MAXIMIZING CO-PRODUCTS NET INCOME AT WESTERN SUGAR

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B.S. Kansas State University, 1989

A THESIS

Submitted in partial fulfillment of the requirements

for the degree

MASTER OF AGRIBUSINESS

Department of Agricultural Economics

College of Agriculture

KANSAS STATE UNIVERSITY

Manhattan, Kansas

2008

Approved by:

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ABSTRACT

The Western Sugar Cooperative is a 135,000 acre sugar beet processing cooperative headquartered in Denver, Colorado with sugar beet processing factories located in Ft. Morgan CO, Torrington WY, Scottsbluff NE, Lovell WY, and Billings MT. The objective of the thesis is to analyze alternatives for maximizing the net revenue of co-products at Western Sugar. The ethanol policies of the U.S. government have had many unintended consequences including increasing the price of corn which is a key ingredient in animal feed production. Sugar beet co-products are produced in fixed proportions. That is, for every unit of sugar produced a corresponding unit of sugar beet pulp is created which is mostly water. Historically this has been dried into an animal feed pellets, however removing water from any high volume and high speed manufacturing process is energy intensive. Natural gas prices have increased dramatically and are projected to stay that way for a long time. As a result, the cost of manufacturing pellets is very high. The research shows that we are able to significantly increase our net income by increasing the percentage and price of pressed feed pulp rather than drying the pulp into pellets. This equals 20 million dollars of revenue in our pulp product line for the 2008-2009 sugar beet campaign. The thesis contains various analyses for changes in critical costs and prices. More importantly it details the subsequent management decisions implemented to maximize net income in the co-products business.

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ACKNOWLEDGMENTS

The author wishes to thank his wife Lori Hofer, and three children Marie, Jared & Nathan for their positive support and encouragement in obtaining this Master of Agribusiness degree, as well as the family sacrifices they made in his career advancement.

CHAPTER 1 INTRODUCTION

The Western Sugar Cooperative is a 135,000 acre sugar beet processing cooperative headquartered in Denver, Colorado, with beet processing factories located in Fort Morgan, Colorado; Torrington, Wyoming; Scottsbluff, Nebraska; Lovell, Wyoming; and Billings, Montana. Our factories are located near cattle feeding regions, and the area is home to major livestock feed products manufacturers.

1.1 History of Western Sugar Cooperative

The Great Western Sugar Company, founded in the early 20th century by Charles Boetcher and partners, was a pioneer in bringing the sugar beet industry to northeastern Colorado. From the first sugar mill built in Loveland, Colorado, in 1901, the company expanded and built or acquired several additional facilities in Colorado, Montana, Nebraska and Wyoming.

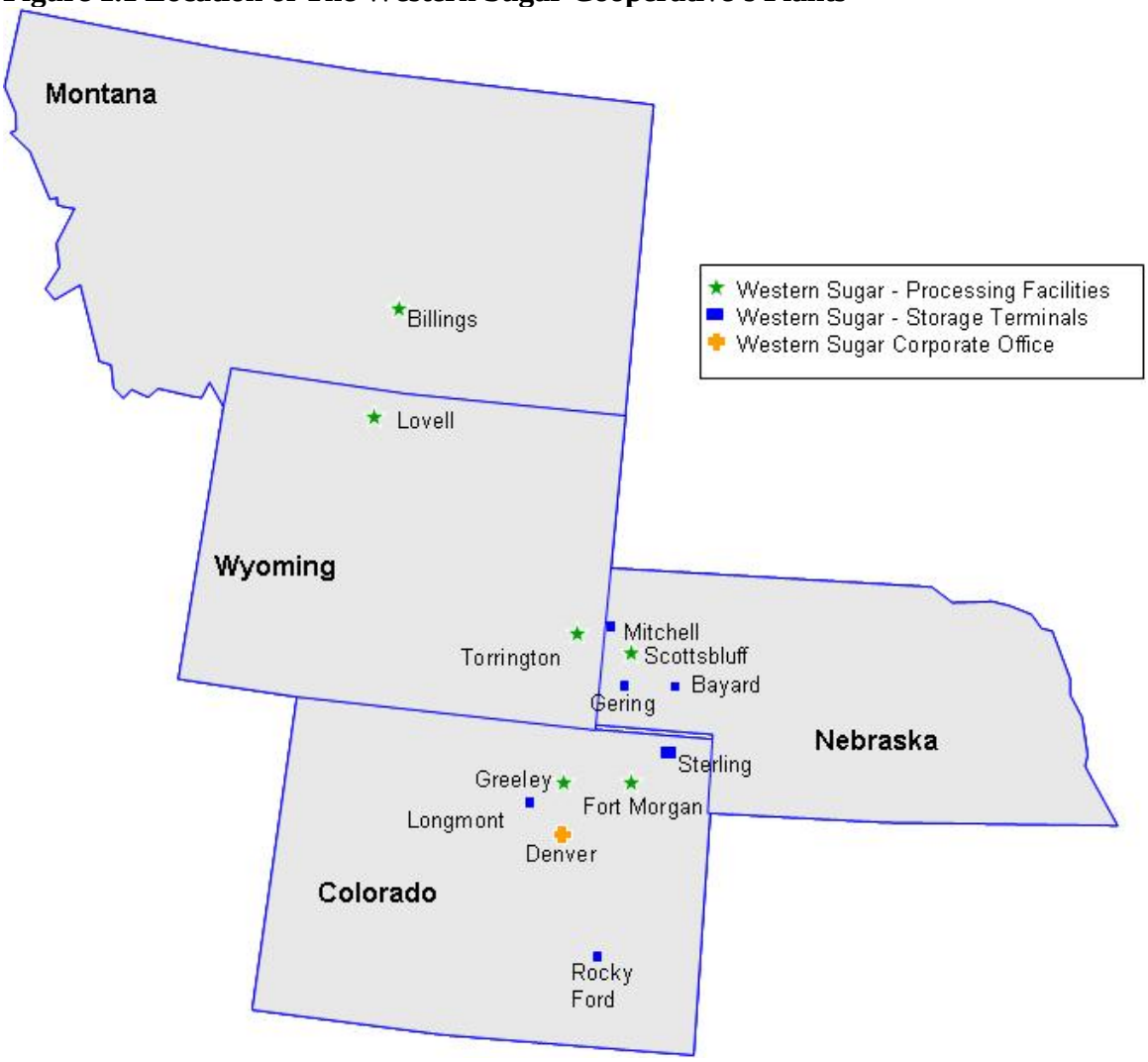
In 1967 Great Western was sold to Colorado businessman Billy White, who in 1974 sold controlling interest in the company to the Hunt Brothers organization. Several years of economic struggles followed; and in 1985 the company, with its six sugar processing plants and five storage facilities over a four-state area, was purchased by the British sugar firm Tate & Lyle. The company name was then changed to Western Sugar Company.

In response to the volatile sugar market in the United States, Tate & Lyle began seeking a buyer for its sugar holdings in the U.S in the late 1990's.

In December 2002, over 1,000 sugar beet growers in Colorado, Nebraska, Wyoming and Montana united to form The Western Sugar Cooperative. They believed that the future of

the sugar beet industry in this area would be well-served by grower ownership of the company. On April 30, 2002, the Cooperative finalized the purchase of Western Sugar from Tate & Lyle. Figure 1 shows the location of Western Sugar's facilities.

Figure 1.1 Location of The Western Sugar Cooperative's Plants



1.2 Relationship between Sugar Beets and Sugar and Pulp

Our sugar beet processing factories produce approximately 8.5 million hundredweight (cwt) of sugar from beets and beet molasses. The other major products sold from these factories are beet pulp and molasses based products left over from the molasses desugarization plant. Total volumes of these products are: 500,000 – 600,000 tons of pressed pulp, which can be sold as wet feed or dried into pellets; 60,000 tons of raffinate molasses, which is a high potassium co product that is used by feed manufacturers and for

road deicing purposes; and 25,000 tons of HE or extract molasses, which is a high sugar by product left over after the sucrose fraction juice is run through the factory for granulation. These 3 key co-products make up the majority of the Co-Products revenue (Table 1.1)

Table 1.1 Gross Revenue of 5 Co-Products AOP 2008

	(millions)
Pressed Pulp	$10.03
Pellets	$2.43
HE Molasses	$3.10
MDS	$4.92
Betaine	$1.82
Total AOP08	$22.30

The average sugar beet weighs approximately 3 pounds and is made up of 75% water, 17% sugar, 5% pulp fiber, and the balance are salts and other minerals. The sugar beets are delivered into the factory throughout the winter months and are washed and sliced into long noodle-like pieces called cossettes. Emerging from the slicers, the cossettes fall onto a conveyor belt to be weighed and fed in the diffusion system. Here the sugar is removed from the beets by hot water “washing” or diffusing the sugar from the beets. The beets are fed into the bottom of the diffuser and are moved upward through the diffuser where they emerge with 2% of the sugar left in them. The spent beets are called wet pulp and are processed in presses and dryers to become livestock feed. The sugar extraction process uses a process called osmosis where the sugar is passed through the porous membrane on the beet’s cell wall while some of the non-sugars are retained by the cell.

The wet pulp, which is 90% water, leaves the diffuser and is sent to the pulp presses. The pulp presses squeeze the pulp to remove as much water as possible. This is then called pressed pulp, which is 76% water or 24% dry matter, and is either sold as livestock feed or sent to the dryer for further processing. The water pressed out of the pulp is sent back to the diffuser to recover the sugar in it. The rotary drum pulp dryers are direct fired by gas or coal, and they dry the pulp to 11% moisture. The dried pulp is then compacted into pellets for easier handling and stored in bulk warehouse for future sales. Pressed pulp is sold for short-term use while pellets store for longer periods, but both are used for livestock feed.

The raw sugar juice is sent through a purification process that uses calcium and a series of filters to remove the non sugars that are in the juice. This prepared juice is called “thin juice.” The next step is to evaporate the excess water off the thin juice by running through a series of evaporator bodies. The thin juice enters the evaporators at 13% solids and when it leaves the final evaporator at 60% solids it is called “thick juice”.

The thick juice is sent to the high melter where the sugars are dissolved through vigorous agitation and heat. The melter juice is then heated and filtered and further concentrated until it reaches 75% solids. This product is called standard liquor and is fed to the white pan where white sugar is crystallized from the solution. Crystallization takes place in a batch process when water is evaporated from the solution. Then finely ground sugar is used to “seed” the pan and each seed crystal grows into a typically sized sugar crystal. More and more water is evaporated, forcing more and more sugar to crystallize on each sugar crystal. The sugar crystals are then spun in white centrifugals, and the crystals are separated from

remaining syrup. The granules are then dried and the remaining syrup is processed many times again.

The remaining syrup is called molasses and is 60% sugar by weight. This molasses is shipped to the Scottsbluff molasses desugarization plant where about 80% of this sugar is recovered. The remaining sugar is sold as molasses byproducts referred to in this document as “MDS” which is a high potassium raffinate and “HE” which is a high sugar extract co-product.

1.3 U.S. Sugar Beet Industry

The U.S. Sugar Beet Industry consists of 1.3 million acres of which Western Sugar represents 10% market share. The industry is made up of seven farmer owned cooperatives primarily in the northern and western United States.

Each sugar producing organization is given an “allocation” or quota that they can sell into the U.S. market. The prices are not determined by the government, but there is a loan rate floor which allows companies to understand their least likely selling price. This loan rate is also utilized by cooperatives in borrowing money from the government CCC loan program against any inventory they might have at a low interest rate.

With each cooperative already given a sales allocation that represents approximately 85% of the U.S. consumption, it is very unlikely to ever have a new U.S. processor enter into the market because of these barriers. This allocation system has helped make sugar beet production a very profitable business in the past couple decades as compared to traditional commodity production.

The new challenges we face are directly related to the ethanol boom. Corn prices have exploded upward, and as a result the expenses associated with beet production (land, rent, fertilizer, fuel, and equipment) have also increased. The tremendous growth in costs has made sugar farming profitability more challenging this past year, and possibly in the future, unless there are reforms or changes to the existing government policy towards ethanol. This environment makes it even more critical to maximize our opportunities for improved profitability.

1.4 Thesis Objective

My responsibilities as Vice President of Agriculture with Western Sugar involve the three following areas:

1.) To provided leadership and direction in the agronomy services, harvest operations, and shareholders services.

2.) To oversee the purchasing of $36 million of annual expenditures for both the factories and agriculture, that will insure our purchasing is done competitively and with suppliers who will service our needs with the least cost, best product available.

3.) To provide leadership and direction of our co-product sales business, with the focus on maximizing the net revenue to The Western Sugar Cooperative and its shareholders.

The objective of my thesis is to analyze alternatives for maximizing the net revenue of pulp based co-products at Western Sugar for the fall 2007 and spring 2008. Specifically, the goal is to maximize the net revenue of our pulp business. The outcome of this project is a long-

term strategic plan that will be implemented to keep our business on the highest net value course.

1.5 Summary

This chapter has discussed the motivation to increase profitability, described the process of how sugar beet pulp is created, and outlined the objective for the research. The next chapter discusses the value proposition for sugar beet pulp.

CHAPTER 2 OVERVIEW OF CO-PRODUCT SALES

I became fully involved in the co-product sales in May of 2006, after the co-products manager resigned; and I decided that my background in commodity merchandising and trading would be a good fit to improve this business. Some of the issues we were facing leading up to this change of management and direction were as follows:

- Co-Products were all tracked on a “gross revenue” measurement approach vs. a net income approach.
- We were very focused on pellet production and how we could become better suppliers to the Japanese export pellet customers.
- We had a preconceived idea of the maximum price we could charge for our products. We felt if we charged any more no one would buy them. There was a poor understanding of the value of our co-products to the cattle feeders.
- We used a sales and marketing approach to selling sugar, versus a disposal mentality of dealing with co-products.
- Cattle feeders had a better purchasing strategy than our sales strategy. For example, at some locations they would intentionally not pick up the pulp. They realized this would put us in a difficult position and force us to discount the price if they picked up the pulp quickly. Larger cattle feeders utilized their volume to get significant discounts, due to the fact that Western Sugar did not want to lose their business. This was yet another example of not understanding our products value.

- Little effort was utilized in benchmarking our products against competitive products and in understanding how to optimize price through analyzing our products true value to the cattle feeders and feed manufacturers.

2.1 Key Areas to Improve the Business

We had three key areas that needed to be explored in order to improve the whole business.

1) Net revenue measurement
    - Understanding the costs of producing products.
    - Creating a net income analysis of our current business.
    - Optimizing our product mix while managing through the constraints of our business.
2) Product value / how to maximize value
    - Nutrition Value.
    - Preconceived value limitations.
    - Better understanding of competition, comparative product value and freight cost analysis of moving Red River Valley, North Dakota product to our localized market.
3) Proactive sales plan that identified the targets for the year and an action plan
    - 1 year and 4 year plan that identified goals and net revenue outcomes.
    - Action plan that involved the who, what, when and how to achieve our desire outcome.

Each of these areas is discussed in greater detail.

2.2 Cattle and Feed Availability

Our pulp business has a unique competitive advantage as compared to most other major sugar beet growing areas. It is located in an area with very high cattle number and a relatively tight corn supply to feed the animals. Understanding these opportunities help you maximize the revenue for each of the regions. The largest population of cattle is located near the three southern factories: Fort Morgan, Torrington, and Scottsbluff. Our two northern facilities, Lovell and Billings, have far less cattle but still have adequate numbers in relationship to available feed to provide opportunities.

Table 2.1 Map of Cattle on Feed in the United States (cattle = 11,966,000)

Ranking	State	Cattle Numbers	% of Total
1	Texas	2,930,000	24.49%
2	Nebraska	2,510,000	20.98%
3	Kansas	2,430,000	20.31%
4	Colorado	1,090,000	9.11%
5	Iowa	570,000	4.76%
6	California	555,000	4.64%
7	Arizona	373,000	3.12%
8	Oklahoma	355,000	2.97%
9	Idaho	235,000	1.96%
10	South Dakota	230,000	1.92%

Figure 2.1 Map of Cattle and Calves in the United States in 2002

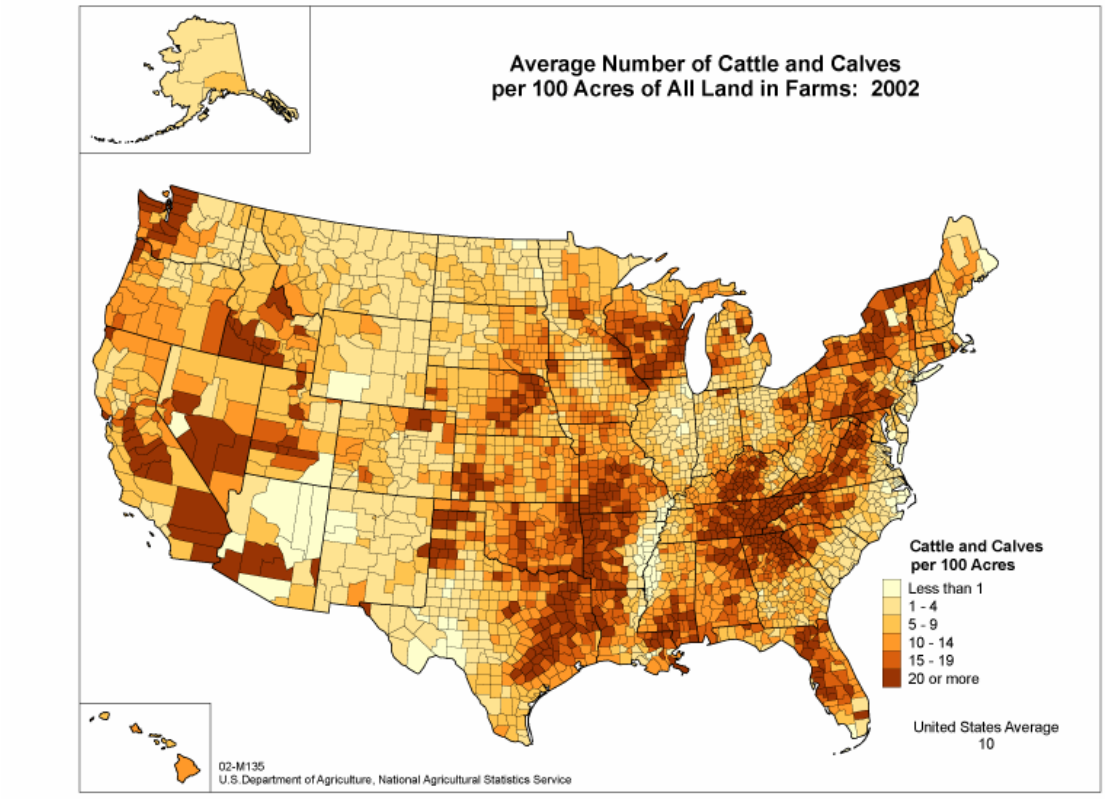
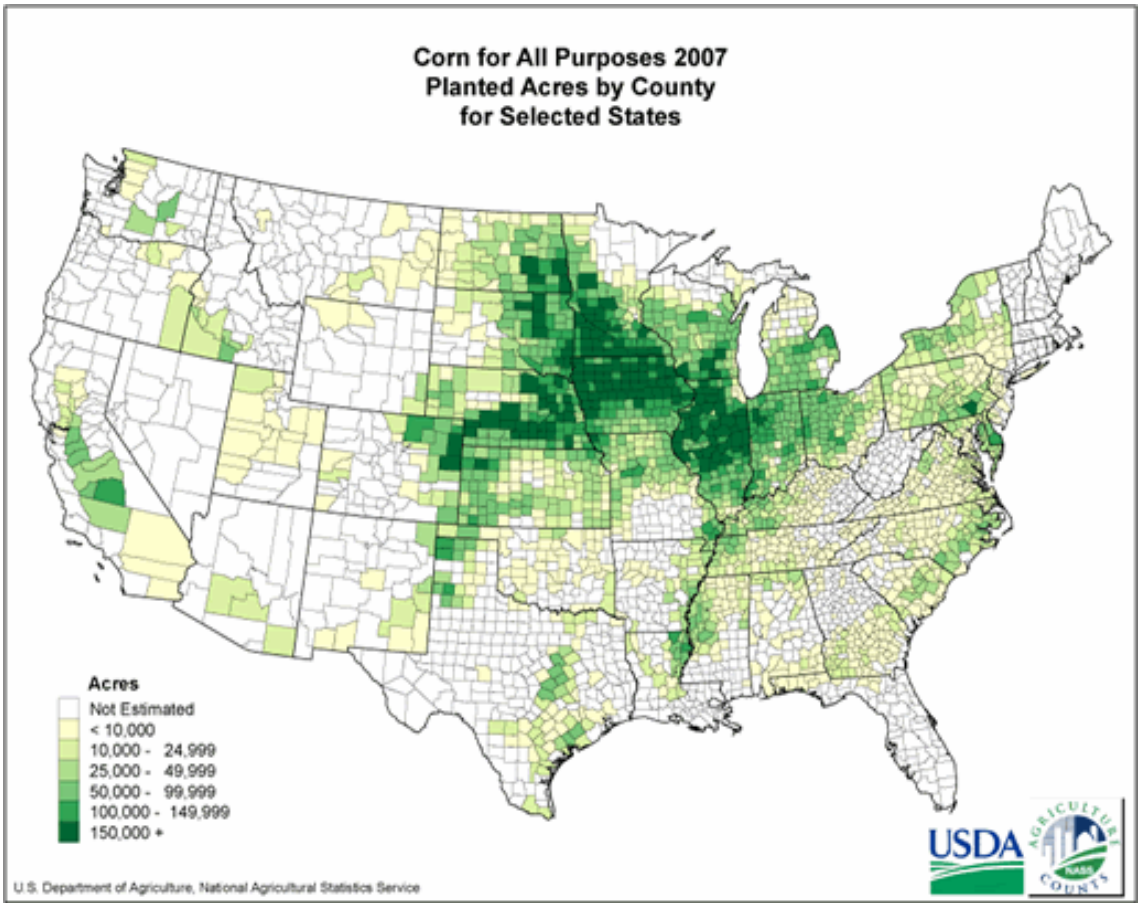


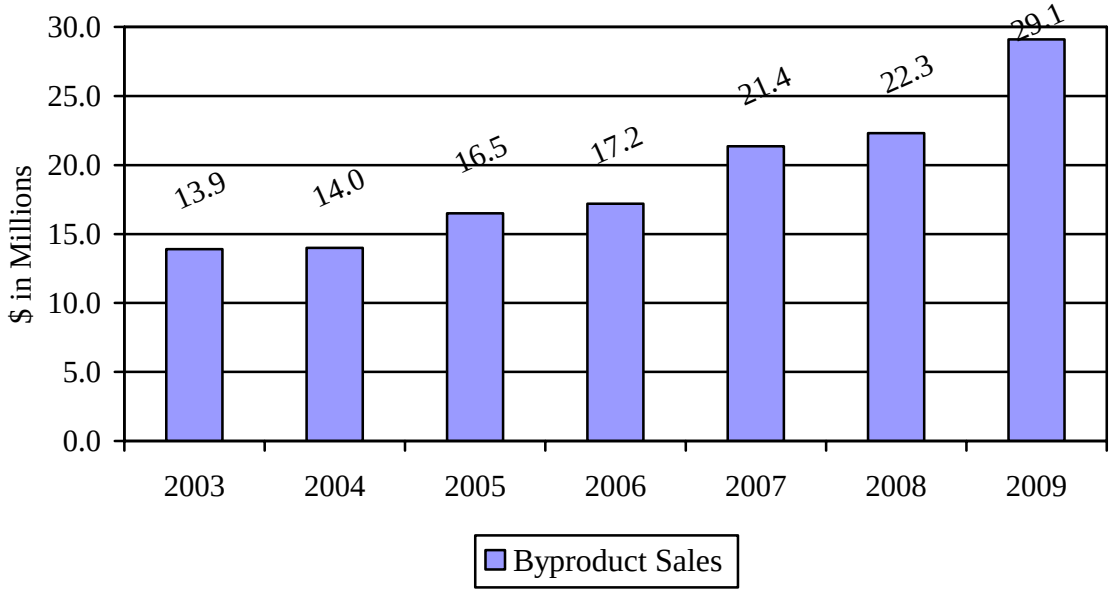
Figure 2.2 Map of U.S. Corn Production



2.3 Net Revenue Management

Our business in 2006 fiscal year grossed $17.2 million, which on face value is a tremendous amount of money. The first project I took on was to optimize the quantity of pulp and pellet production for maximum net revenue to the cooperative within the constraints and limitations at each plant. Our 5 factories produce 600,000 tons of 24.0 dry matter (DM) pressed pulp. This can then be sold as 24.0 DM wet feed or be dried into 89.0 DM pellets at three of our facilities that have pellet mills.

Figure 2.3 Gross Revenue Trends of Co-Products for Western Sugar



The tool we used was Microsoft Excel's solver to help determine the optimal balance of pressed pulp to pellets and to help determine at what value it makes sense to switch from one product to the other. In order to take this approach, I needed to understand all the costs that went into making pellets and pressed pulp before I could create a model to maximize the net income. The following costs represented the key items that were recorded and tracked.

1. Energy – Either gas or coal (Pellets Only).

2. Labor – To run the pellet mills and to load the pellets or pulp.

3. Maintenance – Both the materials to maintain pulp presses and the labor to perform the maintenance.

4. Desugared Molasses or Virgin Molasses – It acts as a binder and it gives the pellets a brown color and molasses smell.

5. Pressing Aids – Gypsum and other products used in the mix to help the presses squeeze more water out of the pulp.

Table 2.2 identifies the relationships between sales and costs of converting 76% D.M. beet pressed pulp into 89% D.M. beet pellets. The additional costs to dry wet pulp are substantial and are now measured more closely to assist in better decision making.

Table 2.2 Economic Value of Converting Pressed Pulp into Pellets

Production	Torrington	Lovell	Billings	Scottsbluff	Ft.Morgan
Pressed Pulp. 24% D.M.	114,067	88,778	152,472	128,249	174,000
Pellets	21,223	21,252	26,389	0	0
Balance Pulp	30,000	15,000	55,000	128,249	174,000
Pulp used in Pellet	84,067	73,778	97,472	0	0
Pellet Costs					
Energy/MMBTU	$ 7.50	$ 1.60	$ 6.38	$ -	$ -
Energy Usage	8.48	9.00	9.40	$ -	$ -
Total Energy Cost	$ 63.60	$14.40	$ 59.97	$ -	$ -
Maint Cost/Ton	$ 2.00	$ 2.00	$ 1.86	$ -	$ -
Labor Cost/Ton	$ 4.20	$ 5.00	$ 5.65	$ -	$ -
MDS Cost/Ton	$ 7.47	$ 5.77	$ 8.96	$ -	$ -
Total Pellet Cost	$ 77.27	$27.17	$ 76.44		
Revenue From Pellet Sales					
Sales Price/Ton	$ 82.00	$78.00	$ 84.50		
Net Pellet Income/Ton	$ 4.73	$50.83	$ 8.06		
Income/ton of Pulp	$ 1.19	$12.84	$ 2.03		
Net Revenue from Pulp					
Avg Sales price/ton	$ 15.25	$15.60	$ 15.50	$15.10	$ 15.10
Expressed in millions of dollars					
Gross Pellet Revenue	$ 1.74	$ 1.66	$ 2.23		
Net Pellet Revenue	$ 0.10	$ 1.08	$ 0.21		
Ttl Pressed Plp Rev	$ 0.46	$ 0.23	$ 0.85	$ 1.94	$ 2.63
Total Revenue	$ 0.56	$ 1.31	$ 1.07	$ 1.94	$ 2.63
Opportunity to	$ 1.18	$ 0.20	$ 1.31	$ -	$ -
Total Opportunity	$ 2.69				

2.4 Total Opportunity

In the original analysis, you can see that the total opportunity for not making pulp into pellets was a $2.69 million dollar net income improvement. The $2.69 million improvement represented the costs associated with making pellets such as natural gas, maintenance and labor. With this size of opportunity, it was easy to see that we had found an area of significant financial impact that should be analyzed further.

2.5 Energy and Natural Gas Costs

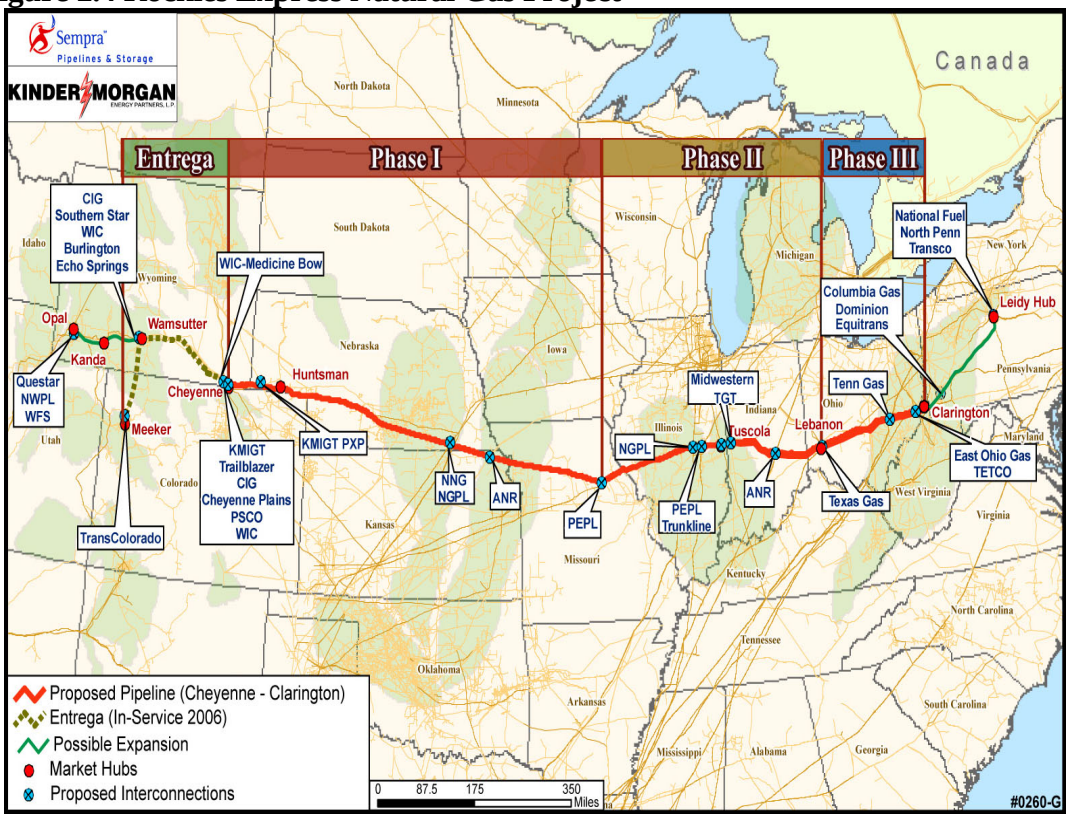
When you examine table 2.1 it becomes quickly apparent that energy is the biggest price component in making pellets at a factory. The reason that this is such a large component is the fact that you are drying a 76% wet product into an 11% wet product in a very rapid and high volume scenario.

The three factories that were drying pulp into pellets consisted of two plants with natural gas dryers (Torrington and Billings), and one with a coal fired dryer (Lovell). The energy costs for producing a ton of pellets averaged over $60/ton at the natural gas locations and $14.40/ton at the coal location. With the above scenario and the likelihood of natural gas prices and coal prices staying in a similar ratio, it became tremendously clear that there was a huge opportunity in shutting off these gas dryers and putting more efforts into maximizing our pressed pulp sales and minimizing pellet production.

An additional threat was that a large natural gas pipeline under construction would ship 20% of all the natural gas produced in the southern region of the Rocky Mountains to the Eastern United States. This pipeline would reduce our available supply and would most likely cause natural gas prices to continue their upward price trend. Our natural gas

advisory broker, Mercator Energy, is projecting natural gas prices to average $12/mmbtu by 2011. Figure 2.4 shows the location of this pipeline.

Figure 2.4 Rockies Express Natural Gas Project



2.6 Implications of the Additional Potential Revenue

Once we were able to understand the additional revenues available by better understanding our net return on co-products, we became committed to create a monthly Profit and Loss (P&L) net income statement that looked at all pulp and molasses products. It was challenging to determine how to make a total net income approach that allowed for an exact comparison. We decided to measure all products on a 100% DM approach in order to understand the net value per ton of DM sold. The first monthly P&L was constructed after

the 2006 fiscal year was completed to summarize the results and establish a benchmark for future comparisons. These are shown in tables 2.4 and 2.5.

Table 2.3 Net Selling Price for Pulp and Pellet Profitability on a Dry Matter Basis, 2004 to 2007 Average

Year	Pressed	Wet	
	Pulp/Ton D.M.	Pulp/Ton D.M.	Pellets/Ton D.M
2004	$53.62	$27.16	$86.57
2005	$55.00	$24.91	$97.38
2006	$53.69	$33.21	$96.25
2007 YTD	$74.47	$35.86	$90.97
Net Margin			
2004	$42.88	$27.16	$24.90
2005	$44.42	$24.91	$18.62
2006	$40.89	$33.21	$-9.86
2007 YTD	$67.97	$35.86	$10.62

The financial opportunity to shift pellet production back to pulp is outlined in table 2.5 for the 2006 and 2007 production plan. In 2006, you can see that there were 47,476 tons of pellets produced. If these same pellets would have been sold as pressed pulp we would have improved our net profitability by $2,409,407.

Table 2.4 Financial Opportunity by year to increase pulp sales 2006 &2007

	2007			2006		
	Pulp	Pellets	Wet Pulp	Pulp	Pellets	Wet Pulp
YTD Net Margin	$67.97	$10.62	$35.86	$40.89	-9.86	$33.21
DM Tons Sold	123,072	28,776	1,036	83,457	47,476	3,799
Opportunity		$1,650,304	$26,149		$2,409,407	$163,623

The opportunity identified is the net income impact from not drying pulp into pellets at our factories in 2008 fiscal year. Once this project was completed it became obvious that maximizing pressed pulp sales would always have a huge advantage over selling pulp as dried pellets due to the energy costs involved in drying a wet product.

Table 2.5 Analysis of Natural Gas and Corn Futures to April 2008 Pellet Production

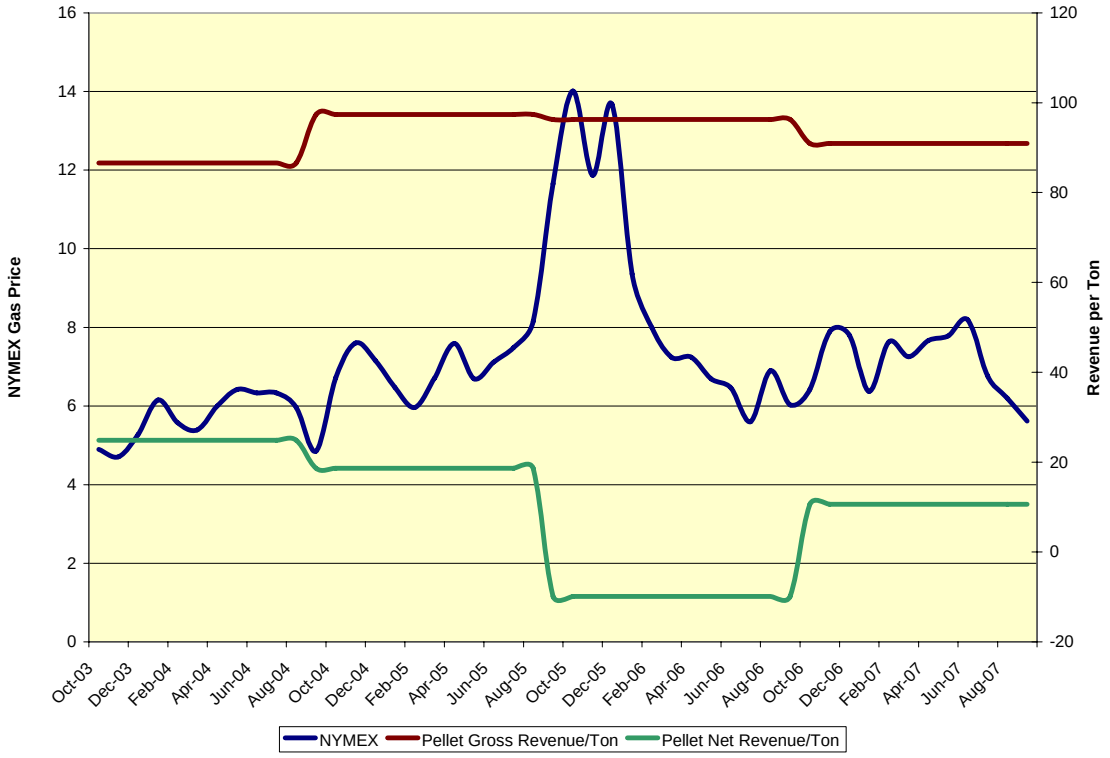
Pellets		
Energy Use/Ton	9	MMBTU
Energy Cost/MMBTU	$7.50	Nat Gas
Maintenance/Ton	$2.00	
Labor Cost/Ton	$5.00	
MDS Cost/Ton	$8.25	
Total Production Cost/Ton	$82.75	
December Corn Futures	$5.80	
Pulp Value	$34.80	
Total Pulp value in a ton of pellets.	$139.20	
Pellet Sales Price	$145.00	
Pellet Production Net Profit over selling as pressed pulp	($76.95)	Per Ton

2.7 Pricing Changes and the impacts on future decisions

The calculator in table 2.5 identifies a pellet vs. pulp decision process that takes into account the key decision drivers: energy cost, December corn futures, and pellet sales value. By using this tool, I can answer the question, “At what point of change in these three variables do you switch to making pellets?”

If all drivers stayed the same and gas price went down to $0 per MMBTU, we would still be $9.45 per ton better off selling pressed pulp vs. making pellets. Conversely by changing the price of corn futures down to $2.50 and leaving pellet value and energy costs unchanged, the calculator would show a $2.50/ton benefit in making pellets. The likelihood of pellets being a more profitable choice over selling as pressed pulp is extremely unlikely. In the 6 years of our cooperative’s existence, we have not had a single year where making pellets made more financial sense than selling the pressed pulp. In the unlikely event that there was dramatic demand for pellets and this value demonstrated the need to make pellets, we would still be fully capable of making pellets at three of our factories.

Figure 2.5 Natural Gas Prices and Gross and Net Feed Revenue per Ton



2.8 Better Management Decisions Result from Better Information

The information from this Net P&L allowed us the ability to make better financial decisions. Immediately, we eliminated $220,000 of proposed capital improvement projects at our Billings facility targeted at improving our pellet production and storage business: $150,000 to improve our pellet conveying systems, $50,000 to install a pellet screening system, and $20,000 to install better doors on the pellet warehouse and make the building "bird proof" because of complaints from Japanese pellet buyers.

2.9 Creation of a Net P&L Statement

The next step was to automate the monthly dry matter basis P&L that would allow management to analyze our decisions and results. This was completed and set up to

combine all pulp products into one value per ton of dry matter, as well as all molasses products into one combined value per ton of dry matter. The next chapter discusses the value of pulp.

CHAPTER 3 THE VALUE OF PULP

Historically, the definition of the product value of pulp was that a ton of pulp was equal to 6 times the December corn futures value. This had been accepted as the truth and had never been questioned. Even with this valuation, we had to discount the pulp to sell it all. I felt that since we were starting from scratch, we should utilize two of the leading dairy and beef nutritionist that are working in the region to determine the value of pulp is in comparison to corn silage. Dr. Rush is a leading beef nutritionist from Nebraska and Dr. Snyder is a leading dairy nutritionist from Colorado. They were chosen because of their credibility with the larger feeders and dairies throughout our area.

3.1 Nutritional Value of Pulp

Table 3.1 summarizes the nutritional comparison and approximate current economic value.

Table 3.1 Nutritional Characteristics of Sugar Beet Pressed Pulp Relative to Corn Silage

	Pressed Beet Pulp	Corn Silage
Nutritional Variable		
% Dry Matter	24%	32%
% Protein Dry Basis	10%	7.50%
% ADF Dry Basis	28%	28%
% NDF Dry Basis	44%	45%
% TDN Ruminant Dry Basis	72%	69%
NE - Maintenance Dry Basis	0.49	0.45
NE - Gain Dry Basis	0.77	0.73
NE - Lactation Dry Basis	0.72	0.69

When I first began working with the pricing of our pulp products, I was told, “No one will ever pay more than $16.00/ton for 24% DM pulp, because that’s all its worth!” Historically, December corn futures rarely exceeded $2.66 ($2.66 times 6 = $15.96). Thus, a $16.00/ ton ceiling was accepted as truth by the industry as well as the cattle feeders who bought the product. An actual example of this price ceiling was in 2003, prior to my employment with Western Sugar Cooperative. December corn futures soared to $3.30; yet we were not able or unwilling to charge more than $16.00 for the pulp.

I used the nutritionist’s research to identify the value and then hired these respected nutritionists to speak at cattle feeder meetings to help sell the value to our customers. It was clear that our product had a consistent relationship to corn and corn silage and could keep increasing in value along with corn futures. On April 4, 2008 corn futures were at $5.80 and our pulp was contracting at $34.80. (This is over $18.00 greater than the cap that cattle feeders and industry said existed).

3.2 Corn to Beet Pressed Pulp Value Equation:

In order to better understand the true value of our pressed pulp product, we asked the key nutritionist how they value our product. In their analysis, they look at three key factors: total digestible nutrients, protein, and freight to get a product that is 75% moisture to the customer. The nutrient analysis is compared to the existing key products utilized to determine value. For example, suppose the following assumptions hold:

Corn Price (90% TDN) - $5.25

Soybean Meal (44% protein) - $350/ton

We can use the values of corn and soybean meal to determine the value of TDN and protein today.

TDN value – ((5.25/.56)*20 /90%)/90 = $2.31/point

Protein Value – 350/44% /100 = $7.95/point

Therefore, we can compare the values of different feedstuffs based on their nutritional values.

Table 3.2 Example #1 Compare Corn to Pulp

Variable	Corn	Pulp	Point Diff.
Protein	10%	9.0%	-1
Digestible Energy	90%	72%	-18

$5.25/bu corn value on a dry ton basis = $208.33

Pulp has a deduction in protein and digestible energy

Protein deduction = -1 * $5.25 = -$7.95

TDN deduction = -18 * $2.31 = -$41.67

Pulp value = 208.33 – 7.95 - 41.67 = ($158.71 * 24% dm)*.12% freight allowance

Target FOB pulp value $33.52 (33.52/5.25 = 6.38 corn to pulp ratio)

Table 3.3 Example #2 Compare Corn to Corn Silage

	Corn	Silage	Point Diff.
Protein	10%	7.5%	-2.5
Digestible Energy	90%	69%	-21

$5.25/bu corn value on a dry ton basis = $208.33

Silage has a deduction in protein and digestible energy

Protein deduction = -2.5 * $5.25 = -$19.89

TDN deduction = -21 * $2.31 = -$48.61

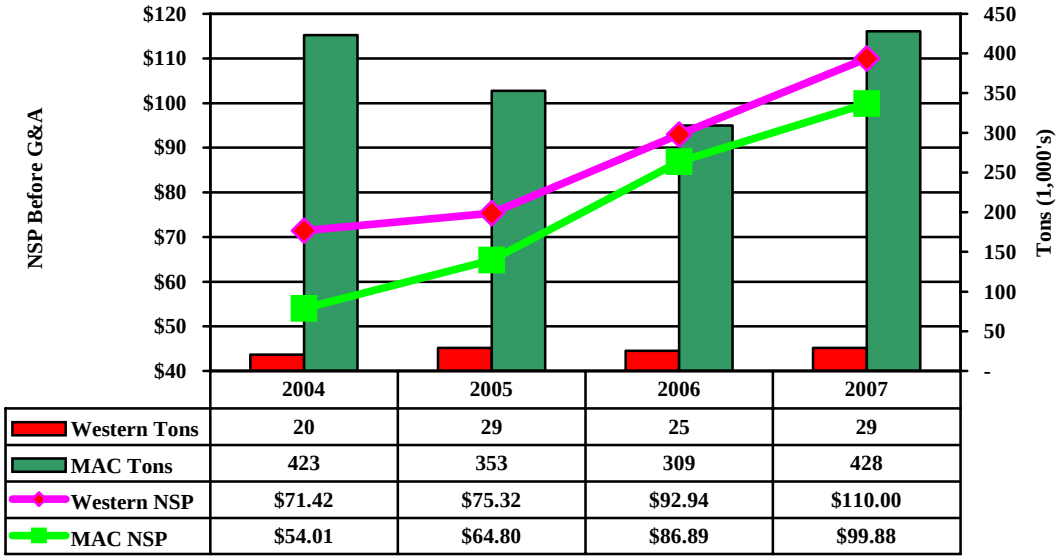
Silage value = 208.33 – 19.89 – 48.61 = ($123.06 * 32% dm)*.12% freight allowance

Target FOB silage value $39.38 (39.38/5.25 = 7.5 corn to silage ratio)

3.3 Market Value of Molasses and Pellets

Price discovery is a very difficult component of the liquid molasses and pellet business because there are very few buyers and sellers. In addition, there is no Board of Trade that establishes a visible cash or futures price. I asked our key cooperative competitor, Midwest Agri-Commodities from the Red River Valley, if they were willing to participate in a bench marking comparison of our molasses and pellet business. This competitor supplies approximately 65% of the U.S. supply of molasses and beet pulp pellets. After legal review to insure there was no violations of comparing past volume and prices and legal assurance that we were compliant with the Capper Volstad Act, we initiated the benchmark comparison. Figures 3.1 shows these results.

Figure 3.1 Pellet Net Selling Price Comparison between WSC & Red River Valley



	2004	2005	2006	2007
Western Tons	20	29	25	29
MAC Tons	423	353	309	428
Western NSP	$71.42	$75.32	$92.94	$110.00
MAC NSP	$54.01	$64.80	$86.89	$99.88

The results suggest that we had an important advantage over our competitors due to logistics. We are located in the heart of cattle feeding facilities and feed product manufacturing. Our competitors were supplying many of the same customers, but their costs and subsequent quoted prices were greatly impacted by the tremendous freight costs to move liquid molasses products from Minnesota and North Dakota to Colorado and Western Nebraska.

With this awareness, it allowed me to better establish our pricing by watching the rail freight costs and the freight surcharges more closely. Price discovery was still somewhat difficult; but with this better knowledge, I could develop a range of pricing our competitors would be selling at in our region and shoot for the highest end of the range. Keep in mind our products were viewed by the customer as a premium because our location did not require them to store large volumes or receive large unit trains of product.

3.4 Implications of the Results

With the knowledge, we were better able to identify what our true opportunity was. The plan was simple: maximize the total net income of our pulp and molasses by implementing the correct product mix, an aggressive pricing strategy, and an effective sales approach.

Our pulp contract commitments are sent out to the cattle feeders every March and the tons are locked in with each customer for their specified months. The customer's pulp price is established by locking in their purchase price using the Chicago Board of Trade December futures, times 6, anytime between March 1st and November 30th. Having a product based off the December corn futures allows both the buyer and seller the ability to hedge or manage risk and pricing.

Prior to 2006, the cooperative had hedged their pulp sales on a haphazard approach. Some years they did no hedging, other they did some, and sometimes they purchased options. My bottom line observation was that there was little risk management planning.

We have decided to hedge 100% of our production with a defined marketing plan that is developed every December prior to sending contracts out. When we can lock in our price objective, we do so using the futures markets. As the customer locks in his prices, we lift an equivalent hedged quantity. This has allowed us to better market our products and to lock in prices that help us achieve financial targets. For example, Figure 3.2 shows the current corn market trend.

Figure 3.2 December 2008 Chicago Corn Futures used for Hedging Pulp

With the recent run-up of corn prices for the past 18 months from $2.35 futures to $5.85 futures, it has allowed us to continue to increase pricing to levels we could never have foreseen. With 2008 targeted values for pressed pulp of $40/ton on 500,000 tons, this equals $20.0 million dollars of revenue in our pulp product line. Our efforts at improving our net revenue on pulp are extremely timely, given the recent run-up in corn. An interesting comparison is the pulp selling price in 2008 for the competitors two sugar beet processors in our Rocky Mountain region; it ran between $7 and $12 per ton. It's apparent that they are still "disposing of pulp". However our plants are located favorably near cattle feeding locations, whereas Worland, Wyoming and Sidney, Montana do not have as much livestock.

3.5 Solving the Problems in Selling More Pulp

In our past years, we had the problem of the cattle feeders delaying their pick up of pulp and therefore creating a problem for us by having a temporary glut of pulp. We also had

pulp buyers delay their purchase during their busy fall season which was also when we were “producing” the most pulp.

We needed a method to clean up the extra pulp and to prevent our customers from developing a vulture mentality. When the pile grew bigger and bigger, the customer would expect a bigger discount off of their contract.

We needed to provide incentive pricing in October and November in some regions to make it worth the feeders time to move pulp during the months when many did not have cattle in their pens or were busy doing field work.

3.6 Solutions for the Problem

We found a company in Arizona that specialized in bagging silage throughout the Western United States. We developed a working relationship with them to solve some of our pulp surplus problems. They were very interested and set up a bagging crew in Colorado. In the first year they were able to work in Fort Morgan and clean the extra pulp by 5:00 p.m. each night. This pulp was put into a silage bag and later sold to dairies. We sold the pulp to the bagger at a 20% discount. This discounting allowed us to effectively raise the price on all of our remaining pulp by creating a shortage.

This partnership was a win/win relationship, and this past year we worked with the company to develop a similar partnership in Billings MT. In both cases, it has allowed them the opportunity to make a good margin and allowed us to widen our margins and increase our sales volume by creating a “scarcity” attitude in the market place.

To create more demand during the slow months of October and November, we established an early pickup incentive, along with a volume discount. This was utilized at the Billings location where the need to stop making pellets and the challenge to convert cattle feeders from corn silage was the most difficult. We used incentives that discounted all pulp picked up prior to December 1st, 2007, customers which would receive a $2.00/ton early pickup discount. Additional discounts for volume purchases were available for quantities greater than 5,000 tons. (5,000 > tons = $1 discount: 10,000 > tons = $2 discount: 20,000 > tons = $3 discount)

Our sales efforts in the past were mainly implemented via mail and phone calls. Now with a targeted approach, we will focus on the cattle feeders in specific regions with on farm sales calls, trial feeding of products, and nutritionist support meetings to help promote the value of our products. Many of the areas we worked in require very little sales support because the customer already believes in the product. In other areas such as Billings, it requires multiple on farm face to face calls to grow the customer base. Today, I am very pleased with our part time representative who travels to the various feedlots to increase the demand for this product.

CHAPTER 4 RECOMMENDATIONS

This chapter discusses recommendations and implications of this analysis.

4.1 Improved Co-Products Net Income

The analysis helped allow us to develop a three year game plan for increasing co-products value. This plan is referred to as AgVision 2010. It has four key initiatives to improve our performance: 1) The addition of 1 fulltime competitive sales representative. 2) The increased use of independent nutritionists. 3) The continued analysis of the businesses monthly net income basis. 4) The performance of semiannual competitive analysis to better understand the market opportunities.

4.2 Sales Focus ($100,000 annual investment)

Our sales method in 2006 consisted of phone and mail contact. We were not staffed to focus on face to face contact or prospect cultivation. We have since added a part time sales person in Billings, and we eventually plan to add an additional field sales person that can help target our top 50 accounts and prospects with on the farm contact. Our goal is to develop a feeding partner relationship that would open additional doors of opportunity. Beyond servicing our existing customers and prospects, this full time sales person would be focused on the following activities:

1. Uncovering possible partnership opportunities through marketing distillers grains from the area ethanol plants in conjunction with beet pulp.

2. Selling additional products and services currently utilized by the feeders.

3. Improving our accounts receivable collections through better relationships and understanding of the customer's ability to pay.

4. Develop long term agreements with the larger dairies and feeders that are financially strong.

4.3 Professional Nutritionist Utilization ($20,000 annual investment)

The large cattle feeders and dairies all utilize a nutritionist to help maximize their net income through better selection in least cost ration formulas. In the past, we have successfully utilized independent nutritionists to help us land large accounts. It is clear that we need to implement more of these activities to expand our customer base with these large accounts. These independent nutritionist consultants would focus on the following activities:

1. Increase customer education using VIP dinner meetings with our top 100 customers and prospects.

2. Increase face to face contacts on the farm with our top 10 accounts annually in conjunction with the sales representative.

4.4 Net Income Focus

One of the biggest benefits has been to manage our business on a net income approach. We will continue to use this analysis monthly. In addition, we will model potential changes in our business and its impact to the net income. Further analysis that will be conducted beyond pulp decisions are as follows:

1) To determine whether we sell or retain the virgin molasses. To analyze the replacement cost at the molasses desugarization plant and the freight associated with shipping from factories to Scottsbluff Nebraska.

2) To analyze the molasses or molasses by products used in making pellets at our Lovell plant. This will allow us to determine which is the least cost product, including freight.

4.5 Competitive Analysis

In order to maximize the selling price of our products, it is critical that we understand the market place opportunities and what prices our competitors are selling their products for. In a small market place, it is sometimes difficult to define your competitors pricing strategy. The key areas we will define on a regular basis in order to maximize our net income are:

1.) Competitors freight costs to ship into our market place.

2.) Feed replacement values of ethanol produced distiller's grains, corn silage, and alfalfa versus beet pulp.

3.) In Lovell, where we will continue to sell pellets, we must determine the value of the small local truck market versus shipping rail cars for export to the PNW. This can be done by having customers bid on our production.

Once the improvement initiatives are implemented, we would measure their impact monthly. The additional staff member would be carefully evaluated to insure that we have selected the right sales representative and have used an effective sales approach. My expectations are that a good sales representative, with independent nutritional support,

should be able to pay for his salary and expenses in 1 year; and produce $300,000 + contribution revenue over and above his direct costs within 3 years. The opportunities are very abundant, and the right sales person should greatly help this business grow.

Tables 4.1 to 4.3 show the budgeted projections for the pulp business through 2010. All assumptions are based on 125,000 harvested acres and $4.00 December Futures.

Table 4.1 Ag Vision Net Income Financial Projections for Co-Products

Beet Quality	Crop Year	CY	CY	CY	CY
	2005/06	2007	2008	2009	2010
Tons/Acre	23.29	22.5	26	27	27.5
Sucrose %	16.49	16.8	17	17.2	17.5
SLM	1.27	1.22	1.18	1.15	1.1

** Assumes Roundup Ready in 2008*

Table 4.2 Budgeted Co-Products Net Selling Price for 2006 to 2010

	2006	2007	2008	2009	2010
Pulp Products/Ton D.M.	$23.13	$53.00	$65	$75	$80
MDS/HE Per Ton D.M. (million $)	$97	$116	$145	$155	$160

Table 4.3 Budgeted Co-Products Net Contribution for 2006 to 2010

Co-Products	2006	2007	2008	2009	2010
Net Income Pulp	$3.34	$7.71	$9.14	$12.19	$13.50
Net Income MDS & HE	$5.65	$6.75	$8.16	$10.08	$10.80
	$8.99	$14.46	$17.30	$22.27	$24.30
Grand Total Benefit	0	$5.47	$8.31	$13.28	$15.31

Our AgVision plan is to increase the net income from all our Co-Products business by over $15,000,000 between 2006 and 2010. We are currently on track to meet these financial expectations. With the high corn futures prices, we will most likely far exceed our goals. This initiative will allow The Western Sugar Cooperative to remain a strong company despite the challenges they are facing in this economy.

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