

An assessment of sales opportunities for a beef feed operation

by

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ABSTRACT

Animal protein is a critical part of world food supply and food security. The primary sources of animal protein are largely produced in the central United States or Midwest.

Midwest Cooperative is a farmer-owned cooperative located in Ames, Iowa. Midwest operates as a grain, agronomy, processing, feed and ecological sustainability organization serving over 7,000 members. The feed business operates as a producer of finished feeds and a distributor of packaged feedstuffs for swine, beef, poultry, mutton and eggs

This thesis is an analysis of the beef feed segment of the business in Jefferson, Iowa. This facility includes milling, mixing, warehousing and repackaging operations. The beef feed business has been identified as a potential opportunity for growth business for the cooperative.

The objective of the project is to identify the current market share position of Midwest in the beef feed market. An evaluation was made of the current business performance of the operation. The current market information and the current production data opportunities for the business in the future are identified.

The evaluation of the operations indicates that while having a 13 percent share of the local beef feed market, it is failing in achieving profitability. This net loss is driven by high total costs of production. The operation has the capacity to increase its production without any additional investment but the increase in production to maximum levels will leave still 56 percent excess capacity and a net loss to operations. Reimagining the current structure could achieve the desired business enhancement.

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CHAPTER I: INTRODUCTION

Farmer-owned cooperatives were created to expand market power, which provided benefits of capturing cost savings and increasing market share. Cooperative ownership is structured as the customers are also shareholders and therefore have an increased ability to influence operational decisions. Providing value for shareholders is paramount to firms organized as a traditional cooperative. Maintaining the critical balance of satisfactory customer service and profitability is a challenge faced by those organizations. The shareholders called “members” might view the primary functionality of the cooperative differently, some as more of a break--even or service focused business, while others may prefer it ran as a for--profit business where shareholder returns are distributed as dividends called patronage.

Animal feed is a service area that many agricultural cooperatives include in their organizations. Midwest Cooperative is a farmer--owned cooperative in Iowa; it includes grain, agronomy, processing, feed and ecological sustainability businesses. The Midwest Cooperative feed business includes beef, swine and poultry feed.

1.1 Cooperative Feed Milling

Feeds were one of the early and high-volume supplies that farmers purchased through their cooperatives (Agriculture 1991). It was the desire of the growers in that time to create an environment where their collective demand could yield a reduction in the production costs of their livestock operations.

In its earliest iterations the feed business in the Midwest region, cooperatives custom ground grain for farmers and would mix in supplements. (Agriculture 1991). Some dairy and egg production processes consumed a “mixed” or formula feeds that were made by the mills of other firms. During this period of time, feed milling was done in a few locations

and distributed great distances. After World War II, cooperative feed milling volumes increased greatly, growth occurred in small formula-feed mills and “medium-size” mills built by regional organizations. (Agriculture 1991)

As the industry evolved, more advanced medicated rations were developed, and land-grant universities conducted research to improve feed efficiency. Advancements in milling equipment and bulk handling equipment created opportunity for larger volume facilities. These larger facilities were supported by improvements in transportation with bulk feed delivery trucks, infrastructure and additional milling capacity created by new technologies in manufacturing. Some production was allocated towards specialized rations or batches and bulk product in lieu of the conventional bagged feed.

1.2 U.S. Beef Feed Industry

The United States beef herd is largely heterogeneous by nature including more than 80 breeds and crosses. Much of the beef that is bred for slaughter is a crossbred animal. Much of this herd diversity is derived from the production goals, geographic location and climate the herd is to be raised in. (Drouillard 2018)

Domestic beef production is highly segmented, which differentiates it from the more commonly vertically integrated meat production of swine and poultry. This segmentation means that the ownership of the livestock is likely to change several times throughout the production process. The production process includes such stages as cow/calf, backgrounding, stocking, feedlot/finishing and finally slaughter.

Iowa is the number eight producer for cattle in the United States. (USDA 2021) The state’s proximity to row crop production and climate favorable for cattle production makes Iowa an attractive location for beef production. While important to the state’s economy,

beef is second in total livestock income to swine. Iowa is the largest swine production state in the country.

1.3 Problem Statement

For Midwest Cooperative, swine feed manufacturing is divided between two of its own feed mills and a toll milling agreement with another local production facility. Poultry feed is a small portion of the nutrition business and is supplied by a single feed mill. The dairy feed business is primarily focused around SoyChlor, an additive to reduce milk fever. The beef feed production portion of the business had to be re-established after a mill closing in Ralston, Iowa. The production facility was retrofitted into an existing warehouse in Jefferson, Iowa and became operational in 2018. However, the current feeds sales may not be organized to take full advantage of the future market potential. Should Midwest Cooperative pursue enhancing its beef feed business?

1.4. Research Objectives

To help assess the opportunities to enhance the beef feed business and answer the study's research question, the study will:

- 1) Identify the alternative feed sales opportunities
- 2) Explore the beef operations' capability to supply any new demand
- 3) Apply return on investment and market share criteria for Midwest Cooperative

1.5 Research Contribution

An analysis of the beef feed operation will help to define expectations as the company considers new market opportunities. The Beef Feed Center in its current operational status uses five percent of the total facility and property but carries the entire cost. This research seeks to explore if feed milling assets can increase utilization to increase the beef feed operations profitability. The beef feed business is currently averaging a \$13,834.30 loss per month in its operations. Identifying an alternative approach to asset utilization could eliminate a \$166,011.60 loss per year.

CHAPTER II: LITERATURE REVIEW

The literature review will enable the evaluation of market foundations and maximized production. The review addresses the challenges of determining whether to expand the beef business within its current geographic location or explore expanding sales into new territories. Additionally, research has documented that return on investment and market share are significant indicators on the success of undertaking a market growth strategy. Limitations of the literature review include the lack of access to private information regarding the extent in which each factor is used to help make a decision. The works cited does provide a basis, background, and criteria that effect company profits.

2.1 Market Share and ROI

Market share is a primary element of business profitability. It was identified as a primary factor in the Profit Impact Market Strategies (PIMS) project. (Robert D 1975) In their study, Buzzell, Gale and Sultan identified a strong correlation between market share and return on investment. Organizations that market and sell general goods as well as specialized items share similar return results, based on their market share position. Why is market share profitable? Three explanations are given as to why higher market share increases profitability. They are economies of scale, market power and quality of management according to a 1975 study by the Harvard Business Review.

The PIMS research presented two influences that can modify the relationship in market share and profitability. The first is the frequency of the goods purchased and the second is that market concentration. With an infrequently purchased product, the “market leader” enjoyed a 28 percent higher ROI, while frequently purchased items that spread was narrowed to 10 percent. The infrequent goods tend to be higher cost, more durable and difficult to evaluate, meaning the risk of a poor decision weighs heavier on the consumer.

When looking at market concentration a more fragmented market allowed the “market leader” a 27 percent better ROI where a more concentrated market was reduced to only 19 percent. Concentrated consumers enjoy a greater ability to bargain for unit cost reductions than that of a fragmented consumer. (Robert D 1975)

Market share growth is often a goal of many organizations, but the study showed that the ability to realize a targeted return on such an investment was correlated to the market share the organization enjoyed prior to the growth strategy. The study noted three factors which should be considered before undertaking such a decision. Those factors include; does the company have the necessary financial resources, will the company find itself viable if the effort is unsuccessful and will there be regulatory influence that will limit their ability to achieve success? Companies with a 40 percent or greater market share enjoy a more than 22 percent better ROI in building market share strategies over smaller share organizations of under 10 percent. Knowing your organizations market share can be indicative of success in building growth strategies.

2.2 Maximizing Production-Distribution

There exists in most business systems the opportunity to optimize its processes. There have been many different models created to optimize, through the integration of inventory and distribution. These models have been proven effective by organizations like Amazon and Walmart. An additional factor that other organizations’ structure leave to be addressed is production. Managing the “Total System Costs” through consideration of production, inventory and distribution create potential opportunity for improvements.

When one commodity is produced that is distributed to several consumers, with varying consumptive rate and storage capabilities, a more calculated approach must be

undertaken to minimize total costs. Production costs, inventory and transportation costs will all be necessary for diagnostic analysis. (Claudi Archetti 2011)

Two inventory policies were used in this analysis. The first being “Maximum Level” in which a standard inventory level would not be exceeded, giving the producer greater flexibility. The second being the “Order Up” policy which would set a range of minimum and maximum inventory which must be maintained. (Claudi Archetti 2011) In either policy there exists a challenge in the distribution of the goods to meet the consumer demand. Both inventory policies were modeled by Bertazzi, Paletta and Speranza with several constraint variants including both consumer inventory storage and transportation unit limitations. It was concluded that in a short-time horizon the ‘Maximum Level’ policy guarantees a smaller cost where the savings are realized in both production and distribution. In observations of a longer time horizon the cost difference between the two decreases. (Claudi Archetti 2011) “Order Up” is a traditional methodology where the consumer directs its own replenishment. Controlling the total cost with the “Maximum Level” approach takes a vendor--managed inventory approach.

2.3 Animal Protein Supply and Demand

The world meat market is influenced by many factors including consumer preference, trade policy, animal welfare, sanitary restrictions and animal disease outbreaks. The future of the global meat market is supply expansion in time period of 2020-2029. (FAO 2020) It is expected that much of the supply growth will occur in developing countries. By 2029 overall meat consumption is projected to increase by 12 percent. (FAO 2020) Consumptive growth is expected to be slower during the mid-2020’s due to income growth levels, age and consumer preferences shifting to a higher quality product.

Nominal meat prices will remain strong in that same period, while real prices look to decline. Beef price movements are projected to be sharper due to its significant production in developed countries where herd sizes were increased. As herd sizes correct in response to sales prices and production costs, production growth will slow. In response, nominal prices will look to increase. (FAO 2020)

Production growth in the beef feed market in developed countries is expected to be 4 percent by 2029. (FAO 2020) The growth will be more heavily influenced by production in North America with higher carcass weights due to lower feed costs and increased herd sizes. Other developed areas like the European Union will see decreased beef production as dairy efficiencies had reduced herd sizes, dairy herds make up approximately two—thirds of the beef production.

Poultry and pork offer a lower price meat product with reduced production costs. Slow income growth during the 2020-2029 periods indicate that growth in poultry consumption is likely to be the largest growth. Beef consumption is expected to account for 16 percent of meat consumption growth during the period. Production costs create departure in the price and therefore consumer willingness to purchase the product. Efforts to reduce costs along the beef supply chain could help beef become a more competitive meat source.

As a top 10 producer of beef in the United States with a herd size of 3.9 million head, Iowa would be expected to be a part of the increased productivity. Although, data from Iowa State University shows total cattle and calves inventory down year on year by 5.2 percent in Iowa, which contrasts with a .2 percent contraction in the national inventory. (Schulz 2021) Much of the cattle inventory in the State of Iowa remains on family farms.

“Family farms” are any farm where the producer and persons related to the producer own a majority of the business. (Schulz 2021) As much as 97 percent of the cattle operations are family farms and 93 percent of the cattle inventory are owned by these operations. The Iowa production is a strong example of the segmented market mentioned prior.

2.4 Summary of Literature

In the study, an analysis was conducted on the beef feed production facility for Midwest Cooperative. Market opportunity, current operational state and opportunities for the future of this business was considered. Alternative ideas for the future of the Beef Feed business will be the primary deliverable.

Research literature on the trends of the world market and the anticipated local production response assist in defining opportunity for the feed operations serviceable area, defined as a 60-mile radius of Jefferson, Iowa. Production data were used to derive the current market share of the organization. Higher market share is correlated to higher ROI, this will help demonstrate the scope of the current opportunity. This information was used to determine an expected ROI on any facility improvements or enhancements. It is expected that a greater share of the market will be an indicator of a stronger ROI. An analysis will be undertaken on a frequently purchased product in a market with little buyer concentration therefore, the expectation would be that the percentage would be in the 10-20 percent range for a two percent market share gain over a two—year period. (Robert D 1975)

A review of the operation by the lowest total production costs takes into consideration the production, inventory and distribution of the finished product, in lieu of the current performance measurement indicator. An opportunity to find a greater total costs

savings is expected. As well as a reimagining the inventory policy as a Maximum Level or vendor--managed system, rather than the Order Up or consumer--driven ordering today.

CHAPTER III: DATA

Data is used to inform the study as it relates to the local market share and current operations. Market share is used to understand Midwest' market participation and opportunity. The current operations are examined in terms of capacity utilization and financial performance.

3.1 Introduction

The information used to define market share includes information on herd sizes, herd production system, geographic location and the cattle feed intake. Much of this can be derived using USDA/NASS agriculture information. That information will define a local feed tonnage demand. The use of internal feed sales and production data from Midwest is used to demonstrate the company's current production and production opportunity. Input from subject matter experts in the feed industry will inform the study. Lastly, current plant production capacities and financial performance will be evaluated.

3.2 USDA/NASS

USDA/NASS data is collected from the Agricultural Census conducted by the two organizations. It provides the population density and production environment. From this data, market trends are identified, and feed demand assumptions are made for the local production. The study is focused on seven local counties in West Central Iowa. Each county is adjacent to Greene County, which is the location of the Midwest Beef Feed Mill and within a radius of 60 miles. The six counties analyzed are Boone, Dallas, Guthrie, Carroll, Calhoun and Webster. In a summary of the USDA/NASS data below the total population of cattle is represented in the "All" heading, while the beef heading is only beef

cattle that have calved. These designations can help to understand the varying production environments. Total cattle population within the seven-county area is 176,000 head.

Table 3.1: Summary of County Population Data

	All			Beef		
	2018	2019	2020	2018	2019	2020
Greene	19,500	19,400	19,100	4,900	4,800	4,600
Boone	14,600	14,400	14,200	4,100	4,000	3,900
Dallas	22,500	22,000	22,000	-	-	-
Guthrie	32,000	31,500	31,500	-	-	=
Carroll	60,000	60,000	59,000	10,800	10,600	10,300
Calhoun	19,500	19,400	19,000	5,800	5,700	5,500
Webster	11,400	11,300	11,200	-		

“-“ indicates no information recorded for the county or year

3.3 Midwest Feed Offerings

The finished feed products from the Midwest Jefferson, Iowa mill in Greene county includes 25 products. These offerings include cattle grower, finisher and other small animal blends. These other small animal blends are sheep and goat formulations. The mill operates primarily for Midwest’ beef feed production. As shown in Appendix A, each feed is unique in its formulation. Many of the feed ingredients are alike, but the formulation is differentiated only slightly. For example, there are 20 beef formulations with 10 of those are within 15--pound range in cracked corn inclusion. The formulations include an average of four individual ingredients, while one formulation has as many as 17 different ingredients. The small variations necessitate small batch sizes for the operation. Larger batch sizes can create a cost--reduction opportunity by increasing processing operational efficiencies.

3.4 Mill Performance

The Jefferson mill is a milling, mixing and a cleaning process. A plant production diagram is included in Appendix B. The operation is accomplished with two employees. The mill's 2020 production indicated in the Board Financial Report was an average of 262 tons per month. Existing raw material storage capacity for the location is 504 tons for whole and milled corn, 50 tons for oats, 50 tons for soybean meal, 24 tons for a premanufactured developer product called "Accuration Developer" and finished feed storage of 90 tons. The roller mill's capacity is 24 tons per hour, which allows it to process four times more than the product can be mixed. The Davis mixer has a three-ton batch capacity and is currently performing at six tons per hour in the current process configuration. Cleaning is completed utilizing a Rotek screener that can clean at upwards of 18 tons per hour. The capacity could be increased, but the effectiveness of screening is reduced. At its current configuration it can process three times more than the mixer is capable of handling. The mixer is observed to be the operational limiting factor or bottleneck.

3.5 Business Financial Performance

The milling operation includes the beef feed mill, packaged feed options and a liquid feed packaging plant. All the activities are included in the 2020 Board Financial Report in Appendix D. To segregate feed milling operations, the data collected and organized in Appendix C does not include costs associated with those peripheral activities. The data collected from the milling operations indicated that each month the beef operation results in an average net loss of nearly \$14,000.

Using current market share to determine the expected ROI for a growth plan was introduced in the literature review. The study showed that the higher the market share percentage the higher the expected ROI. Below in Table 3.2 is the summary of the of relationship between the two. For example, if an organization captures 30—40 percent of the market it should expect to enjoy an average ROI of approximately 24.1 percent.

Table 3.2: ROI of Growth Plan by Market Share %

Market Share %	Average ROI
Under 10%	7.5%
10 – 20%	13.3%
20 – 30%	20.5%
30 – 40%	24.1%
40% or Over	29.6%

Source: (Robert D 1975)

Concentration ratios are used to indicate the size of a firm in relation to an industry. The C4 is a ratio that indicates the market share of the four largest firms in its respective industry. A low concentration ratio would indicate greater competition among the firms in that industry, compared to one with a ratio nearing 100%, which would be evident in an industry structure characterized as a monopoly. The scope of the industry that these ratios are used to analyze can be focused to a smaller geographic area. This study uses a C4 ratio to assess the degree of market power, which could impact the decision to extend the Landus’ geographic reach. While exact information isn’t available, effort put towards estimating the C4 for the local market is shown below.

Table 3.3: Local Beef Feed Market C4

Firm	Outlets	% Share
Mid-States	1	24%
Midwest	1	13%
Bomgaars	5	5%
Thiesens	2	1%
C4 Concentration	-	43%

The C4 analysis estimates that Mid-States Milling has the largest market share, but it would also suggest the structure of competition is monopolistic. There does exist additional competition in smaller or specialty feed providers. These are typically represented by producers that become dealers to support cheaper procurement costs for their operations.

Mid-States operates in the local market as well as additional areas, which allows them to supply the additional demand needed to reduce its operational costs. In addition to beef feed sales Mid-States is in the dairy feed market and has the largest dairy farm in Iowa as a customer. Mid-States uses its facility for other supplying feed formulations as well to maximize their production. Bomgaars and Thiesens are farm retail stores. Both companies pursue smaller feed demand customers, such as hobby or project farms. These providers offer finished formulations in 50--pound bag quantities. This segment of the feed industry is characterized by its low volume and intense quality management, which presents a barrier to entry for high volume and moderate quality management, provided by companies similar to Mid-States or Midwest Cooperative.

CHAPTER IV: ANALYSIS

An evaluation of the local market opportunity and the current production data is used to determine the current market share. Market share is indicative of the expected ROI of a growth strategy, increasing market share by one percent will increase an ROI by an average of .55 percent. Midwest allocates capital to maximize return. Based on current projects, returns of less than 10 percent would likely not be assigned. The formula used to evaluate the ROI of additional sales or increased market share is $\text{Gains from Investment (increased sales)} - \text{Cost of Investment (total costs)} \div \text{Cost of Investment}$. This will use the dollars gained from additional investment less the increased variable costs and fixed costs divided by the total costs to evaluate the ROI.

Analysis of the Beef Feed Center operations determines the current facility utilization and the realizable capacity. Evaluation of feed formulations is used to understand its impact on asset utilization. Assessment was conducted on delivery and the associated charges. This will identify any future required enhancements and what infrastructure investment would be needed to capture these opportunities.

The fundamental profit function is $\text{Profit} = \text{Revenue} - \text{Cost}$. The study is working toward understanding revenue potential based on market share, cost reduction potential through improved efficiencies and profitability that must be substantiated by an adequate return on investment. The formula for cost is the total cost or $\text{TC} = \text{Fixed cost (underutilized production)} + \text{Variable Costs (average production and average transportation)}$. The formula for revenue is demonstrated as $\text{Revenue} = \text{Average tons} * \text{Average price}$.

The financial performance is evaluated to understand the opportunity to promote the operation to a profitable contributor to the Midwest portfolio. Evaluating the production in a cost per ton approach is completed to understand the largest cost factors and offer methods to course correct any loss leaders.

4.1 Market Share

The 60-mile radius from Jefferson, Iowa is identified as the targeted market to evaluate. A one percent increase in this local market represents an additional \$13,000 in sales. The area includes 176,000 head of cattle, a result of a one percent decrease in each of the last two years of USDA/NASS data. Of that total population, 15-20 percent will never be fed a finished feed option. (Long 2021) In the target market, USDA/NASS data indicated that in the last three years cows that have calved decreased two and three percent. This suggests a decrease in breeding operations' sizes.

For this study feed market categories are defined as "Cattle", "Feedlot" and "Dairy Cows". The potential sales opportunity for each category can be seen in Table 4.1. This infers a demand for finished feed products in these counties. A feed potential opportunity based on 300 pound per brood cow per year and one pound per feedlot head per day. (Long 2021) Based the greatest population of cattle in Carroll and Guthrie counties, feed demand is expected to be the highest. For example, Greene county has an expected demand of 910 tons of cattle feed for herds other than dairy and feedlot operations are expected to feed 1,492 tons annually.

Table 4.1: Feed Opportunity (Tons)

County	Cattle	Feed Lot	Dairy Cows
Greene	910	1,492	
Boone	589	1,109	
Dallas	1,308	865	323
Guthrie	1,639	1,799	275
Carroll	1,140	8,536	
Calhoun	455	1,560	
Webster	355	550	200
Total (Tons/Year)	6,396	15,911	798

Source: Based on Purina Mills report (Year)

Based on Midwest’ production data the 2020 milling operation can meet the demand of “Cattle” production, with 56 percent of the mill’s capacity still available. The data also indicates that if focused exclusively on feedlot feeds the mill could fill is operational capacity but would fall nearly 11 percent short of the county’s total feedlot finished feed demand. “Feedlot feed blends are a more difficult market. This feed is more often mixed on-site with ingredients being sourced individually.” (Anderson 2021)

Looking only at the “cattle” market demand of 533 tons per month the feed operation’s current average monthly production of 263.88 tons, would indicate a 50 percent share. (Anderson 2021)

4.2 Production and Distribution

The Beef Feed Center’s production capacity is 300 TPW (ton per week) or 1,200 tons per month and based on a 50--hour work week. This takes into consideration a 10--minute loading, 2--minute mixing and 15--minute unload cycle. At 300 TPW and limited

product differentiation the facility is turning its finished feed inventory storage 3.3 times in a week cycle. This calculated production opportunity will be used to indicate an amount that could be sold. (Appendix F)

4.2.1. Mill Production

The mill produces an average of 263.88 tons per month, which indicates the mill operates at approximately 22 percent of its production capacity. In discussions with the current mill operators, a bottleneck exists in the conveyance equipment, but those limit operations only to the previously mentioned 1200 ton per month capacity. This would indicate additional capacity for the milling operation of more than 900 tons per month.

4.2.2 Labor Allocation

One factor that will be required to capture the maximum output is the allocation of labor specifically assigned to milling tasks. The current labor pool's utilization is supplemented with other center activities. The liquid feed activities require approximately 20 hours per month, an average of 18.5 hours. This utilization reduces potential beef feed productivity by 111 tons per month. As evidenced in current production, labor today is not a limiting factor of production.

4.2.3 Feed Formulations

Data gathered from the operation indicates 25 formulations are being mixed at the production facility. Most of the mixes are made in less than truckload quantities, creating a broken or dead freight scenario. In order to cover some of this efficiency loss the business is charging a minimum delivery quantity of 8 tons. With an approximately 24-ton capacity this still leaves 16 tons of dead freight in less than truckload quantities. That dead freight, if unused, would indicate an opportunity cost of \$34.56—\$153.60 depending on delivery

distance. Aside from complications and costs of the diverse formulations on distribution it limits the production facility in that it has restricted segregated storage. When the quantity of any blended formulation rises above 30 tons the ability for the facility to segregate is reduced as multiple bins must be used for the same product. Irregular quantities limit the storage efficiency and can create a need for increased shipments to manage space.

4.3 Financial Performance

Evaluation of current financial performance using the $\text{Profit} = \text{Revenue} - \text{Costs}$ equation indicate the costs are exceeding revenues, the Beef Feed Center is averaging a loss of \$13,834.30 monthly in net income for its operations. Profitability is necessary to remain viable in the Midwest feed business portfolio. As mentioned above the financials are a culmination of milling, packaged product sales and packaged liquid sales. A summary of the year to date financials are available in Appendix D. In Appendix E is a representation of labor allocated specifically to the bulk repackaged liquid feed products. Appendix C represents an adjusted P&L to attempt to specifically address the costs directly associated with the milled feed business.

4.3.1 Highest Costs of Production

Expenses were evaluated on a per ton basis to determine where the highest costs of production existed. The equation: $\text{Total costs} = \text{Fixed costs} + \text{Variable costs}$ is used to account for the cost of operation. The total average variable costs of production per ton were \$18.67 of \$90.34 total costs of production, indicating that variable expenses account for slightly more than 20 percent of the production costs. Of those variable costs the largest were fuel expense at 23 percent and repairs to licensed vehicles at 27 percent, both of which are associated with the delivery of the product at \$9.37 per ton. Delivery charges are determined by traveled distance. Currently only the 41—55 mile range covers our

identified associated costs of delivery with a \$0.92 per ton profit. All other distance range charges average a \$2.78 cent loss per ton.

Table 4.2: Delivery Profit/Loss

Miles	Base Rate	Fuel Surcharge	Adjusted Rate	Cost per ton	Profit/Loss
0-10	\$ 5.70	\$ 0.69	\$ 6.39	\$ 9.37	\$ (2.98)
11-20	\$ 6.29	\$ 0.69	\$ 6.98	\$ 9.37	\$ (2.39)
21-30	\$ 7.40	\$ 0.69	\$ 8.09	\$ 9.37	\$ (1.28)
31-40	\$ 8.42	\$ 0.69	\$ 9.11	\$ 9.37	\$ (0.26)
41-55	\$ 9.60	\$ 0.69	\$ 10.29	\$ 9.37	\$ 0.92
56+	\$ 2.16	\$ 0.23	\$ 2.39	\$ 9.37	\$ (6.98)

Total expenses for the location include variable, fixed and payroll costs. Payroll accounted for \$28.82 per ton, which is 32 percent of the total costs. Fixed costs are 47 percent of the total expense with a \$42.82 per ton allocation. Of that \$42.82, depreciation comes in at \$30.40. The depreciation for the building is 34 percent of the total expense and 39 percent of the total income per ton. The existing milling operation occupies 5% of the total property and requires very little of the resources provided from the existing asset for its operation, this depreciation is prohibitively expensive for the milling operation at an average monthly cost of nearly \$16,000.

4.3.2 Revenue Generation

The tons indicated in the revenue portion of the board financial report are a combined total for the bulk, packaged dry and packaged liquid feed sales as sales margin for each individual product were not available to the study. Revenue = Average tons * Average price was used. Gross income for product sales are \$67.68 per ton. Total operational expenses are \$94.66 per ton leaving a net loss of \$26.98 per ton. Increasing revenue would require an increase in production volume, increase in sales price or both.

While there is opportunity to increase production tonnage, increasing sales at the current price level to a level where Midwest is capturing 100 percent of the tons available in the local cattle segment would only improve the net loss per ton to \$22.79. Keeping the price fixed in the current market would not yield a favorable result. Current market structure, concentration, availability of alternatives leaves small opportunity to increase prices substantially.

4.4 Analysis Summary

The identified 13 percent of finished beef feed market and 50 percent market share of “cattle” finished feed production is utilized for ROI evaluation. The analysis indicates there exists an opportunity to increase sales. Due to the industry market structure there is limited market power in order to influence the market price for feed. There also exists opportunity to improve the total production costs. Reducing costs will improve the profitability of the operation. These findings will support a decision in pursuing enhancements of the beef feed business.

CHAPTER V: RESULTS

The study of Midwest Cooperative's beef feed business was undertaken to understand opportunities for expansion. The analysis found several areas that could be used to improve current business and explore the expected return on enhancements to current operations. Sales opportunities were identified as additional demand with the local market. Operations capabilities were explored, and operational efficiency improvements were discussed, including an inventory policy recommendation. ROI of a growth plan was discussed in relation to the beef business's current market.

5.1 Market Share and Feed Sales Opportunities

The results of the analysis showed an opportunity for growth. This opportunity is represented as additional tons of demand not currently being met by the beef feed milling operation. The mill's current capabilities would allow it to meet all the "cattle" finished feed needs in the 60-mile radius of Jefferson, Iowa and still dedicate capacity towards feedlot production to maximize asset utilization. The beef feed operation is currently averaging nearly 264 tons per month of production while the market is indicating a 1,925 ton per month total finished feed demand and a current market share of 13 percent. When considering only the "cattle" market share that percent increases to 50. This segmentation could increase an expected ROI on a growth strategy by nearly 20 percent. These increased volumes would help to decrease total fixed costs, but without the opportunity to expand radius past the 60 miles or participate in feedlot demand to increase revenues the current total production costs yield a net loss. Even capturing 100 percent of the "cattle" feed market, would leave 56 percent excess capacity for the mixing operation and a net loss of \$22.79 per ton.

5.2 Operational Capability

The current operation has additional output capacity available for production. The current setup could yield an additional 900 tons per month of product if fully utilized, adding additional production should allow that operation to capture greater operational economies of scale by reducing fixed costs. Reducing product offerings will reduce cycle times creating a greater production opportunity. While a reduced product offering creates mixing efficiencies and reduced costs, it also helps to promote logistical efficiencies by facilitating less dead freight and more calculated inventory movements. Delivery was found to be the second largest cost of the operations and assigned at a loss with current freight charges. Due to limited segregation in finished product storage, deliveries must be made more often for a larger product offering. Introducing efficiencies into the logistics of the finished product and adjusting freight charges would remove a potential loss leader from the total production costs

Narrowing the product line to fewer customized specific feed offerings can offer more consistent demand, stronger asset utilization and decreased response times. Focusing demand around a specific portfolio of products offers the opportunity to approach customers with a vendor--managed inventory approach or maximum—level approach, allowing for lower total production costs. A maximum—level approach would improve profitability by reducing distribution costs.

5.3 Enhancement ROI

Considering the current market share of Midwest, the PIMS research would indicate that the expected ROI for a 2 percent market share growth for the Beef Feed Center to be 13.3 percent. In Table 5.1, the study's analysis indicates that to reach that same 13 percent ROI an increase of market share of greater than 150 percent would be

necessary. That significant difference is due to prohibitively high total costs of operations for the Beef Feed Center. This is a level in which a project might be assigned capital within Midwest. The local feed cattle market was represented as a fragmented market and the feed product as a frequently purchased good, which would indicate a tendency to weaken an ROI. The three factors to be considered in an enhancement strategy are first, will the operation be viable after growth? The analysis indicated that despite capturing 100 percent of the seven county “cattle” market, the enhancement would not yield a viable result. While the other two factors were a more positive conclusion as the organization does have the financial resources and there are not any regulatory restrictions on a growth strategy or enhancement.

$\text{Profit (f)} = \text{Revenue} - \text{Costs}$ is the primary financial function. Increasing revenue to indicate 100 percent of the “cattle” market share will yield a loss due to prohibitive operational fixed costs. The chart below shows what level of Market Share dollars would be necessary to achieve an acceptable ROI. The “Target” is very likely near the point of diminishing returns as additional investment would need to be made to increase capacity beyond that point. For example, if sales were increased 50 percent, we would realize a -4 percent ROI for the change due to average total costs being in excess of the gain from additional market share.

Table 5.1: ROI to Market Share

Base (Current)	Market Share (Net \$)	Output Quantity	Average Fixed Costs	Average Variable Costs	Average Total Costs	ROI
Current	\$ 40,000	264	\$22,000	\$27,000	\$ 49,000	-18%
50%	\$60,000	396	\$22,000	\$ 40,500	\$ 62,500	-4%
100%	\$ 80,000	528	\$ 22,000	\$ 54,000	\$ 76,000	5%
150%	\$ 100,000	660	\$ 22,000	\$ 67,500	\$89,500	12%
Target	\$ 105,000	693	\$22,000	\$ 70,875	\$ 92,876	13%
200%	\$160,000	792	\$22,000	\$108,000	\$130,000	23%
500%	\$400,000	1584	\$30,000	\$270,000	\$300,000	33%

Figure 5.1 shows a graphical representation of the costs relative to ROI. You can see average fixed costs remain constant until just before a 500 percent increase in market share dollars, this would indicate additional capital investment in the facility would be necessary to increase the production to that level.

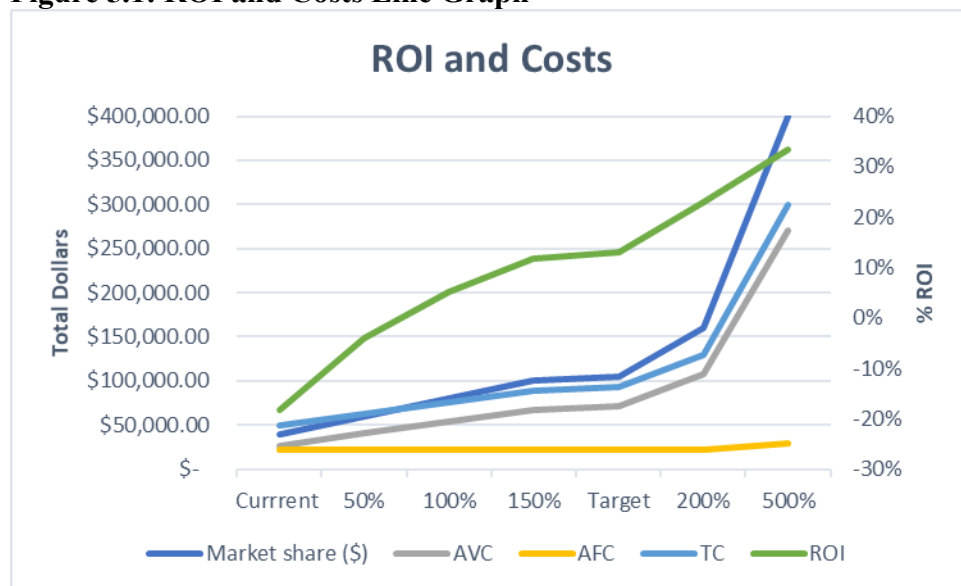
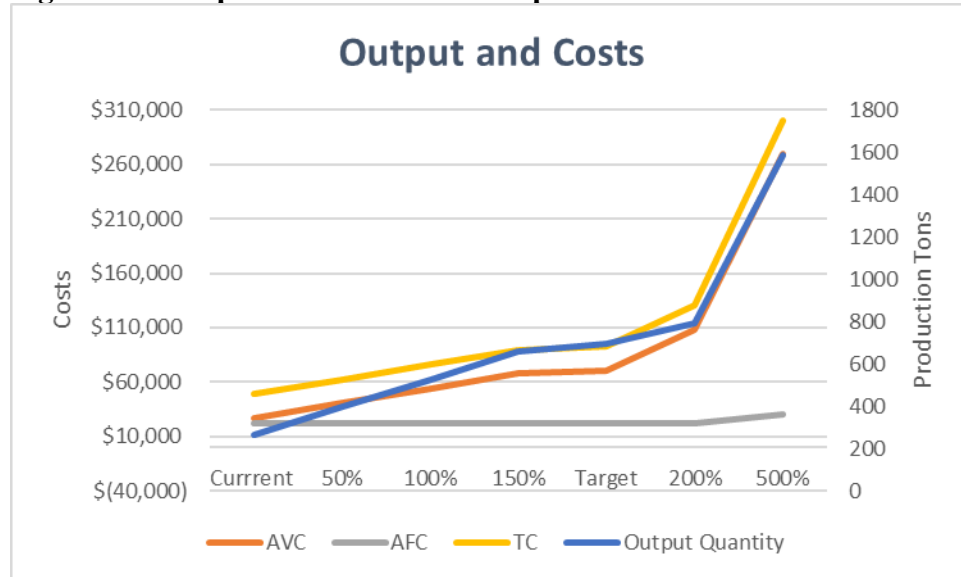
Figure 5.1: ROI and Costs Line Graph

Figure 5.2 shows a graphical representation of the costs relative to the tonnage output. Looking at the production tonnage as an alternative to the market share dollars shown in Figure 5.1. The economies of scale are recognized just before the 500 percent increase from base production level.

Figure 5.2: Output and Costs Line Graph



CHAPTER VI: CONCLUSIONS

The study's three objectives were to: 1) identify the alternative feed sales opportunities; 2) explore the beef operations' capability to supply any new demand; and 3) apply return on investment and market share criteria for Midwest Cooperative.

First, whether Midwest Cooperative should pursue enhancing its Beef Feed Business, there have been several important factors identified to inform the decision. The current market position of the operation is that it is supplying 13% percent of the total finished beef feed demand in the seven--county area identified as Boone, Dallas, Guthrie, Carroll, Calhoun, Webster and Green Counties in Central Iowa. A growth strategy with the goal of increasing 2 percent of market share in that total market share range would be expected to yield a 13 percent ROI, which would be an acceptable level to be considered for investment. Opportunities identified for the beef feed business include reducing the number of formulations mixed to increase efficiencies and reevaluating delivery charges to eliminate a loss leader in the operations. There exists excess capacity in the current milling operation which could be utilized to increase tonnage output.

Second, the Beef Feed Operation at Jefferson is currently yielding a net loss which doesn't maximize the opportunity for Midwest Cooperative and its members. The financial capital and physical assets could be deployed in another fashion to create added value. For example, a similar sized warehouse could be leased for minimum of \$10 per square foot per year, leading to a minimum breakeven return on cost of ownership based on market rate for listed warehouse space in the area. Through the research it was found that there exists an opportunity to expand the current operations without additional physical investment in the facility, rather by the increase of sales volume. The identified market opportunity does

not provide a viable return for the operation under the current operational model. Capturing 100 percent of the defined market would still yield a loss of \$22.79 per ton of production. Increasing market share even to the highest achievable level will not yield a positive ROI due to prohibitive total production costs. Changes will need to be made to the structure of the business to create a sustainable business scenario.

As an alternative to the existing operation a toll—milling agreement or a third—party production could be utilized to meet the Midwest customers’ needs in the finished feed area. Leaving dry packaged feeds and liquid feeds which require less labor and have increased distribution flexibility, making them a more sustainable business option. Efforts in expanding and leveraging those businesses are likely to be more profitable for the organization and should be evaluated.

The largest costs of the operation fell in delivery and depreciation, while an intensive dive into the logistics of delivery was outside of the scope of this analysis, it is acknowledged that further analysis of that area would likely provide useful insight. The depreciation, being the other cost leader is an area of opportunity. The beef feed operation occupies a very small percent of the total asset. Finding additional revenue sources for the underutilized areas would create positive impacts to the profitability of the operation through leasing income, helping to drive down fixed costs.

The enhancements to the beef feed business should be directed towards an ability to supply in all three identified production environments of cattle, feedlot and dairy to expand market opportunity. Packaged goods allow for greater distribution flexibility, enhancements in this area would allow the potential of distribution partnerships or other

efficiencies. These enhancements would likely drive a restructuring of the business and a fresh evaluation of the organizations go to market strategy.

Third, the ROI of a market share improvement is different than the research indicated. This is due to high total costs associated with the operations. In order to realize an acceptable ROI for the changes a market share increase of greater than 150 percent would be required, with no changes to the total costs structure. That level of increase would require capturing sales in the feedlot environment or increasing the geographic market area outside of the 60—mile radius of Jefferson, Iowa. Increasing market share sales, decreasing operational total costs or a combination thereof would be required to improve the ROI for the Beef Feed Operations.

6.1 Assumptions

In order to proceed with the research, there were several assumptions utilized to complete the study. The first is that Midwest Cooperative can remain competitive in the finished feed business by limiting its offerings. Second, utilizing the average revenue per ton assumes that all formulations are equally profitable. Third, variable costs remained constant with no additional labor or delivery resources needed for additional production. Lastly, that there is existing demand to be met for packaged and liquid feedstuffs.

6.2 Recommendations

Throughout the research there were opportunities for improvement identified for Midwest Cooperative. First, looking for opportunities to reduce the total fixed costs of operations. This could be accomplished of through utilizing facility space for other revenue streams or renting the space. Second, looking at toll-milling opportunities either by bringing demand to the mill or moving Midwest demand to another milling facility. Third, investigating distribution partners that could help to reduce the costs of delivery. Fourth,

look to expand liquid and packaged feedstuffs sales. Lastly, search for opportunity to increase the market either by additional production environments or a greater than 60 mile radius from Jefferson, Iowa.

6.3 Future Research

There are subjects which could help to inform this study in the future that were outside of the scope of this analysis. The product margins on each product and the effects on those margins to significantly expand sales is an area. Utilizing the market share and ROI analysis on a profitable business to understand the difference in the applicability in the two scenarios would provide value.

Once enhancements strategies are undertaken a reevaluation of the Beef Feed operations would indicate the effectiveness of the changes.

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APPENDIX A

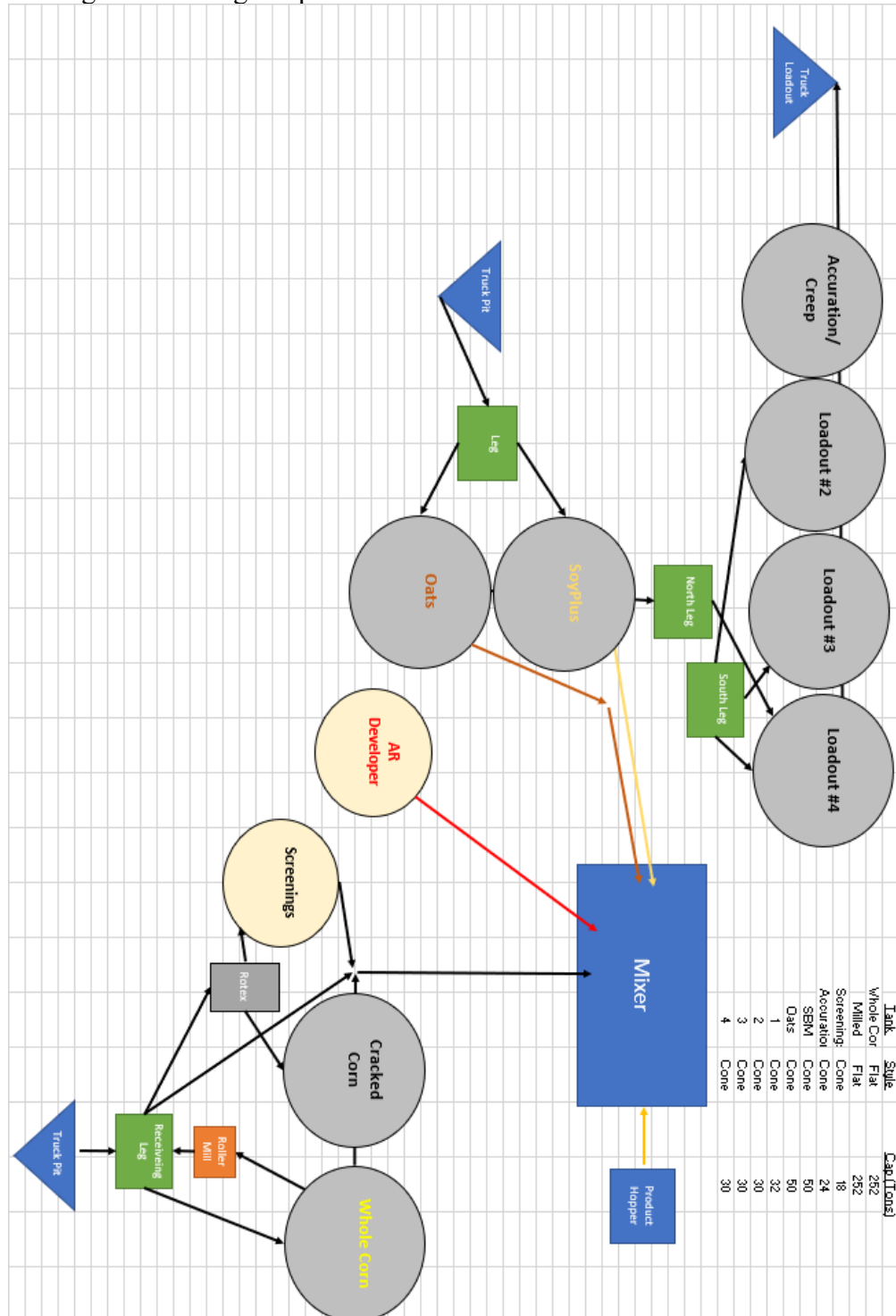
		Ingredients																		
Animal	Name	Cracked Corn	Whole Mill	Corn Fine Rolled	Oats	Cottonseed Hulls 40#	Calf and Bulky B100	Molasses	AR Dev R100 Bulk	Steakmaker 36-0 plain	SoyOil	DDG's	SM BP Balancer 25 R700	RL Pro BP Bal MinAV4R16	Intense WSC Calf Mixer	Steakmaker 40-20 R500	RL 40-20 Cow G/L AV4 R4	Sheep Balancer 36 B136	Alfalfa Pellets Bag	
Beef	Dan Heller	92.35								7.65										
Beef	Corn90/10AR Fin R Bulk	90																		
Beef	Floyd Klocke	87.5														12.5				
Beef	RL 40-20 Cow Mix CP (250)	87.5															12.5			
Beef	Adam Kohler	86.25						1.25								12.5				
Beef	Taggart Corn/SM36-0	85							15											
Beef	Badger Cattle Mix	84.25							12	3.75										
Beef	Corn82.5/17.5ARGrwR	82.5																		
Beef	Corn80/20 AR Supp R Bulk	80																		
Beef	"River Valley Farms"	77.5							22.5											
Beef	Corn75/25AR Dev R Bulk	75							25											
Beef	Ranniger Cattle Mix	71.25			5							20	3.75							
Sheep	Heather & John Lint	31.25	31.25		10			2.5											25	
Beef	Corn70/30AR Supp R Bulk	70																		
Beef	Schmidt Cattle Mix	69.33						0.667				15								
Beef	Lautner/Slevers Calf Bulk	65			6.25	5			7.5	2.5									13.75	
Beef	Haub Calf Grower Mix	62.5						2.5												
Beef	Verner Cattle Mix	61.65			25			2		9.35	2									
Beef	Hughes Cattle 2020	39			25	8	25	3												
Beef	Haub Heifer Finisher	34.54										62.14		3.33						
Goat	Smith Goat 2020	55			22.5			1.25			1.25									
Sheep	Danner Sheep Ration	80																		
Sheep	Klockeim Sheep Feed	79						1												
Sheep	Caleb Cox	80																		
Beef	Haub Promix			37.04							0.65									

APPENDIX A (CONT.)

[illegible]

APPENDIX B

Mill Flow Diagram w/Storage Capacities



APPENDIX C

Adjusted Financials for Milling activities only

Adjusted w/o Liquid	\$ (2,651.89)	\$ (1,106.27)	\$ (6,409.48)	\$ (3,734.78)	\$ (10,589.66)
<i>Labor</i>	\$ 345.27	\$ 476.91	\$ 361.83	\$ 355.01	\$ 450.09
<i>Variable Expense Share</i>	\$500	\$500	\$500	\$500	\$500
<i>Fixed Expense Share</i>	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000

APPENDIX D

Board Financial Report Summary of 2020 YTD- Beef Feed Operations

	YTD P&L Summary										
	September	October	November	December	January	February	March	April	Avg,NW	Avg/Ton	Total
VOLUMES											
Feed Tons	549931.5	601104.38	506241.6	555796.19	425731.74	508808.38			524602.30		3,147,613.79
Feed Tons	274.97	300.55	253	278	212.87	528.00	528		339		2,375.38
Grain Thru The Mills in Tons	0	1208138.4	373503.2	508132.24	444941.28	470119.44			500805.76		3004834.56
Grain Thru The Mills in Tons	0.00	604.07	187	254	222.47	528.00			299		1796
Total Volume In Tons	274.97	904.62	440	532	435.34	1,058.00			607		3643
SALES											
Feed	\$ 157,905.13	\$ 187,638.18	\$ 168,508.14	\$ 176,750.02	\$ 157,985.22	201,433.19			\$ 175,036.65	\$ 288.29	\$1,050,219.88
Merchandise	\$ 254.26	\$ 58.83	\$ 155.24	\$ 1,050.06	\$ 31.22	255.26			\$ 300.81	\$ 0.50	\$1,804.87
Total Sales Dollars	\$ 158,159.39	\$ 187,697.01	\$ 168,663.38	\$ 177,800.08	\$ 158,016.44	201,688.45			\$ 175,337.46	\$ 288.79	\$1,052,024.75
GROSS MARGIN											
Feed	31,424.52	29,133.12	31,513.96	24,256.38	30,489.28	27,468.72			\$ 29,047.66	\$ 47.84	\$174,285.98
Merchandise	46.19	11.77	30.58	182.57	5.76	28.35			\$ 50.87	\$ 0.08	\$305.22
Total Gross Margin	31,470.71	29,144.89	31,544.54	24,438.95	30,495.04	27,497.07			\$ 29,098.53	\$ 47.93	\$174,591.20
FEED SERVICE INCOME											
Mil Services	8,085.19	8,515.02	6,179.10	7,649.46	4,906.84	6,532.03			\$ 6,977.94	\$ 11.49	\$41,867.64
Fuel Surcharge Income	113.36	114.18	70.29	177.74	198.76	257.24			\$ 155.26	\$ 0.26	\$931.57
Feed Services	180.00	305.15	120.00	120.00	366.40	335.45			\$ 237.83	\$ 0.39	\$1,427.00
Total Service Income	8,378.55	8,934.35	6,369.39	7,947.20	5,472.00	7,124.72			\$ 7,371.04	\$ 12.14	\$44,226.21
Total Direct Feed Income	39,849.26	38,079.24	37,913.93	32,386.15	35,967.04	34,621.79			\$ 36,469.57	\$ 60.07	\$218,817.41
OTHER INCOME											
Other Income	1,238.25	150.00	0.00	0.00	150.00	150.00			\$ 281.38	\$ 0.46	\$1,688.25
Dividend Income		1,704.65	995.66	10,257.98	1,021.61	7,987.14			\$ 4,393.41	\$ 7.24	\$21,967.04
Joint Venture Income											
TOTAL OTHER INCOME	1,238.25	1,854.65	995.66	10,257.98	1,171.61	8,137.14			\$ 3,942.55	\$ 6.49	\$23,655.29
TOTAL INCOME	41,087.51	39,933.89	38,909.59	42,644.13	37,138.65	42,758.93			\$ 40,412.12	\$ 66.56	\$242,472.70
PAYROLL EXPENSES											
Payroll Salaries and Wages	12,088.78	13,518.86	9,620.16	10,412.76	10,074.48	12,989.79			\$ 11,450.81	\$ 18.86	\$68,704.83
Payroll Tax Expense	840.21	745.47	871.40	995.60	783.04	1,029.11			\$ 877.47	\$ 1.45	\$5,264.83
Employee Benefits	2,379.31	2,381.00	2,392.00	2,376.00	2,543.00	2,571.00			\$ 2,440.39	\$ 4.02	\$14,642.31
Retirement Expense	558.77	391.10	344.89	491.99	350.66	448.34			\$ 430.96	\$ 0.71	\$2,585.75
Uniforms	0.00	200.90	0.00	199.99	0.00	0.00			\$ 66.82	\$ 0.11	\$400.89
TOTAL FEED PAYROLL	15,867.07	17,237.33	13,228.45	14,476.34	13,751.18	17,038.24			\$ 15,266.44	\$ 25.14	\$91,598.61
FIXED EXPENSES											
Depreciation	12,746.26	12,746.26	17,726.77	17,726.77	17,726.77	16,217.64			\$ 15,815.08	\$ 26.05	\$94,890.47
Property Taxes	1,914.00	1,914.00	1,914.00	1,914.00	1,914.00	1,914.00			\$ 1,914.00	\$ 3.15	\$11,484.00
Interest Term	1,598.45	1,481.39	1,402.40	1,391.18	1,223.61	1,047.92			\$ 1,357.49	\$ 2.24	\$8,144.95
Property Insurance	2,090.00	2,090.00	2,090.00	2,090.00	5,515.00	2,775.00			\$ 2,775.00	\$ 4.57	\$16,650.00
Leased Equipment	134.17	126.25	126.25	611.22	611.22	618.49			\$ 371.27	\$ 0.61	\$2,227.60
TOTAL FEED FIXED	18,482.88	18,357.90	23,259.42	23,733.17	26,990.60	22,673.05			\$ 22,232.84	\$ 36.62	\$133,397.02
VARIABLE EXPENSES											
Plant Supplies	110.65	71.42	375.74	14.97	71.84	1,238.72			\$ 313.89	\$ 0.52	\$1,883.34
Mineral Oil Foam Marker Feed B		0.00	0.00	0.00	0.00	0.00			\$ -	\$ -	\$0.00
Repairs Building/ Equipment Property	463.31	399.35	0.00	1,335.35	1,634.96	712.57			\$ 757.59	\$ 1.25	\$4,545.54
Repairs Licensed Vehicles	5,601.51	0.00	4,277.79	2,409.09	925.10	9,731.11			\$ 3,824.10	\$ 6.30	\$22,944.60
Repairs Non-Licensed Vehicles	0.00	312.46	60.99	171.48	70.49	0.00			\$ 102.57	\$ 0.17	\$615.42
Truck Licenses Taxes	641.08	641.08	641.08	641.08	523.90	380.10			\$ 578.05	\$ 0.95	\$2,827.24
Fuel Expense	2,380.84	2,560.76	1,993.59	1,756.21	2,338.12	2,319.96			\$ 2,224.91	\$ 3.66	\$10,968.64
Utilities	203.30	1,202.70	1,538.51	2,083.65	1,472.17	1,038.26			\$ 1,256.43	\$ 2.07	\$7,538.59
Sampling and Testing Lab Fees		168.00	107.00	0.00	39.50	87.50			\$ 80.40	\$ 0.13	\$402.00
Extermination	165.85	219.35	165.85	165.85	107.00	112.35			\$ 156.04	\$ 0.26	\$770.40
Rent Equipment	0.00	695.50	695.50	695.50	695.50	695.50			\$ 579.58	\$ 0.95	\$3,477.50
Service Contracts	203.30	203.30	0.00	0.00	0.00	0.00			\$ 67.77	\$ 0.11	\$406.60
Truck Freight Expense	0.00	0.00	0.00	0.00	0.00	0.00			\$ -	\$ -	\$0.00
Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00			\$ -	\$ -	\$0.00
Quality Management Systems	0.00	0.00	0.00	0.00	0.00	0.00			\$ -	\$ -	\$0.00
Inspection Serv-Required	1,251.90	0.00	0.00	0.00	0.00	0.00			\$ 208.65	\$ 0.34	\$1,251.90
Licenses, Fees and Permits	0.00	0.00	217.50	0.00	0.00	0.00			\$ 36.25	\$ 0.06	\$217.50
Computer Equip and Maintenance	55.45	55.45	49.40	70.61	103.45	49.40			\$ 63.96	\$ 0.11	\$383.76
Network Communications Internet	0.00	10.00	87.58	49.91	51.61	51.61			\$ 41.79	\$ 0.07	\$250.71
Employee Functions and Education	0.00	0.00	0.00	0.00	0.00	0.00			\$ -	\$ -	\$0.00
Donations and Sponsorships	0.00	0.00	0.00	0.00	0.00	250.00			\$ 41.67	\$ 0.07	\$250.00
Telephone	127.08	427.09	146.76	153.69	135.05	210.24			\$ 199.99	\$ 0.33	\$1,199.91
Office Supplies	0.00	414.64	267.50	327.09	817.76	1,006.84			\$ 472.31	\$ 0.78	\$2,833.83
Meals, Meetings & Travel	0.00	0.00	0.00	44.95	0.00	0.00			\$ 7.49	\$ 0.01	\$44.95
TOTAL FEED VARIABLE	11,234.72	7,421.84	10,893.03	10,024.41	8,936.62	17,914.25			\$ 11,037.48	\$ 18.18	\$66,224.87
TOTAL FEED EXPENSES	45,584.67	43,017.07	47,180.90	48,233.92	49,678.40	57,525.54			\$ 48,536.75	\$ 79.94	\$291,220.50
GROSS MARGIN/COMMODITY SAVINGS	31,470.71	29,144.89	31,544.54	24,438.95	30,495.04	28.35			\$ 24,520.41	\$ 40.39	\$115,651.77
SERVICE AND OTHER INCOME	9,616.80	10,789.00	7,365.05	18,205.18	6,643.61	8,472.59			\$ 10,182.04	\$ 16.77	\$51,475.43
TOTAL GROSS INCOME	41,087.51	39,933.89	38,909.59	42,644.13	37,138.65	8,500.94			\$ 34,702.45	\$ 57.16	\$167,127.20
TOTAL EXPENSES	45,584.67	43,017.07	47,180.90	48,233.92	49,678.40	57,525.54			\$ 48,536.75	\$ 79.94	\$245,635.83
OPERATIONS PROFIT OR (LOSS)	(4,497.16)	(3,083.18)	(8,271.31)	(5,589.79)	(12,539.75)	(49,024.60)			\$ (13,834.30)	\$ (22.79)	(\$78,508.63)
TOTAL PROFIT OR (LOSS)	(4,497.16)	(3,083.18)	(8,271.31)	(5,589.79)	(12,539.75)	(49,024.60)			\$ (13,834.30)	\$ (22.79)	(\$78,508.63)
Net per Bushel	11.43	11.43	11.43	11.43	11.43	11.43			\$ 11.43	\$ 0.02	\$57.14
TOTAL PROFIT OR (LOSS)	(4,497.16)	(3,083.18)	(8,271.31)	(5,589.79)	(12,539.75)	(49,024.60)			\$ (13,834.30)	\$ (22.79)	(\$78,508.63)

APPENDIX E

Bulk Repackaged Feed Representation

Adjusted w/o Liquid	\$ (2,651.89)	\$ (1,106.27)	\$ (6,409.48)	\$ (3,734.78)	\$ (10,589.66)
<i>Labor</i>	\$ 345.27	\$ 476.91	\$ 361.83	\$ 355.01	\$ 450.09
<i>Variable Expense Share</i>	\$500	\$500	\$500	\$500	\$500
<i>Fixed Expense Share</i>	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Task	Pails/Barrels	Tote	Bulk		Labor Costs
Hrs Labor	1	0.17	0.000085		21.5
Lbs.	2000	2000	1		
Liquid Facility					
SoyOil					
Pail	5,800	13,480	11,560	-	15,440
Barrel	16,000	11,200	1,600	18,000	11,200
Tote	44,400	96,000	90,000	66,000	62,000
Bulk (Refilling totes)	-	12,000	20,000	10,000	23,200
PureGold					
Tote	-	3,200	4,000	-	-
Bulk	16,000	4,000	-	10,000	-
Molasses					
Buckets	50	100	-	-	-
Pasture+					
Bulk	-	-	6,580	2,380	4,380
Liquid Labor Costs					
SoyOil					
Pail	\$ 62.35	\$ 144.91	\$ 124.27	\$ -	\$ 165.98
Barrel	\$ 172.00	\$ 120.40	\$ 17.20	\$ 193.50	\$ 120.40
Tote	\$ 81.14	\$ 175.44	\$ 164.48	\$ 120.62	\$ 113.31
Bulk (Refilling totes)	\$ -	\$ 21.93	\$ 36.55	\$ 18.28	\$ 42.40
PureGold					
Tote	\$ -	\$ 5.85	\$ 7.31	\$ -	\$ -
Bulk	\$ 29.24	\$ 7.31	\$ -	\$ 18.28	\$ -
Molasses					
Buckets	\$ 0.54	\$ 1.08	\$ -	\$ -	\$ -
Pasture+					
Bulk	\$ -	\$ -	\$ 12.02	\$ 4.35	\$ 8.00
Total.Labor	\$ 345.27	\$ 476.91	\$ 361.83	\$ 355.01	\$ 450.09
	16.059	22.182	16.8293	16.5123	20.9343

APPENDIX F

Current facility capacities charts

<u>Tank</u>	<u>Style</u>	<u>Cap (Tons)</u>
Whole Corn	Flat	252
Milled	Flat	252
Screenings	Cone	18
Accuration	Cone	24
SBM	Cone	50
Oats	Cone	50
1	Cone	32
2	Cone	30
3	Cone	30
4	Cone	30
<u>Equipment</u>	<u>Style</u>	<u>TPH</u>
Mill	Roller	22
Cleaner	Rotex	18+
Mixer	Paddle	6*
*limited by downstream <i>(3 ton batch)</i>		