A Profile of Cattle Feeding in Michigan
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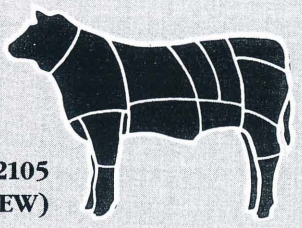

A Profile of Cattle Feeding in Michigan

by K. R. Gwilliam and S. R. Rust
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INTRODUCTION

Cattle feeding in Michigan grew during the 1960s and early 1970s from annual marketings of 200,000 head to a peak of 277,000 in 1977. The subsequent four-year decline in annual marketings appears to have bottomed out in 1982 at just over 170,000 head, and rebounded to 224,000 head in 1984 and 1986 (see Table 1).

Not only did fed cattle numbers decline in Michigan after 1977, but the Eastern cornbelt's share of the national market also diminished (Table 2). Concentration of cattle feeding shifted to the Western cornbelt and Great Plains where the mild climate, lower feed costs, plentiful supplies of feeder cattle and concurrent relocation of slaughter capacity contributed to the development of massive feedlots. These factors also led to the development of an infrastructure of industrial cattle feeding in the Western plains, resulting in further cost reductions due to greater specialization and efficient use of resources.

The post-1977 decline prompted concern about the future of the industry in Michigan. Rising production costs and an apparent downward shift in national demand pointed to a need for re-evaluation of traditional positions. The Western cornbelt had clearly gained a strong advantage in production and processing costs and was using this advantage to capture an increasingly larger portion of the market.

In the midst of this competitive adjustment, Michigan and Eastern cornbelt fed cattle marketings decreased in both total numbers and U.S. market share, falling from 9 percent of the U.S. total in 1971 to approximately 6 percent in 1986. It is evident from Table 2, however, that the extent of the decrease has not been as great in Michigan as in the other Eastern cornbelt states. Consequently, Michigan's share of Eastern cornbelt fed cattle marketings has increased from 11 percent in 1971 to 14 percent in 1986.

Michigan's production in the state amounts to only 35 percent of its consumption of fed beef. The state's population provides the potential demand for many more fed cattle than Michigan cattle feeders produce. However, the

Table 1: Michigan annual marketings of fed beef (thousands)

Year	Number	Year	Number
1962	208	1975	244
1963	214	1976	271
1964	208	1977	277
1965	219	1978	271
1966	230	1979	219
1967	240	1980	218
1968	243	1981	197
1969	244	1982*	173
1970	254	1983*	192
1971	251	1984*	224
1972	251	1985*	211
1973	244	1986*	224
1974	242		

Source: Michigan Livestock Statistics, 1962-81.

*Figures for these years were estimated by multiplying the reported cattle on feed quote by 1.28 (the average ratio of marketings to cattle on feed from 1977 to 1981). No official figures are available since the USDA cattle on feed and marketings reporting services were cut back in 1982.

slaughter capacity in the state is currently insufficient to service the volume of fed beef that the local population consumes.

A further peculiarity is that a significant number of cattle finished in Michigan are shipped out of the state for slaughter—in fact, Michigan is a net exporter of fed cattle. (See section on marketing.) Therefore, industry and government officials felt that additional slaughter plant capacity would enhance the prospects for cattle production and improve the competitive position of Eastern cornbelt producers. However, according to a study, supplies of fed beef in the Eastern cornbelt were insufficient to support a new, cost-competitive plant that would process more than 200,000 head of cattle annually. The study recommended that the best alternative would be to modernize and expand existing facilities. (See Ag-Econ report #447, "An Assessment of the Economic Feasibility of New Investments in Beef Slaughtering and Processing Facilities in Michigan," H. Riley et al., and MSU bulletin E-1797.)

These combined local phenomena portray a situation poised for innovation and change. Constructive change requires information for decision making purposes. Producers and packers, as well as other businesses with vested interests in maintaining a competitive and progressive fed cattle industry in Michigan, have recognized that the first logical question is, "Where are we now?" In response to this, the Michigan State University Department of Agricultural Economics surveyed 928 Michigan cattle feeders in April 1986. Names and addresses were drawn from an updated version of a 1981 address list compiled by the MSU departments of Animal Science and Agricultural Economics. The address list was updated with the help of Cooperative Extension Service personnel.

The data for this report come from 283 responses received from the 1986 mail survey. Because of the nominal contribution of the smaller cattle feeders (see following section on industry structure) and the intention of this report to describe the characteristics of those cattle feeders who are feeding cattle as a business, the report will focus on survey information summarized from those feedlots in the industry reporting more than 100 head of cattle fed annually. Reference to respondents is restricted to this group. Data relating to the feeders marketing fewer than 100 head annually will be included in selected tables and occasionally in the text for comparative purposes, but such cases will clearly specify that the information refers to all feeders.

Table 2: Cattle on feed: United States as a whole and Eastern cornbelt states.

State	Number of head in thousands 1971	1976	1981	1986	Percent change 1971 to 1986
Michigan					
On feed Jan. 1	225	210	160	175	-22
Marketings	251	271	197	225*	-10
Ohio					
On feed Jan. 1	308	320	160	160	-48
Marketings	431	387	235	205*	-52
Indiana					
On feed Jan. 1	314	285	280	250	-20
Marketings	476	365	348	320*	-33
Illinois					
On feed Jan. 1	649	630	519	460	-30
Marketings	1,049	935	925	815	-22
Eastern Cornbelt					
On feed Jan. 1	1,496	1,445	1,119	1,054	-30
Marketings	2,207	1,958	1,705	1,565	-29
Percent of U.S. total	8.7%	8.1%	7.4%	6.0%	
United States					
On feed Jan. 1	12,770	12,941	11,593	11,497	-10
Marketings	25,281	24,170	22,894	25,957	+ 2.7

Source: USDA Statistical Reporting Service.

*These figures are estimated, using reported Jan. 1, 1986, cattle-on-feed estimates and average turnover rates for the years 1977-81.

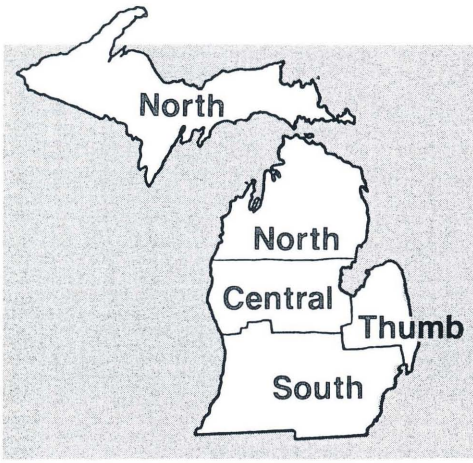


Fig. 1: Marketing of fed cattle • Regional changes.

Region	Year 1969	1974	1978	1982
North	12,063	10,997	11,800	9,952
Central	43,298	47,713	47,105	45,779
Thumb	57,156	66,878	83,995	80,817
South	162,386	133,797	141,309	133,366
Totals	274,903	254,385	284,209	269,914

Source: Census of Agriculture, U.S. Department of Commerce.

INDUSTRY STRUCTURE

Cattle feeders who sold more than 100 head in 1985 accounted for 95 percent of all fed cattle sold by the respondents. In contrast, 53 percent of the feeders (described as those who "marketed less than 100 head annually") accounted for only 5 percent of the cattle sold (Table 3).

Table 3: Size distribution of cattle feeders, 1985 marketings

Category by Number Sold	Percent of Cattle Feeders	Number of Cattle	Percent of of Total Marketings
0-50	37	1,440	1.8
51-100	16	2,751	3.5
101-400	29	14,017	17.0
401-1,000	9	13,160	16.7
1,001 & up	9	47,494	60.1

Source: 1986 Survey data.

Geographical Location

The southern half of Michigan has traditionally served as the site for most of the state's feedlots (Fig. 1). A shift in concentration has seen a modest decrease in the southeastern and southern counties and a significant increase in the east central "thumb" area of the state.

Table 4: Capacity and feedlot use rates.

Category by No. sold—1985	Capacity reported	Cattle sold—1985	Percent of capacity used in 1985
	(No. of head)		
0-100*	16,231	4,194	26
101-400	19,120	14,019	73
401-1,000	16,700	13,160	79
1,001 & up	30,050	47,494	158
Totals	82,191	78,867	(ave.) 96

Source: 1986 Survey data.

*Included here for comparison only.

Capacity

Feedlot capacity does not appear to be limiting production of fed beef within the state. Table 4 shows the reported capacity and relative use. Feedlots reported a significant amount of unused capacity. For the most part, only the larger feeders filled their lots more than once a year, as indicated by the capacity used in excess of 100 percent.

The traditional way to measure feedlot use is the turnover rate, in which the one-time cattle-on-feed estimate (usually Jan. 1) is divided into the total annual marketings. The average turnover rate for Michigan from 1977-81 was 1.28, which was similar to that for Indiana (1.3) and Ohio (1.28). This compares to the 2.2 average annual turnover rate of the 13 leading cattle feeding states (calculated from USDA 13-state cattle-on-feed reports, 1982-85). Possible reasons for the lower rate in Michigan include the seasonal nature of cattle feeding, the kind of cattle being fed, and the fact that cattle feeding in Michigan is usually combined with other major farm enterprises.

Kinds of Feedlots

Most of the feedlot capacity fits the description "open lot with par-

tial cover." Table 5 gives a breakdown of the lot types used and the estimated capacity attributed to each type of lot.

More of the cattle marketed were fed under shelter and on slotted floors than the initial inspection would suggest, because the use rates were much higher in these lots. It is not uncommon for a feeder to start cattle in one lot and then move groups of them onto slotted floors for the last 60 days as they approach market weight.

Custom Feeding

Custom feeding has not been a common practice in Michigan—only 11 percent of the survey respondents were custom feeding at the time of the survey. Forty percent of those who were custom feeding used a feed-plus-yardage method of levying charges, while others based their fees on cost of gain, flat yardage rates or a share of the gain. Comments from survey respondents indicated a recent growing interest in this practice. Custom feeding reduces feedlot operators' demand for short-term capital, and helps spread risk in a volatile market.

PROFILE OF THE CATTLE FEEDERS

Age and Experience

Survey respondents ranged in age from 22 to 77 (average age, 49), with the vast majority being between the ages of 36 and 65. Michigan cattle feeders average 28 years of farming and 23 years experience in feeding cattle. Ninety-one percent reported being full time farmers.

Intentions

Perhaps because of the many stressful conditions confronting farmers in general and cattle

Table 5: Reported capacity by lot types.

Lot type	Percent of feedlot capacity
Open lot	20.0
Open lot with partial cover	42.5
Covered lot w/out slotted floor	25.5
Covered lot with slotted floor	12.0
Total	100.0

Source: 1986 Survey data.

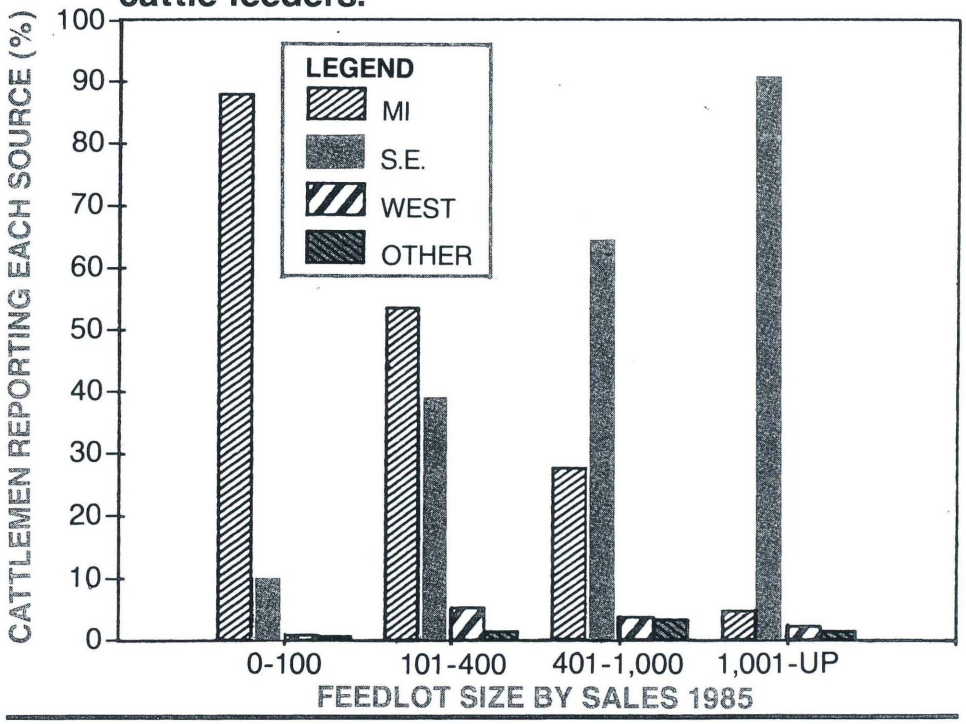
Table 6: Use of various purchasing services.

Source	Feedlot size by marketings—1985 101-400	401-1,000	1,001 & up
	%	%	%
Auction or personal arrangement	41.4	28.2	11.0
MLSE[1] Commission buyer	31.4	53.8	30.5
Independent Orderbuyer	20.1	18.0	58.0
Raised on farm	7.1	0.0	0.5
Totals	100	100	100

[1]Michigan Live Stock Exchange

Source: 1986 Survey data.

Fig. 2: Feeder cattle buying patterns of Michigan cattle feeders.



Source: 1986 Survey data.

feeders in particular, approximately 25 percent of *all* those surveyed responded that they were not feeding cattle at the time of the survey. However, none of those "currently feeding and sold more than 100 head in 1985" indicated an intention to discontinue. Nine percent planned to expand, 7 percent to reduce, 16 percent were undecided and 67 percent planned to maintain their current level of production.

It would seem that a turning point from the recent liquidation has been reached and, at least temporarily, that active cattle feeders are determined to hold on. Though liquidation, obviously, is not always by choice. Though this data points to stabilization in the cattle feeding business, more than two-thirds of the farmers questioned said that they were not optimistic about the future. It should also be noted that at the time of the survey (April 1986), cattle prices were very depressed, and the authors believe that the mood of the industry was particularly negative.

Major Farm Enterprises

More than 90 percent of the cattle feeders reported that, in addition to cattle feeding, cash crops were a major farm enterprise. Others included hogs, dairy and other livestock, reported by 18, 11 and 10 percent, respectively. The fact that a large majority of Michigan's cattle feeders produce all or most of their own feed indicates that Michigan cattle feeders use cattle feeding to market their corn crop.

CATTLE TYPES AND SOURCES

Sources of Feeder Cattle

Table 6 shows the breakdown of the purchasing practices of the responding cattle feeders.

The smaller cattle feeders purchased their stock locally, while those with larger lots purchased most of their cattle from the states south and east of Michigan and, to a lesser extent, from the West (Fig. 2).

Fig. 2 shows that buying patterns changed dramatically as the size of the feeding operation increased. In comparison, Table 7 shows the relative numbers of cattle that come from each region. It is possible that producers in the South and West are better able to assemble large groups of cattle that appeal to the operators of the large lots.

Types of Cattle

Table 8 gives a general breakdown of the kind of cattle fed.

Entry weights of cattle varied from approximately 100-pound deacon calves to over 850-pound steers. The most popular placement weight was in the 450- to 650-pound range for both steers and heifers. Lightweight feeders were more common among the smaller producers. Larger feedlots specialize in finishing, and therefore concentrate their efforts on heavier cattle that have been grown or backgrounded elsewhere, rather than placing young calves or light feeders.

MARKETING

Weights

The larger feedlots tended to market cattle of lighter finished weight, which may indicate that they fed primarily beef-type cattle that descended from British breeds rather than Holsteins or exotics. More than 70 percent of the fed steers were marketed between 1,050 and 1,250 pounds, whereas 77 percent of the heifers weighed between 950 and 1,150 pounds when marketed.

Outlets

The Michigan cattle marketing structure is characterized by the large percentage of the sales volume handled by the livestock cooperative the Michigan Live Stock Exchange. In this survey, the MLSE accounted for nearly 75 percent of all fed cattle sold. Services were provided in the form of either

Table 7: Various sources of feeder cattle.

Source	Percent	Number
Michigan	38	29,970
Southeastern states	55	43,377
Other states	7	5,521

Source: 1986 Survey data.

Table 8: Three major categories of cattle fed.

Type of cattle	Number sold	Percent
Beef steers	53,604	70
Beef heifers	13,760	17
Dairy steers	10,764	13
Total cattle fed by the survey respondents	78,867	100

Source: 1986 Survey data.

auction yards or direct-to-packer sales on a commission basis.

Michigan-fed cattle go to a variety of slaughter destinations (30 or more), both in and out of the state (Table 9). No one market consistently takes a majority of the cattle offered for sale. This presents a problem to feeders as they attempt to target their feeding program to match the demands of the market.

Table 9 shows a significant number of cattle going to Canadian markets. Unfortunately, the Canadian purchasing pattern is inconsistent and, consequently, unpredictable. Michigan cattle are imported only when the price differential is sufficient to compensate for the shipping and $1 per hundredweight (cwt) tariff. Several forces tend to influence this movement. In some cases, the Canadians import to fill the gaps in their production. At other times, shifts in the exchange rates will make importation profitable for a short time until local prices adjust to the change (Fig. 3). Although a significant number of Michigan-fed cattle go to Canada, the sporadic purchasing pattern makes it difficult to anticipate when the Canadian buyers will be in the market. Nevertheless, when they are, Michigan producers realize about a $1 to $2 advantage per cwt, which can represent a substantial margin for cattle feeders.

Table 9: Slaughter destinations of Michigan-fed cattle.

Packer location	Percent of cattle	No. of slaughter plants
Michigan	32.5	16
Out-of-state (U.S.)	45.0	9
Canada	22.4	5
Totals	100.0	30

Source: "Opportunities to Custom Feed Cattle in Michigan," S. Rust et al., MSU Animal Science Mimeo 105, October 1986.

MANAGEMENT

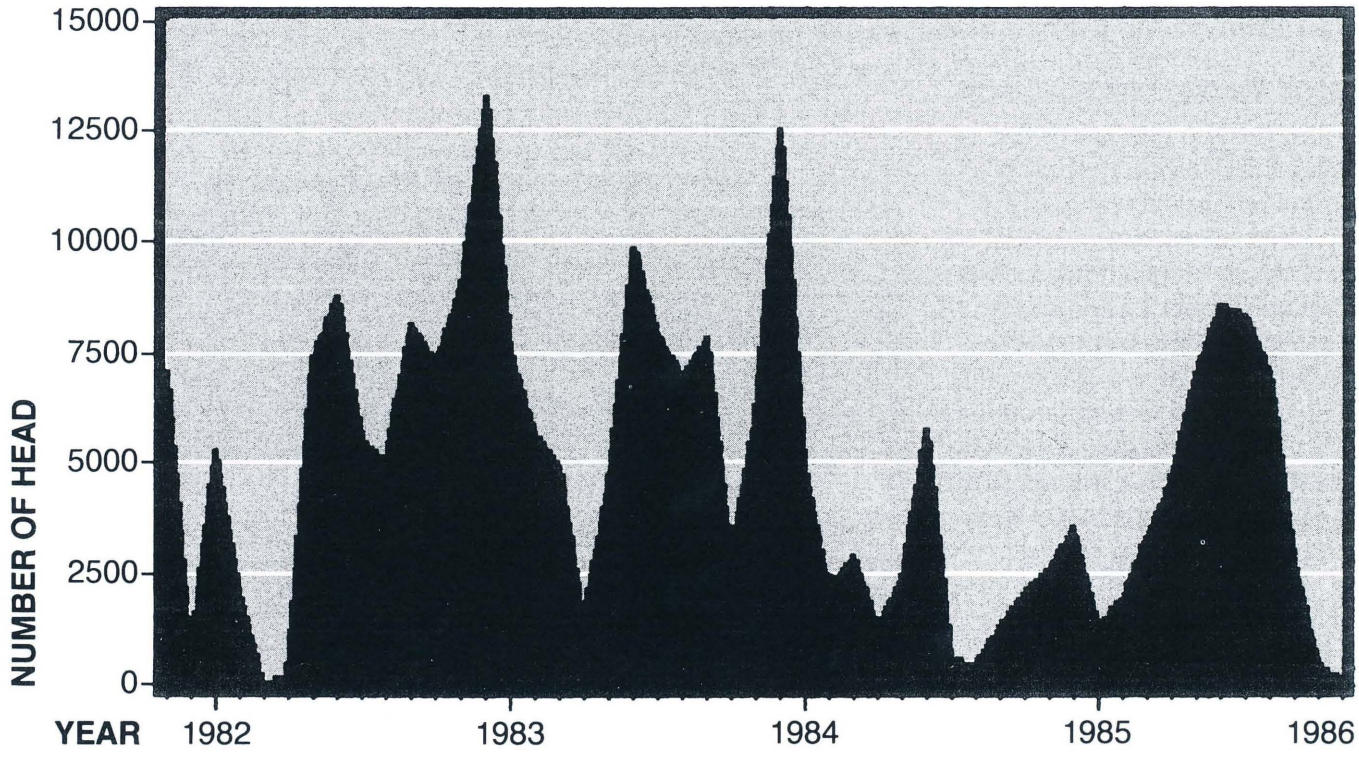
Futures Markets

Just over 20 percent of the responding cattle feeders reported making use of the futures and/or options markets as a tool to manage risk exposure or to forward price cattle or feed.

Cattle Feeding Practices

Sixty-eight percent of the respondents indicated that they fed their cattle to appetite or all the feed they would eat. The remaining 32 percent use a variety of

Fig. 3: Canadian monthly imports of fed beef from the United States 1982-86.*



*Michigan supplies 95 to 98 percent of the fed beef imported into Canada.

Source: Agriculture Canada, Agricultural Statistics, solicited data.

Table 10: Feedstuffs and reported use by Michigan cattle feeders.

Primary feeds		Byproduct feeds		Protein Supplements	
Corn silage	70.7	Brewers' grains	11.1	Soybean meal	33.3
Haylage	36.4	Corn gluten feed	13.1	Ammoniated corn silage	26.3
Alfalfa hay	56.6	Distillers' grains	4.0	Liquid supplement	6.1
Mixed and/or grass hay	9.1	Other grain byproducts	7.1	Protein blocks	5.1
Dry shelled corn	34.3	Potato byproducts	7.1	Other protein sources	21.2
High moisture corn	54.5	Apple byproducts	4.0		
Ground ear corn	22.2	Beet pulp	9.1		
Other grains	7.1				

Source: 1986 Survey data.

methods, ranging from requiring that the cattle "clean up" the ration offered within a predetermined length of time, to combinations of self feeding part of the ration and measuring the balance. Twenty-six percent of the responding cattle feeders routinely weighed the amount of feed delivered to the bunk daily. Of the approximately 59 percent of the respondents who utilized feed mixer wagons, about 64 percent had working scales.

Feeds and Supplements

Table 10 summarizes the various common feedstuffs used in Michigan and the percentage of cattle feeders reporting use of each type.

A majority of Michigan cattle feeders rely on corn silage as the main source of roughage.

Corn fed as grain appears in three standard forms—dry shelled, ground ear and high-moisture. The most popular form used was high-moisture corn, which was fed by as many feeders as the other two forms combined.

Brewers', distillers' and other byproduct grains were fed by 10 percent of the responding cattle feeders. Those reporting the use of these feeds represent some of the largest feedlots.

Other byproduct feeds, such as potatoes or apple pulp, were also used primarily by the larger producers. This can probably be attributed to economies of scale in handling, storage, and efficient use of perishable products.

Soybean meal appeared to be the most popular protein supplement, followed by anhydrous ammonia treatment of silage. A few of the smaller and medium-size lots relied on blocks and liquid supplement as supplemental protein sources.

Sixty percent of the cattle feeders added salt, minerals and vitamins directly to the ration, while 18 percent provided these nutrients free choice. The remaining 22 percent supplied them free choice as well as adding them to the ration.

Nearly 80 percent of the cattle feeders said they had their feed analyzed regularly, while 25 percent reported that the analysis is done at least quarterly.

Additives and Implants

Rumensin was reported as being fed by 83 percent of feeders while some used Bovatec (24 percent) and MGA (9 percent).

Compudose and Ralgro appeared to be the most popular implants. They were reportedly used by 63 percent and 56 percent of the feeders, respectively. Synovex-S and Sinovex-H were used by 21.5 percent of the feeders, and Steeroid and Heiferoid by 6.3 and 1.3 percent respectively.

Working Facilities

Headgates were reported by 77 percent of the feeders as part of their livestock handling equipment. Livestock scales were conspicuously absent, with only 19 percent reporting them as part of their equipment.

Concern for disease control was evident. Approximately 70 percent reported having either a separate hospital area or a chronic pen; 33 percent had both.

Vaccinations

Approximately 20 percent of purchased feeder cattle arrived preconditioned or vaccinated prior to shipping. Another two-thirds were vaccinated upon arrival, so a large majority of the cattle received preventive treatment for disease.

Records

About 63 percent of the cattle feeders said they kept some kind of performance records on their cattle. In most cases, this amounted to rough estimates of total gain and days-on-feed for entire pens of cattle. Individual performance records were lacking because of the relative absence of feed and livestock scales.

SUMMARY

Compared to the other states in the northeastern cornbelt, Michigan's production of fed beef

has remained relatively stable. Even though the survey was conducted during a time of particularly low prices, nearly all of the producers who were feeding at that time indicated that they expected to continue with their feeding operations. The continuation of a consistent level of output in the presence of a less than ideal cattle feeding and marketing environment indicates that Michigan cattle feeders have been successful in keeping input costs down and selecting markets.

From the supply standpoint, Michigan's primary advantage lies in the availability of low cost feeds such as corn silage and high-moisture corn. These are primarily the result of the often unfavorable fall harvesting conditions. When properly managed, they provide high quality sources of energy. However, they are not readily transported. In addition, the availability of lower quality grains and byproduct feeds enables feeders to choose alternative sources of inexpensive nutrients for cattle feeding. Michigan cattle feeders will succeed in turning out quality, salable beef using the available resources, provided they can reduce production costs sufficiently to compete with other producers.

On the demand side, the Canadian market and other local specialized markets provide the potential for profit to cattle feeders who can produce the desired quality and degree of finish required. Local centers of population also provide the potential for expansion of slaughtering and processing facilities in the event that sufficient supplies of fed beef become available to sustain them.

Michigan cattle feeders have the experience, technology and facilities to efficiently convert available feeds into a high-quality, salable product. Innovations in cost reduction and improved management practices have been substantial, but there is still much to be done in this area. The recent interest in custom feeding attests to the commitment of some cattle feeders to find new ways to make current conditions work for, rather than against them. Aggressive cost reduction efforts will play a major role in their remaining competitive and possibly capturing an even greater share of the regional market. Cattle feeding remains one of the best alternatives for marketing the Michigan corn crop.

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