regions. Each region was estimated for the major feed grains produced. Barley on the South Island and both barley and maize on the North Island. For example in the South Island barley analysis, the model explained 86% of the variations in production with all variables statistically significant at the 1% level. This particular model estimated that for a 10% increase in the price of wool, the area sown to barley would decrease by 5.4%. Similarily, a 10% increase in the barley to wheat price ratio would result in a 25% increase in the area sown to barley.

For maize, one of the estimated equations explained 87% of the variation in maize acreage. The elasticity at the mean was estimated and for a 10% increase in the maize price, the acreage of maize increased by 15%. This was based on 15 years of data.

Several grain marketing alternatives were discussed. These included grain cooperatives, feed grain marketing boards and also making better use of the services of the grain broker. All have merits and of course certain limitations but as the feed grain industry expands there will be increasing pressure for changes within the New Zealand feed grain industry.

This study hopefully has shed some light onto the functions and activities of the major participants in the New Zealand feed grain trade. This is just a starting point. More accurate grain statistics are necessary before any extensive research can be conducted. Hopefully this is an area where government and industry can come together.

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