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Minnesota AGRICULTURE ECONOMIST



Effective Price of Minnesota Dairy Feed

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What price did you pay for your last order of protein supplement? Now ask your neighbor what he paid. If you and your neighbor are like a group of dairymen in southeastern Minnesota, you probably paid different prices.

Wait a minute! you might say. Sure I paid a different price than he did. I paid cash and he took his feed on credit, I picked up my feed and he had his delivered, I top-fed my protein supplement and he mixed his. But even with factors like these considered, the dairymen studied paid different prices.

This article presents findings of a recent study of dairy feed prices and procurement practices to aid you in your feed purchasing decisions.

EFFECTIVE PRICE

Purchasing protein supplement is not a simple process. A number of decisions must be made prior to or as part of the transaction itself. As a buyer, you must decide:

- (1) where to purchase the feed,
- (2) what specific feed to buy,
- (3) what quantity to obtain at one time,
- (4) how frequently feed should be purchased,
- (5) whether to buy bag or bulk feed,
- (6) who will transport the feed to the farmstead,
- (7) whether to top-feed or to mix the supplement with feed grains,
- (8) whether to pay cash or buy on credit, and
- (9) how long to defer payment.

Each of these decisions costs you money. For example, in deciding where to purchase your feed, you will have to use some of your time (which is valuable), you may have to make a few telephone calls or perhaps buy some market news publications. In another situation, a price might be quoted to you that includes delivery to the farmstead, the cost of delivery being included in the purchase price. Purchasing decisions that you make will be paid by you in the form of (1) a higher purchase price, (2) a specific charge for the service itself by the seller, or (3) an expenditure of your own time and resources in carrying out the service you desire.

Published, Purchase, and Effective Prices

Considering all of the costs that go along with your purchase of farm supplies, there are three different prices that should come to your attention. First there is the **published** price. This price is listed in advertisements and makes certain assumptions about the kinds of decisions you would make in relationship to the total purchase transaction. Secondly, there is the **purchase** price. The purchase price is the price per hundredweight (cwt.) after those factors of knowledge, time, storage, transport, and product changes relating to the transaction, have been taken into account. But there is a third price that is frequently overlooked by many farmers: it is the **effective price**. Effective price considers the published price, the costs associated with the services provided by the seller, and, additionally, **covers the costs incurred by the buyer in carrying out many of the services himself.**

Procurement Costs

You can separate the costs attendant to a transaction into four categories: (1) transportation costs, (2) mixing, or form changing costs, (3) time costs, and (4) knowledge costs. The cost of knowledge is involved in all the decisions necessary to the transaction itself; it is especially appropriate in deciding where and what to buy. It usually is necessary for the

buyer to seek market knowledge; that is, to compare the prices and technical characteristics of the products. Knowledge costs also are expended by the buyer in terms of his particular operation when he must decide what quantity to buy at any one time, how frequently he should purchase, and what particular package the feed should come in.

Buyers incur transportation charges in hauling the feed from the feed outlet to the farmstead. Naturally, you need to decide whether the delivery cost is greater or less than the cost involved in making use of one of your trucks and your labor to move the feed. The outcome of this decision may vary seasonally. At one time of the year, your time may be worth far more than at another time, or your trucks may have greater uses in other types of farming activity.

In a similar way, mixing costs need to be compared with what the seller would charge explicitly and what it would cost you to mix it yourself if you had mixing facilities.

Time costs are more difficult to analyze, but are equally important. Deferred payment charges made by the seller must be compared with alternative uses of your liquid assets. In many instances, farmers are heavily advantaged by the credit arrangements made possible through their local dealerships.

The effect of a careful analysis of the actual costs incurred in carrying the product or carrying the finance charge over time should be understood. The costs incurred in acquiring additional knowledge about the product and the prices at which it is sold can pay off handsomely to the alert producer.

Procurement Strategies

The result may be a wide variety of **procurement strategies**. A procurement strategy is a particular set of decisions made regarding the nine items listed earlier. It may, for example, be advantageous at one point in the year to have feed delivered and buy it on 30-day credit, but to mix it yourself. This is one procurement strategy. At another time of the year, it may be advantageous to have the feed store deliver a mixed feed and pay cash. This is another procurement strategy.

To view these ideas in a more practical manner, let us consider the results of the prices paid and procurement practices of a group of dairy farmers in southeastern Minnesota.

THE STUDY

To determine the extent of price differences paid for dairy feed, an area of southeastern Minnesota was selected for a 1970 study. The area is geographically small, involving only nine townships (see the figure). Buyers in the area had several available sources of oil seed meals and commercial protein supplements. All buyers in the area were selective in choosing the source from which they purchased the manufactured feed: dairy farmers bypassed closer outlets in order to go to the outlet they wanted to buy from. All sellers had available technically similar, if not identical, products. Thus, they were judged to be in direct rivalry for sales to the buyers in the area. Because of the complexity in comparing feeds, the study was limited to purchases of feeds intended for the same productive enterprise, milk production.

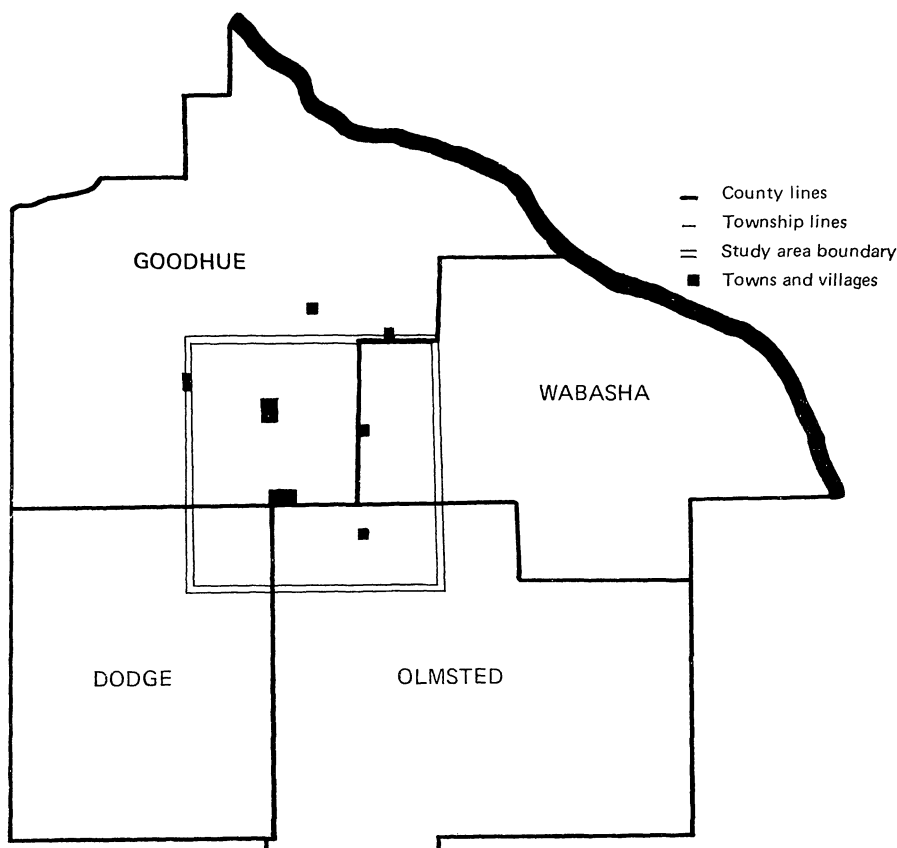
The data were collected from the buyers, dairy farmers. Each buyer's purchase price, procurement activities, procurement costs in addition to purchase price, total business relationship with the seller, procurement attitudes, and farm and dairy enterprise characteristics were studied. Sixty-two dairy farmers were selected for complete study. The 62 schedules resulted in 69 price observations: five buyers purchased two dairy protein supplements and one buyer purchased three. From these data, the effective price each buyer paid was calculated. The resulting distribution of effective price was then related to many different characteristics.

There was a wide variation of procurement strategies. In fact, there was no one single way in which farmers always bought their feed. Some of them carried on their own transport, mixing, and time storage activities. Others bought them. Others followed varied practices.

Procurement Cost Results

This wide variation in procurement strategies was accompanied by a wide variation in the cost of procurement. For the 69 observed purchases of manufactured dairy feeds, the average procurement cost was .227 cent per cwt. The distribution of the calculated procurement costs is presented in table 1.

Higher or lower procurement costs are not associated with a particular type of feed. When procurement costs were arrayed in terms of the different procurement strategies, it was found that those who had their feed delivered, those that defer payment, and those that rent a mixer incur a less than average procurement cost. It should be quickly pointed out, however, that while these costs were



Location of study area, southeastern Minnesota.

so recorded, costs were considered at a single point in time and did not take into account seasonal variation in the value of the buyer's resources.

It also was learned that those buyers picking up their feed in small quantities incurred a procurement cost greater than the average cost incurred by all the dairy producers. A variation in procurement costs per cwt. of soybean meal, for example, varied among buyers by nearly as much as \$1 per cwt. It is equally clear, then, that many of these producers could lower their procurement costs by care-

fully calculating effective price (purchase price minus procurement costs).

Effective Price Results

The calculated effective prices per hundred pounds of feed for the 69 observed purchases are presented in table 2. There was no difference in effective price among types of supplement, soybean meal, commercial supplement, and linseed meal.

Depending upon whether or not commercial premixes and commercial concentrates are added into the total analysis,

Table 1. Calculated procurement costs per hundred pounds of feed purchased, by feed type

Procurement cost, cents per cwt.	Number of observations in each cost range		
	Soybean meal	Commercial supplement	Other
60 and up	1	3	
45-49	3		1*,1†
30-44	5	6	3*
15-29	4	12	1‡,3*
00-14	4	12	1§,1†
- 10 to - 5	2	1	

* linseed meal
 † commercial premix
 ‡ commercial concentrate
 § urea

Table 2. Effective price per hundred pounds of feed purchased, by feed type

Effective price, dollars per cwt.	Number of procurements observed in each price range		
	Soybean meal	Commercial supplement	Other
12.08-15.40			2*
8.20-10.05			6†
6.40- 6.79		1	
6.00- 6.39		1	1‡
5.60- 5.99	2	5	
5.20- 5.59	4	6	4§
4.80- 5.19	5	14	2§
4.40- 4.79	7	6	1§
4.00- 4.39	1	1	

* commercial premix
† commercial concentrate

‡ urea
§ linseed meal

the distribution of effective price is substantial. A range of \$4 per cwt. to slightly over \$12 per cwt. in effective prices paid by farmers for all of the feed types existed. The distribution with a more homogeneous product like soybean meal still is indicative of a substantial difference in effective price. This difference must be explained by items outside of transport, mixing, time, and knowledge costs. A broader range of differences exists for commercial supplements and, of course, a substantial range exists for more sophisticated premix and concentrated feeds.

When effective prices are categorized by source of purchase, it is apparent that considerable differences exist. It was learned that those buyers who bought from the same outlet paid similar prices. Differences could be explained by cost of transport, mixing, or storage. But buyers who purchased from different outlets paid different prices, considering transport, mixing, and storage costs. This result suggests that buyers could greatly decrease their effective price by merely shopping around and trying to find the lowest price for similar feeds.

It is significant that only one buyer out of the 62 spent any time or other resources shopping around. Despite these results, about 90 percent of the buyers interviewed felt that there was no difference in prices among the several sellers.

Technical Characteristics

Purchase price variation among selling firms is expected, of course, if the firms are selling different products. But what constitutes a difference among products? First, there are technical differences. Technical differences may be judged by the ingredient composition of the product sold. Technical differences also can be judged by the contribution made to production. Secondly, product differences may be the result of buyer beliefs. In a

situation where perfect knowledge does not exist, buyer beliefs may be the overriding element in judging product differences. In such an environment, buyer beliefs may be strongly influenced by seller claims.

In the study area, the inputs considered were on a technical basis. The components of the feed types did differ. Oilseed meals, soybean and linseed, have a single component, whereas commercial supplements contain a variety of primary ingredients. In fact, commercial supplements often include some oilseed meal. Commercial supplements also guarantee a more complex nutrient analysis: specified levels of crude protein, fat, TDN, minerals, vitamins, drugs, hormones, etc. These differing analyses lead to seller claims of technical differences, and, consequently, differing levels of contribution to production. As a result, asking prices differ. Buyers should, however, be willing to continue to pay the price differential only as long as the claimed differences in productive worth are realized.

CONCLUSION

Sellers of prepared feed in Minnesota engage in several nonprice competitive practices.* These practices are attempts by the seller to differentiate his product(s) from that of a rival. Besides varying terms of sale, product brand names are used extensively. Further compounding the buyer's purchase activities are the technical characteristics of the products. Many buyers lack sufficient knowledge to make interfirm technical comparisons and relate these comparisons to price differences. Such an environment is conducive to wide and unexplainable

* R. Clyde Greer and Dale C. Dahl, "Competition in Prepared Animal Feed Manufacturing in Minnesota," *Minnesota Agricultural Economist*, Agricultural Extension Service, University of Minnesota, No. 516, March 1969.

(technically) price dispersion. Price dispersion may be increased by the addition of costs associated with particular procurement strategies.

It is clear from the study that there are market forces that distort the allocation of production factors. Results presented strongly indicate that, in the study area, the same volume of output is possible at a reduced expenditure for any production factor considered.

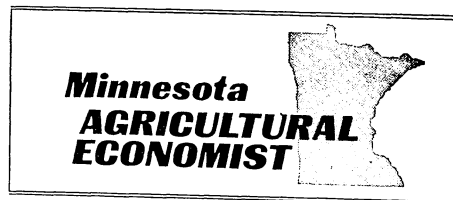
Farmers have long been told that they are price-takers; that there is nothing they can do as individuals to influence either the price they pay for inputs or the price they receive for outputs. It is clear from the study results that the price talked about first must be specified. Most buyers in the study area could reduce the purchase price by investigating alternative sources of supply. It is equally apparent that some buyers could reduce procurement costs through a reconsideration of their procurement strategy, the combined effect of all procurement decisions. There is, of course, an overlap. Some buyers could reduce both purchase price and procurement costs. The effect of each reduction is, of course, to decrease the cost per unit of input at the time it is fed, which is effective price. Thus, while each selling firm may have a set selling price, given specified terms of sale that an individual buyer cannot influence, purchase prices between selling firms are not equal. Buyers in the study area were paying price differentials that were not warranted by variation in the productive worth of the feeds. The relationships existing in this set of data suggest that:

(1) Many buyers do not realize the influence that procurement decisions have upon the total cost of purchased feed.

(2) Many buyers do not know what the price policies of firms selling similar, if not identical, inputs are.

(3) Many buyers who are sold a particular feed on the basis that it is technically better than some other feed do not change their feeding practices to realize the advantages they might attain.

Are you such a buyer? ■



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IN PERSPECTIVE



Grain Consuming Animal Units in Minnesota

K. E. Egertson and D. C. Dahl*

Much of the grain and commercial feedstuffs produced and manufactured in Minnesota is used in livestock and poultry production. This article examines recent changes in livestock numbers in Minnesota in terms of the amount of grain livestock consume.

The Animal Unit

Annually, a single milk cow consumes about 100 times more grain than a broiler. But fed cattle eat 2.2 times more grain than a milk cow. Viewed in this way, all livestock can be counted in terms of how much grain they consume. In 1959, all the livestock produced in Minnesota ate enough grain to feed 6.92 million milk cows. Of course, we did not feed that many milk cows, just that many milk cow equivalents or animal units, with the milk cow used as the reference animal unit.

Trends

The accompanying table presents changes in the number of grain-consuming animal units fed in Minnesota for selected years. In 1968, 6.28 million animal units were fed grain in Minnesota. Viewing these data in terms of the amount of feed each animal class consumes gives perspective to the market for feed in the state. Notice that hogs represent the most important class of grain-

consuming animal, representing 37 percent of the animal units in 1968. If milk cows and fed cattle are added to hogs, these three animal classes consumed 75 percent of the grain in 1968.

There was a 12 percent decline in total animal units fed grain from 1959 to 1968 for the state. This represents a decrease in grain fed, but does not necessarily represent a decrease in grain sold commercially to farmers, because at least two-thirds of the grain fed to animals is produced on the farm, and so does not go through commercial channels.

In terms of total grain consumption, hogs have been a declining market. This is consistent with a long-term downward trend in hog numbers in Minnesota. Milk cow numbers have declined significantly in recent years. This fact helps explain a decline in the significance of milk cows as grain consumers in the state. Other animal classes showing declines include sheep and lambs and chicken hens, both consistent with product consumption decreases.

Since Minnesota is a major turkey producing state, grain consumption by this poultry class is important. About 8 percent of the grain fed to animals in Minnesota was consumed by turkeys in 1968. However, grain used in 1968 was about the same as that used in 1959.

Fed cattle and broilers represent increases in grain-fed animal units in recent years. Fed cattle grain consumption increased nearly 50 percent from 1959 to 1968. This development coincides with significant feedlot developments in the state and with increased per capita consumption of beef. Broiler production in Minnesota has been more erratic and of less importance over the 10-year period. Broilers consume less than 1 percent of the grain fed to animals in the state.

Summary

Hogs, milk cows, and fed cattle are the most important users of feed grains in the state, consuming three-fourths of all grain fed to animals in 1968.

Grain use by milk cows, sheep and lambs, hogs, and chicken hens is declining, mainly due to decreases in animal numbers. Turkeys held steady in grain usage, but grain fed to cattle and broilers increased from 1959 to 1968. These trends appear likely to continue. ■

Grain consuming animal units fed annually, total and by classes, Minnesota, selected years*

Years	Classes								
	Total	Milk cows	Fed cattle	Sheep and lambs	Hogs	Hens	Broilers	Turkeys	
				million units					
1959	6.92	1.44	.92	.062	2.70	.72	.026	.43	
1962	7.04	1.45	1.06	.055	2.74	.59	.041	.46	
1965	6.27	1.33	1.19	.042	2.11	.46	.038	.45	
1968	6.28	1.18	1.23	.036	2.36	.42	.047	.43	

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* Source: National and State Livestock-Feed Relationships, Stat. Bull. 446, ERS-USDA, February 1970.

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