

**EFFECTS OF FLUIDGRO ON CENTENNIAL
SUPPLY; IMPLEMENTING EFFECTIVE
MARKETING STRATEGIES TO ENHANCE
SALES AND PROFITABILITY**

by

BRANDON B. LAWS

B.S., Tennessee Wesleyan College, 2004

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

2012

Approved by:

Major Professor
Dr. Allen Featherstone

ABSTRACT

Because agriculture is a cornerstone in the U.S. and World economies, the agricultural retail industry is becoming more competitive. To gain a competitive advantage, agricultural retailers must take advantage of competencies that they have.

The thesis provides an in depth analysis of how FluidGro products effect the profitability of Centennial. It explores the issues impacting Ag Retail and how marketing concepts and theories can make a retailer achieve success in volatile times. Insight is provided regarding how Centennial Ag Supply can use those strategies to give them a low cost position and a differentiated product and how Centennial can improve profitability by implementing effective marketing strategies for the FluidGro brand of products.

Finally, a couple of capital improvement options that Centennial Ag can invest in to increase the sales and profitability of their FluidGro product line and what impact that will have on company sales and profitability. A net present value analysis is used to analyze the capital improvements and linear regressions estimate the profitability of the FluidGro product line and how this will contribute to increased profitability to the parent company, Centennial Ag Supply.

Results indicate that Centennial should first invest in a wholesale division. Next, Centennial should invest in a heat exchanger to allow it to manufacture additional products.

TABLE OF CONTENTS

List of Figures	iv
List of Tables	v
Acknowledgments	vi
Chapter I: Introduction	1
1.1 Objective.....	6
Chapter II: Literature Review	7
2.1 Issues Impacting Ag Retail	7
2.2 Marketing Concepts and Theory.....	10
Chapter III: Theory	13
3.1 Porter’s Generic Strategy’s	13
3.2 The Science of Success	20
3.3 Blue Ocean Strategy.....	23
3.4 Inventory Management	27
Chapter IV: Data and Methods	30
4.1 Data.....	30
4.2 Regression	31
4.3 Effects of FluidGro on Profitability.....	32
4.4 Methods	33
Chapter V: Conclusions	39
Works Cited	41

LIST OF FIGURES

Figure 2.1: Porters Five Forces Diagram	8
Figure 2.2: New Metrics for CCO	11
Figure 3.1: Porter’s Generic Strategies Diagram	14
Figure 3.2: Principles of Market-Based Management	20
Figure 3.3: Value Innovation Diagram	24
Figure 4.1: Percent of FluidGro Sales Line Fit Plot	33

LIST OF TABLES

Table 1.1: Summary of Centennial Supply Sales Characteristics	2
Table 3.1: FluidGro Profitability by Product	13
Table 3.2: Southwest Nebraska Crop Acreage	17
Table 4.1: Summary of FluidGro Sales Data by Customer	31
Table 4.2: Regression Results from FluidGro Sales Data by Customer	32
Table 4.3: Correlation of FluidGro Sales Data by Customer	32
Table 4.4 Annual FluidGro Sales by Product	35
Table 4.5: Net Present Value of Heat Exchanger (in \$000)	36

ACKNOWLEDGMENTS

The author wishes to take the time to recognize that the journey that is the MAB program could not be completed without help along the way from several people. I would like to acknowledge the people that have helped me and thank them because even if I could have completed this journey alone it would not have had the same meaning and been as rewarding.

I would like to thank Timothy C. Ulrich, class of 2010, who introduced me to the program. Without his introduction I may never have been able pursue such a fulfilling degree. Thank you to my classmates who worked and learned together with me and allowed me to lean on them for support whenever I had questions or needed their assistance. I would also like to thank my mother and father Cindy and Ron Laws for all their support and simply caring enough to ask how I was doing. It felt good to report my progress to them and have them be proud of me. My mother- and father-in-law Nancy and Mike Coufal deserve a thank you as well for allowing me to work in their home while visiting and also offering much needed support.

While the aforementioned people where truly instrumental in my success in the MAB program, undoubtedly my wife deserves them most acknowledgement. From day one she has sacrificed for me to pursue this degree. She has poked and prodded me when I needed extra motivation and was there to celebrate with me when I completed each piece of the program. I would also like to acknowledge our son, Carter Michael Laws, who has given me a different type of motivation; and while he hasn't always made it easy to focus on my school work he has made it even more rewarding to complete.

Finally I would like to thank all of the professors in the program. Each one of them offered something unique that made the MAB experience enjoyable. I would like to specifically thank Dr. Allen Featherstone for both his direction on this thesis project as well as, with the help of Mary, Lynnette, and Deborah, working to ensure the program is a rewarding and enjoyable experience. Thank You.

CHAPTER I: INTRODUCTION

Centennial Supply Co., hereafter referred to as Centennial, is an agricultural retailer located in Northeastern Colorado and Southeast Wyoming. It was founded in 1976 by James Klein and is still owned by him to this day. Centennial sells chemicals, seed, and fertilizer directly to farmers as well as fertilizer on the wholesale market. Much of the product that is sold is manufactured by other companies; however Centennial has the ability to manufacture many types of specialty grade, high quality fertilizers. Many of those products are sold under their proprietary line of products known as the FluidGro brand.

FluidGro products are profitable for Centennial because the cost of raw material and the value pricing that is used. One of the major issues with the brand is there is no major driver within the company to grow sales. Profitability is often a motivating factor but Centennial also offers many other products that are reasonably profitable and have a fleet of sales reps and customer service representatives that promote their products to Centennial and its sales staff. This often leaves FluidGro products with less promotion.

The FluidGro brand of products has the potential to generate the majority of the company's profit. They are some of the most profitable products in the Centennial portfolio and with further market penetration these products can become a cornerstone of the company, one that provides consistent profitability and helps manage risk of an ever more volatile fertilizer market.

This thesis will explore several possible solutions to the issue of the effects of FluidGro on Centennial and how implementing effective marketing strategies can enhance sales and profitability. The thesis will look at resources within the company as well as ones

that may be available externally. The goal is to find a solution or series of solutions that will allow Centennial to be more profitable as a company.

Centennial is an agricultural retailer; but what does that mean? An agricultural retailer can be defined many different ways, but for this thesis an agricultural retailer is defined as a business that sells inputs and offers services directly to the farmer.

Agricultural inputs are made up of crop protection chemicals as well as seed and fertilizer. Services that are offered by agricultural retailers include, but may not be limited to, chemical and fertilizer application, soil testing, crop scouting, fertility recommendations and data collection for future decision making (i.e. harvest data). Centennial is a top 100 ag input retailer and had \$45 million in sales (CropLife 2012). Those sales dollars are broken down in Table 1.1.

Table 1.1: Summary of Centennial Supply Sales Characteristics

Category	% of Sales
Crop Protection	18%
Fertilizer	75%
Seed	2%
Application	5%

The majority of sales are made up of products that are manufactured by other companies and Centennial acts as a distributor for them. Centennial has agreements with several chemical companies to supply crop protection chemicals. It also has agreements with two seed companies to sell seed. It also works with a few major suppliers to procure fertilizer. Agricultural supply is an industry that is controlled by only a few key suppliers. Anytime Centennial can manufacture its own products, it provides a cost advantage and this is why the FluidGro products are key to the company's future success.

Based on sales volume, fertilizer is the backbone of Centennial and a large component of their success. Fertilizer can be broken down into three major categories. The first one is macro nutrients. These are nitrogen, phosphorus, and potassium. These are large components of commercial production agriculture. The second category is micro nutrients like zinc, boron, manganese, molybdenum, copper, etc. These nutrients have an impact on crop yield of a crop but are used in relatively small quantities. The third category is fertilizer additives or enhancers that can be added to fertilizer blends to produce better efficiency or crop response. The macro nutrients are used in such large quantities and require such large operations to mine the raw materials and manufacture the fertilizer. Therefore, Centennial works with other suppliers to buy the fertilizer and resell it. Centennial also does the same thing with the micro nutrients as well as the fertilizer additives. Centennial has the capabilities to manufacture some of these products providing a better cost position that allows being a low cost provider.

Centennial currently has a core group of products that fall under the FluidGro brand. The products are as follows:

- **32 Cal-iber** – a nitrogen and calcium fertilizer blend that contains calcium thio sulfate and fulvic acid that helps the plant use the nitrogen more efficiently as well as flush sodium from the soil.
- **AquaCon Plus** – a spray adjuvant that contains ammonium sulfate and fulvic acid to improve the efficacy of many pesticides.
- **Beet NiK** – a potassium thio sulfate and nitrogen blend that is specially formulated for sugar beets to increase sugar production.

- **Flash Guard** – a manganese and boron foliar fertilizer blend to help the plant metabolize glyphosate sprays that also contains Transit technology to help maximize yield potential.
- **K Boost** – potassium thio sulfate with Transit technology to maximize sugar production in beets as well as reproduction in all crops.
- **N Capsulate** – fulvic acid that is added to fertilizer blends to help them perform more efficiently.
- **N TruZT** – a starter fertilizer blend with Transit technology to help the crop emerge more quickly and utilize nutrients more efficiently.
- **N TruZT Plus** – N TruZT but with a higher concentration of the Transit chemistry.
- **Slo Ride** – slow release foliar nitrogen to give crops an extra boost of nitrogen at critical times.
- **Stress Out** – blend of N, P, K as well as a micro nutrient blend to help crops recover from stressful events such as hail or chemical damage.

Because Centennial operates in Northeast Colorado and Southeast Wyoming, there are unique market characteristics that present some challenges. First, it is a relatively diverse cropping area with significant acreage of crops like corn, wheat, dry beans, sugar beets, potatoes, onions, alfalfa, turf grass, and sunflowers. Servicing all of these crops causes Centennial to have a large inventory of products, many fertilizer options, a large cost of inventory, and major logistical challenges. This creates added cost for Centennial. The more products that can be made on site could help manage some of the inventory challenges.

The Colorado/Wyoming market is a lucrative market with successful growers. One challenge that comes with operating in a prosperous area is that there are many potential competitors. Centennial has many competitors, especially if you consider that all agricultural retailers sell mostly the same products. In one of the markets, Yuma, CO, there are seven other retailers that sell at least one or all of the same classes (chemical, seed, and fertilizer) of product. This creates a need to differentiate from the competition by offering products from the FluidGro line.

While Centennial is an ag input retailer whose mission is to help growers be more profitable by offering innovative solutions to their everyday challenge of reaching maximum yield potential, Centennial's main purpose for being in business is to be profitable. The full service agricultural retailer incurs a lot of costs to run business operations. Each location has several pieces of application equipment with some self-propelled pieces of machinery costing as much as \$250,000 each. There is also a fleet of semi-trucks and tankers for fertilizer transportation. Inventory is also a large cost item. Some crop protection products cost as much as \$300 a gallon with a need for thousands of gallons of chemical on hand. There also is a real cost associated with the risk of the agricultural retail business. If Centennial inadvertently ruins a farmers crop, that is a large expense. There are environmental hazards that must be considered. The industry standard for net profit before taxes is anywhere from 4% to 12%. Centennial has a goal for all of their locations to achieve a 10% profit before taxes and currently 3 out of 5 locations are meeting that goal. With the high margins associated with FluidGro products and by extracting the value they create, Centennial should see the 10% goal achieved across the board if it focuses on growing sales and offering new products in this branding platform.

1.1 Objective

The thesis examines the effects of FluidGro products on the profitability of Centennial and how implementing effective marketing strategies may increase the sales of FluidGro products and increase overall company profit. Theories on effective marketing as well as strategies to increase sales volume and offer new products will be explored. To show why these efforts lead to more profitability for Centennial, a regression will be developed to examine how profitable the FluidGro brand is on a per customer basis. The thesis will examine individual FluidGro products and how they affect Centennial's profitability and the direction their sales volumes have changed over the past five years. This should answer whether or not increasing FluidGro's sales volume will lead to more net profit for Centennial.

CHAPTER II: LITERATURE REVIEW

The agricultural industry faces many issues and challenges. Many are issues for all businesses while others are unique to the agriculture industry. Most agricultural retailers have many of the same issues though they may look at them in a different light based on their situation. The following information is a summary of previous literature that has addressed these issues.

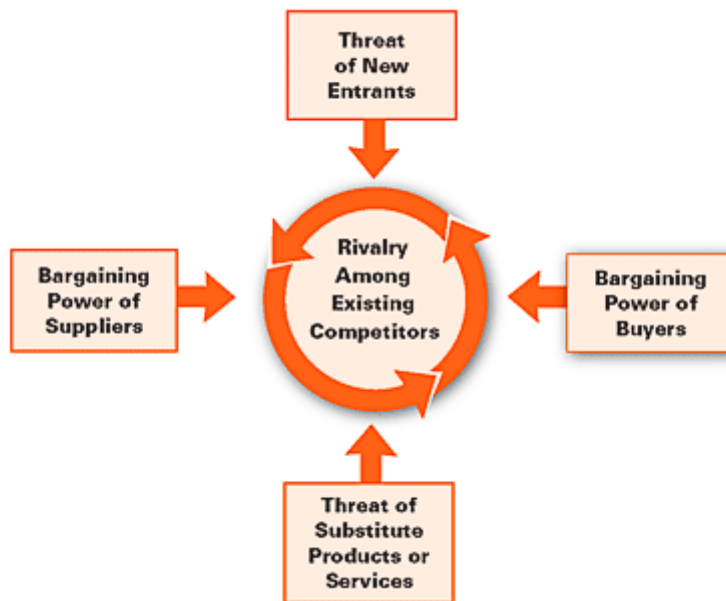
2.1 Issues Impacting Ag Retail

The agriculture retail industry is very competitive by nature. There is a finite amount of sales potential. While the number of farms or farmers may continue to change, there is a relatively set number of acres that everyone is competing for. Olsen, Rahm, and Swanson (2010) explore the industry and the competition that is at work using Porter's Five Forces model. Porter's five forces is illustrated in Figure 2.1. This figure explains how companies gain market share to offset relatively high fixed costs as well as market segmentation to try and identify customers that will have the most profit potential. Olsen, Rahm, and Swanson argue that international competitors are the most likely threat to enter the market. With some companies operating in an economy that is not a traditional free market system, they are able enter the market and ignore short term or long term profit perhaps because of government backing or financing. As one example, Olsen, Rahm, and Swanson discuss the Chinese glyphosate industry that was a spinoff of China's petrochemical industry. The motive for entering the market was to increase employment and exports not profit.

The bargaining power of the supplier as well as the bargaining power of the buyer is also explored (Figure 2.1). The agricultural input industry is a price taker because the use of products is small per company compared to other global sectors who use the raw

materials in a non-fertilizer capacity. The industry profits are difficult to maintain at the retail level because raw material suppliers set the price and there is no product differentiation because fertilizer is a commodity so this causes the industry to compete on price. The bargaining power of the buyer is a consequence of farmers having little market power because they act as individuals. Also agricultural retail companies are working to grow larger and gain market share so they can take advantage of large purchase discounts, freight savings, and market cycles with large amounts of storage.

Figure 2.1: Porters Five Forces Diagram



Source: Porter 2008

The threat of substitutes comes from companies trying to make improvements in the production process. While the plant cannot substitute one nutrient for another, companies can attempt to breed better genetics or insert different traits into the plant to reduce or eliminate the need for a certain line of products. In this case, the substitute for one product or service could be the very product it was created to protect. A good example

of this is biotech seed with insect resistant traits. These products have all but eliminated the application of some soil insecticides. Olsen, Rahm, and Swanson recognize that the industry has a heavy burden to meet the estimated world demand for food, fiber, and fuel and that comes from large demands on the value chain leaving the industry to continue to compete for profit and market share.

Product differentiation is a way that rivals actively compete against each other. Krause (2011) looks at how agricultural retailers use product differentiation as a way to rival their competitor. He identifies product differentiation through performance, bundled services, discounts, rebates, and loyalty programs as the primary way competitors differentiate their products. Many companies try to find a product that can outperform their competitor. Seed companies develop with hybrids, chemical companies patent new forms of chemicals, and fertilizer dealers try to make specialty blends or use proprietary additives. Crop input retailers work closely with growers and provide recommendations on what blends of fertilizer and what chemical combinations to use. If retailers are able to add value to the input business by coupling it with an application service or some type of finance plan, they can often offer a slightly more attractive price. Price competition can also exist through volume discounts, rebates, and/or loyalty programs. Many times truckload quantity discounts are given for large farmer purchases. Also many companies have a cash back or point system if the farmer uses multiple products from the same supplier. With more competitors offering the same products and services it is crucial to differentiate the products to achieve more profit.

The ability to have a customer for life is the ultimate goal of a retail business and agriculture retailing is no different. In the Retailing Issues Letter put out by Arthur

Anderson in September of 2000, a bike retail shop is the self-proclaimed world famous bike shop that has a unique perception of the industry. The premise for success has been the desire to offer a level of service that is beyond the imagination of the customer. The retailer demonstrates this at public speaking events with a bucket of quarters. The quarters are the amount of service the company can offer, representing both time and money. The retailer offers members of the audience to take as many quarters as they want, he believes, that people are in large reasonable and regulate themselves on what they expect. He goes back to everyone who took the quarters and gives them more, this is the illustration to show that giving more service than expected allows you to build a relationship with that customer that will last for life. “Removing the bar rather than raising it” (Zane 2000).

2.2 Marketing Concepts and Theory

Marketing can be defined as the flow of information from the distributor/manufacturer to the consumer and back. According to the article Rethinking Marketing, a growing trend in marketing is to allow information to flow from the customer to the distributor/manufacturer to help them offer a product that fits customer needs. This is different from offering a product and waiting for feedback from the customer to see if it has been properly positioned. The new trend is actually leading to a new position for companies across the world. The CCO or the Chief Customer Officer is a position that has grown from 30 companies to over 300 companies today (Rust, Moorman and Bhalla 2010). The CCO people focuses on a new set of metrics (figure 2.2).

Market segmentation is getting a fresh look in many industries, including agriculture retail. Rediscovering Market Segmentation is a piece in the Harvard Business Journal that examines how companies use this tool and where they could expand use. Segmentation focuses on consumer types but according to the article, 59% of companies

surveyed have executed some type of major market segmentation but only 14% believed they received value from the process (Yankelovich and Meer 2006). The idea behind segmentation is to identify a decision that would benefit from the information about different market segments.

Figure 2.2: New Metrics for CCO



Source: Rust, Moorman and Bhalla 2010

The firm tries to determine which customers drive profits and segment them in ways that make sense to manage, analyze actual and potential purchasing behavior, and revise segmentation decisions as market conditions change (Yankelovich and Meer 2006). The firm is trying to gain insight on how to beat the competitor and get the maximum value from your resources in the market.

Once the strategies are implemented, how can an organization take advantage of the information? The resource based view of the firm allows this to occur. This is an internal look into the firm to find specific resources that can be exploited to gain a competitive advantage. Firms look at manufacturing capacity, customer loyalty, production experience, and technological advantages (Wernerfelt 1984). Firms find resources that help sustain a barrier to competition. Most often it is in a place where competing firms currently don't

have a position barrier themselves. These barriers can be defined as partially analogous to entry barriers and applied to current products that exploit these resources as well as new products that allow the firm to take advantage of the resources as well (Wernerfelt 1984).

CHAPTER III: THEORY

FluidGro products are very profitable for Centennial. Table 3.1 outlines the 10 products that currently make up FluidGro's lineup and the sales margin they generated for Centennial. This information was pulled from the companies accounting software and is an average generated over the life of the product dating back to 2008. In 2011, FluidGro accounted for 2.8% of gross sales. This is a relatively small number, when you realize that these are high value products and have a higher cost per acre compared to more traditional options with the high margin potential, one would think sales would be higher to capture that added value in the form of profit.

Table 3.1: FluidGro Profitability by Product

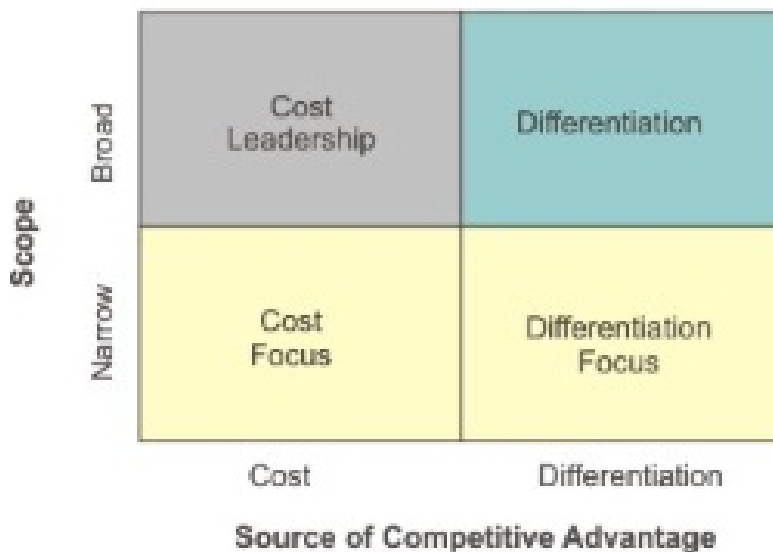
<i>Product</i>	<i>Margin</i>	<i>Product</i>	<i>Margin</i>
Flashguard	54.50%	K-Boost	63.34%
Slo-Ride	67.49%	NTruZT	34.74%
N-Capsulate	55.58%	Aquacon Plus	55.25%
Beet Nik	51.14%	32-Cal-iber	33.12%
Stress-Out	62.77%	NTruZT Plus	46.64%

3.1 Porter's Generic Strategy's

One way to increase sales volume for these products is to create a wholesale division for FluidGro. Increasing sales volume would allow the company to take advantage of economies of scale on the manufacturing side and allow the retail division a higher margin opportunity. The goal in creating the wholesale division is to allow FluidGro to gain a cost leadership position while still using differentiation to separate those products from their competitors. This strategy allows FluidGro and Centennial to gain a competitive advantage over other agriculture retailers (Figure 3.1). This figure shows how a firm can focus on certain strategies to gain the advantage. It outlines the scope of the

customer that the firm can focus on as well as how it can extract value, or obtain a competitive advantage, from that scope. The firm can attempt to be a low cost provider or offer a differentiated product that is more highly valued by the customer. Through development of FluidGro, Centennial has gained knowledge and developed strategic alliances to differentiate its products from its competitors.

Figure 3.1: Porter’s Generic Strategies Diagram



A wholesale division would give Centennial the ability to segment the market. This would enable FluidGro products to reach farmers that realize the value of the products and are willing to pay for them. Based on interviews with other agricultural retailers in the region, there are several retailers in the western half of the country with whom Centennial does not compete and do not have a strong portfolio of value added fertilizer products. While that may occur for different reasons, a partnership with a supplier who can support them would allow a strategic alliance to form and gain the ability to differentiate themselves from their competitor. These products require a certain level of support and training, so companies understand how to position them in the market and how to answer

objections they may receive in their sales efforts. Centennial has the capability to be that supplier with their current product line-up and agronomic knowledge of those products. Centennial can train and support many other retailers in their sales efforts of the FluidGro brand. These retailers also have intimate knowledge of their customer base that is a key component of market segmentation, allowing both the retailer and FluidGro the ability to offer the most effective product for the situation.

In 1997, Toyota introduced the Prius in the U.S. market after success in Japan. The launch of a hybrid car at that time was considered unsuccessful because the American consumer had little concern about fuel economy at that time (Yankelovich and Meer 2006). The failure by Toyota to understand the U.S. car buyer market and what they wanted led to losses. By working with other agriculture retailers Centennial could use their knowledge of their customers to market the FluidGro line to producers that would be interested in it. FluidGro could also take this knowledge and develop new products that could be adapted for a specific area or it could introduce new products over the entire selling area increasing their ability to differentiate.

By working with other agriculture retailers in the western U.S., FluidGro would also have an opportunity to build brand recognition. Cheerwine is a cherry flavored soft drink that is similar to Cherry Coke or Black Cherry Dr. Pepper. Many have not heard of it unless they have spent time in North Carolina. This is where the beverage is made and marketed. By working with other retailers in different markets, this would allow FluidGro the potential to reach national recognition, or at least recognition on a regional scale. This would give Centennial the ability to communicate its mottoes of “Commitment to

Excellence” and “Innovative Solutions for Innovative Growers” to a broader target audience and open the door for expanded opportunities.

In examining the opportunity in the region of southwest Nebraska, a partnership with several retailers would give FluidGro a wholesale presence that could lead to additional profits. In the counties of Perkins, Lincoln, Dundy, Red Willow, Chase, Hayes, Frontier, and Hitchcock there are over 2 million acres of crop land (Table 3.2) that includes 1.2 million acres of corn, 464,000 acres of wheat and 120,000 acres of soybeans (Nass 2012). If FluidGro could gain access to just 15% of this market with an average program cost of \$17 per acre this would increase company profit by 1.2 million dollars, assuming a profit margin of 25 percent. By differentiating the product and focusing on companies who service growers that are looking for new and innovative ways to increase their bottom line, FluidGro could enhance the profitability of Centennial with a wholesale division.

Table 3.2: Southwest Nebraska Crop Acreage

Category	Acreage
Corn	1,296,195.60
Sorghum	52,686.20
Soybeans	120,900.00
Sunflower	5,539.60
Sweet Corn	0.4
Pop or Orn Corn	1,645.10
Barley	1.3
Winter Wheat	464,022.00
DbI Crop WinWht/Soybeans	1,082.80
Rye	1,339.00
Oats	959
Millet	7,370.20
Safflower	50.7
Alfalfa	40,156.90
Other Hay/Non Alfalfa	8,923.10
Sugarbeets	320
Dry Beans	1,408.40
Potatoes	3,245.00
Other Crops	8.2
Peas	949.6
Switchgrass	16.7
Fallow/Idle Cropland	333,196.30

Source: Nass 2012

In the area of Southwest Nebraska, FluidGro would have many potential partners. There are two companies that FluidGro would target that would give them access to those acres. Those companies are Aurora Co-op (Aurora) and Cooperative Producers Inc. (CPI). These companies have been identified because of location, sales volume, and business make-up/business philosophy.

Aurora Co-op services southwest NE but also would give FluidGro an opportunity to expand into central and eastern NE as well as north central Kansas. Aurora Co-op is the 16th largest crop input company in the country according to Crop Life magazine (CropLife 2012). With over 100 million dollars in sales and with 45 percent of that being in fertilizer, this is a large market for FluidGro and a way for Aurora to extract more value from

existing sales and grow new sales. Centennial and FluidGro have an existing relationship with Aurora as they currently supply Aurora with N-Capsulate, a fulvic acid product that helps enhance fertilizer efficiency and activate vital functions within the plant. Aurora also positioned itself in the market as a highly knowledgeable company that is there to service its growers with sound agronomic solutions. This is a philosophy that fits FluidGro and the adoption of its products. All FluidGro products are designed to offer solutions to problems or enhance yield through agronomic research.

CPI is a Crop Life top 100 ag input retailer with between 50 and 100 million dollars in sales with 59 percent of that in fertilizer. CPI was identified because of their location, like Aurora, they have locations in southwest NE as well as central NE which allow for expansion. They also focus on the high service end of agriculture with an emphasis in precision agriculture. FluidGro has positioned several of its products to fit in a grower's fertility program if he/she is using precision ag and precision placement technologies. These products would provide CPI another item in their portfolio to extract market value from growers who are concerned about making an investment with the highest rate of return for their farm.

Aurora and CPI have used differentiation to get the most value for their products. Aurora has gone after a broader target audience with a simple differentiation strategy that says "we are more knowledgeable than all of our competitors". This has allowed them to extract a little more value for the same product or service because most growers are willing to pay for that knowledge. CPI has used a differentiation focus to target a narrow customer base and attempt to extract a high value from those customers. Their use of precision ag has allowed them to do business with customers that are willing to invest capital to achieve

a higher return on their farm than they were previously experiencing. FluidGro is a brand that fits both models. Differentiation is a key strategy for their success. These products are not like many in the market and a wholesale partner that can communicate that message will allow FluidGro to increase sales and allow the partner to be more profitable with their existing sales and grow future sales as well.

The area in question is not, however, without competition. There are three major competitors that FluidGro would have to compete with. These companies are Crop Production Services (CPS), Helena Chemical, and Kugler. CPS has a separate products company similar to FluidGro called Loveland Products Inc. (LPI) and Helena has their own line of value added nutritional products. Kugler is a small family owned fertilizer company located in southwest NE that focuses on specialty blended fertilizers utilizing slow release nitrogen and ortho-phosphate based formulations. Each of these companies will be challenging to compete with in their own right. LPI and Helena have large resources of cash and a national retail network to pull information from and Kugler is a well-established local company with loyal customer following. It is believed that FluidGro could still achieve success as a wholesaler in this area due to its ability to use local knowledge and small company size to move and adapt quickly to offer sound agronomic solutions for the wholesale customers and their growers.

Growing the brand through a wholesale division is not without potential challenges. If the retail division of Centennial expands into an area where another partner retailer is, there will be competition between sellers of FluidGro and could de-value the product as the two companies compete for the same business. There also is the risk of ruining the relationship between FluidGro and the partner retailer that may result in termination of the

partnership. This could be viewed as creative destruction but it would only be beneficial if the result was a net gain from the Centennial retail store realizing more margin for the company than the partnership. Creating a wholesale division would increase sales volume as well as help segment the market, develop new products and create brand recognition through Porter’s Generic Strategies of cost leadership and differentiation.

3.2 The Science of Success

When trying to implement new practices or ideas, it is important to have a plan. The five principles of market based management are vision, virtue and talents, knowledge and process, decision rights, and incentives and offer a guideline as to how to put thought into action (Figure 3.2).

Figure 3.2: Principles of Market-Based Management

1. Vision - Determining where and how the organization can create the greatest long-term value
2. Virtue and Talents - Helping ensure that people with the right values, skills and capabilities are hired, retained and developed
3. Knowledge Processes - Creating, acquiring, sharing and applying relevant knowledge, and measuring and tracking profitability
4. Decision Rights - Ensuring the right people are in the right roles with the right authority to make decisions and holding them accountable
5. Incentives - Rewarding people according to the value they create for the organization

Source: Koch 2007

In creating and growing a wholesale division for FluidGro, it needs to be seen how Market Based Management principles can be applied. Centennial’s vision is “To improve the productivity of our customers through expert innovation, consultation, products, and services.” The idea of adding a wholesale division aligns perfectly with that vision. A wholesale division can bring innovative products to a wider scope of customers that would

allow more growers access to these products. The implementation plan involves four dimensions of MBM and has to do with people.

The steps to implement the wholesale division are:

1. Break out FluidGro into a separate profit center
2. Hire a sales and marketing manager along with a sales team
3. Work with Centennial retail to enhance and develop products
4. Use a network of retailers to distribute the product

In his book, “The Science of Success”, Koch talks about profit centers. He says “a business can best determine where to create value when it is organized into profit centers” (Koch 2007). In the case of FluidGro, this would transfer all products to a cost based system and allow Centennial to maximize its competitive advantage by monitoring the profitability of the brand and each individual product.

The hiring of a sales/marketing manager to oversee FluidGro would be one step to help manage the brand and the products using their skills to ensure success. Virtues and talents are a MBM principle that insures that people have the right skills, values, and capabilities to do the job (Figure 3.2). By placing the right person in that role, it allows the company to maximize the dimension of virtues and talents. The right person also exercises the fourth dimension of MBM which are decision rights. The sales/marketing manager would have many responsibilities. That person would need to be given the authority to make decisions and would be held accountable for those decisions. To a lesser degree, the addition of a sales team would also fall under these two dimensions. Members of the sales team would have a great deal of autonomy and would be expected to uphold the company values as well as make sound decisions that lend to the overall success of the brand.

Knowledge is power, and when working with new products and new technology it is key to have a large knowledge pipeline so everyone in the company can benefit from the rapid flow of knowledge. The MBM dimension of knowledge processes is the act of creating, acquiring, sharing, and applying relevant knowledge, and measuring and tracking profitability (Koch 2007). By working with Centennial retail, FluidGro has an outlet to test products as well as get feedback from growers. This allows the company to better educate as well as enhance the products it offers.

Centennial's headquarters sits on about 130 acres, of which 100 is active farmland that is owned by the company. By using that farmland to perform trials on new and existing products, it will give Centennial good insight on how to improve and position existing products as well as what voids could be filled by new products. This would lead to higher profitability to the grower and allow Centennial and FluidGro to assign a value to the products because they could put a quantitative number on the product based on increases in yield and revenue. FluidGro and Centennial could then take this information to their sales force and train them on product uses and crop responses so they could communicate this value to the growers. The knowledge process is a key part of the MBM system and establishing research trials and training would allow the company to take advantage of the success this system would generate.

The last plan of action takes advantage of the MBM dimension of incentives (Figure 3.2). Incentives certainly apply to the sales department; however, using a network of retailers to distribute FluidGro products will use incentives also. This principle or dimension is important because it is one that benefits both parties. Centennial is incentivized by the larger market area for their FluidGro products and the retailer or

distributor is incentivized by the profit potential and product offering of the FluidGro Brand. It must be a true win-win for it to work. Incentives reward people according to the value they create for the organization. The retailers create value for Centennial and FluidGro by buying and distributing the product and Centennial creates a value for the retailers by offering a FluidGro product line that brings a value to the market place at a price point that allows the retailer to realize a profit. Incentives are the adhesive of a partnership. Establishing a wholesale division for FluidGro is a major step to growing sales and expanding the product offering of FluidGro products within Centennial.

3.3 Blue Ocean Strategy

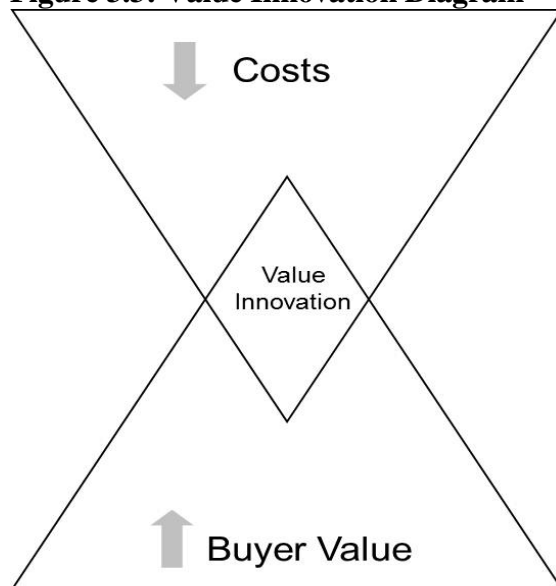
There are a number of farmers that could use products like the ones in the FluidGro line and they also have needs for products that don't exist. Centennial and FluidGro are in a position to expand the manufacturing capabilities to make products currently bought from other suppliers. This allows them to operate in as much of a "Blue Ocean" as possible in this industry.

A Blue Ocean is a market that is created by a firm through value and innovation such that they are the only ones operating in that market. They have made the competition obsolete because no one can do what they do, or at least not for a while. Fertilizer has been around for decades and it is difficult to develop a true Blue Ocean Strategy. FluidGro has an opportunity to manufacture micro-nutrient fertilizers and specialty, high quality grades of fertilizers. For both micro nutrients and high quality grade fertilizers, there are only two or three manufactures in the industry and none of them are in the Rocky Mountain region. Expanding manufacturing capabilities would allow FluidGro to capitalize on economies of scale and increase margins on the retail side by giving FluidGro a lower cost position, as

well as be a supplier for a large number of agricultural input retailers that currently have no reliable supplier.

FluidGro could become a value innovator by bringing new technology to the consumer at a low cost and a high buyer value. The ability to operate as a low cost provider and provide for product differentiation in what is described in the Blue Ocean Strategy as value creation. Applying this advantage to new technology with high value may allow FluidGro to turn value creation into value innovation (Figure 3.3).

Figure 3.3: Value Innovation Diagram



Source: Mauborgne 2005

Blue oceans are defined as untapped market space, demand creation environments, and the opportunity for highly profitable growth (Mauborgne 2005). The opportunity for FluidGro to expand manufacturing capabilities and develop new products is one that creates a blue ocean type environment. This can be accomplished through the following:

1. Adding a heat exchanger to the fertilizer plant to make ortho-phosphate based fertilizers.

2. Utilize the capability to make citric acid chelated fertilizers for retail and wholesale distribution
3. Expand the fulvic acid and Transit based products.

If FluidGro expands its manufacturing capabilities by adding a heat exchanger, it will allow the company to manufacture orthophosphate blends using potassium hydroxide and urea. This provides a product that will be a value creation in their area of the country. Orthophosphate fertilizers are a more efficient and available form of phosphate fertilizer that is only manufactured by two or three suppliers. FluidGro can sell these products in their retail stores as well as have a product to take to the wholesale market throughout the western United States.

FluidGro and Centennial also currently have the ability to manufacture micronutrients in the citrate form but is not doing so on a large scale. Micronutrients in the citrate form are used throughout agriculture. Citric acid is used to chelate the nutrient allowing it to be mixed with other fertilizers and herbicides without much antagonism, which occurs when the metals react with the herbicide and make it less effective, as well as increased plant availability. FluidGro could increase the manufacturing of these nutrients and provide another valuable asset to sell in both a wholesale and retail market.

Fulvic acid and “Transit” are two products that are additives that affect fertilizer efficiency. Fulvic acid is the component of the N-Capsulate product offered by FluidGro. It has been the best selling product since 2008 when the name was changed from Fulvic 6000 to N-Capsulate. Transit is a technology that was developed by one of FluidGro’s strategic partners, FBSciences. It is a carbon based compound that works in the plant by triggering a physiological response from the plant resulting in better fertilizer use

efficiency, stress tolerance, and yield potential. Both of these products have enormous upside in the area of value innovation. They are proven to increase fertilizer use efficiency and yield. With high fertilizer costs and above average commodity prices, a producer should see value in lower input costs that increase revenue. Both of these products have a low cost position giving the retailer a high profit potential. By focusing on these products FluidGro can begin to operate in more of a Blue Ocean environment.

In the world of agriculture retail, the vast majority of companies do not have the capability or desire to manufacture their own chemicals and specialty fertilizers. Therefore, there are only a few, non-retail, companies that manufacture anything similar to what FluidGro could manufacture. The expansion of FluidGro's capabilities and products allow them to follow the sequence of a Blue Ocean Strategy. The Blue Ocean Strategy is a sequence of concepts or questions that your product must fit or answer yes to. These are buyer, utility, price, cost, and adoption (Mauborgne 2005). The three action steps fit those concepts. Buyer utility is simply; will this bring value to a mass of people so they want to buy it? Products that enhance yield will have a value for the growers. The concept of price means that you can sell the product at a price point that will be accepted by the consumer. With the products mentioned above, FluidGro may be able to price them at a price point that the consumer will pay, especially since they are currently selling some of them now. Cost is the ability to secure the product, or manufacture the product at a cost that will allow them to sell it and make a profit. As mentioned before it is selling some products currently at a profit and those products are procured from a third party. By manufacturing in house, this cost should be lower since many of the manufacturing capabilities are already there and those costs are sunk costs.

3.4 Inventory Management

As a company or division within a company expands, it is important to keep the cost of doing business low. In the case of FluidGro, as with many manufacturers, one of the major goals of expansion is to achieve the lowest cost per unit of production as possible. One key step in doing this is managing inventory.

Vendor managed inventory is an inventory management system in which a supplier assumes responsibility for the timely replenishment of a customer's stock. APICS (The Association for Operations Management) defines a VMI arrangement to be a "means of optimizing supply chain performance in which the vendor is responsible for maintaining the inventory level required by the customer. Re-supply is performed by the vendor through regularly scheduled reviews of on-site inventory". In other words, FluidGro can control the movement of product, offer timely service to its customer as well as cut down on shipping and warehousing costs and more accurately forecast demand by using a VMI based system.

According to the SBA, there are three major types of VMI systems in the market place today. They are consignment, pay on scan and scan based trading (U.S. Small Business Administration n.d.). Consignment is the most basic type of vendor managed inventory. It operates by taking a participating vendor delivering inventory at pre-determined times and formally accounts for the inventory, much like a traditional transaction between vendor and retailer. The only major difference between consignment and a normal vendor to retailer transaction is that the vendor comes in on periodic intervals to count inventory from which they will order more stock and compensate the retailer for the sales. Pay on scan is a form of VMI that is more efficient. It eliminates the predetermined delivery times and inventory counts and allows the vendor greater access to the store and the inventory. The vendor has

ownership and replenishment responsibilities of the inventory. When the items are scanned for sale by the retailer, the vendor has access to that information and knows when to replenish the inventory in the store and once those items are scanned, the vendor can charge the retailer for the cost of that good. The vendor absorbs the shrink in this method since items not scanned are never sold and the retailer is not charged for this item so this works best with products that have little shrink.

The third major method of VMI management is scan based trading and is by far the most sophisticated. Like pay on scan, the vendor has unrestricted access to the store and inventory but there is a far greater level of data visibility between the vendor and retailer. For instance, the vendor may have the capability to access sales numbers at the customer level through the retailer's records. Also the vendor may have prior knowledge of sales or promotions. The vendor can adjust inventory ahead of time to account for the potential change in demand. With the scan based trading method, the problem of shrink is also handled differently. There is usually a predetermined cap on what the retailer will pay in shrink. If that cap is exceeded, the vendor will be assuming the loss for the difference. Many companies, according to the *Journal of Business Logistics*, have seen reductions in over pay / under pay errors and inventory adjustment times may be reduced from 20 days down to two days on average (Wallin, Ashenbaum and Rabinovich 2007).

In many ways, an agriculture retailer is a lot like a grocery store with similar products from several different manufacturers. FluidGro could set up a scan based trading system that would allow the retailer system to EDI inventory levels and sales transactions directly into their supply chain management system. These numbers could be compared to for Centennial and the location would never have to go without inventory and FluidGro

would have a more accurate demand curve in which to produce by, all while reducing warehousing costs. According to the *Journal of Business Logistics*, many large grocery retailers have implemented a VMI system due to its efficiency. It allows them to focus on sales and building customer base rather than managing inventory. The retailer could put the focus on managing their retail locations and local markets and FluidGro could forecast inventory to ensure product is available when needed.

The Grocery Manufacturers Association conducted a study where users of scan based trading saw significant benefits. Vendors, on average, saw sales increase as much as 5% and retailers experienced a decrease in shrink by 1% of sales (Association n.d.). The argument can also be made that with a more open and direct channel to the retailer, warehousing costs would go down resulting in an even larger gain for both companies.

CHAPTER IV: DATA AND METHODS

To explore how to improve profitability by implementing effective marketing strategies, the level of profitability of FluidGro to Centennial must be explained. Sales data from 2008 to April 1st 2012 were obtained from the Centennial accounting software. All sales from that time period from all active customers were obtained. To analyze the data, four variables that affect margin percentage of a customer in both a positive and negative way are examined:

- Margin – this is the net income divided by total revenue.
- (S) Sales \$- indicates an average of total sales dollars for that customer.
- (A) Application \$- indicates the average amount of sales dollars that were spent on custom application of chemicals and/or fertilizer on their farm.
- (P) Prepay\$- indicates the average amount of sales dollars that were prepayed to secure a fertilizer or chemical cost for the next season.
- (F) % of Sales for FG- indicates of total sales dollars what percentage was generated from the sale of FluidGro products.

4.1 Data

The data were collected from Centennial and is summarized in Table 4.1. It shows the results of 1112 observations and the four variables listed above. The mean of the specific variables can be used to examine what an “average” customer might look like to Centennial. The average customer spends \$40,781 with Centennial and \$2,028 of that is for application and \$3,970 of sales is from prepay. Of the \$40,781, in sales, only 2.4% was from the sale of FluidGro products.

Table 4.1: Summary of FluidGro Sales Data by Customer

	Mean	Standard Deviation	Range	Minimum	Maximum	Count
Sale \$	40,780.5	202,762.6	1,431,930.8	10,351.3	1,442,282.1	1,112
Application \$	2,028.29	15,400.78	94,325.13	0	94,325.13	1,112
Prepay \$	3,970.33	58,393.23	402,900	0	402,900	1,112
% of Sales for FG	0.024009613	0.041392077	0.209730262	0	0.209730262	1,112

4.2 Regression

To determine how the variables affect customer margin, a regression was run on the data using the same variables. The results are displayed in Table 4.2.

Margin is profit margin and is the percentage of profit determined by the difference in sale price and cost (net income) divided by revenue (sale price). The sales, application, and prepay are variables expressed in thousand dollar increments while variable F is the percentage of sales dollars that are FluidGro products. Sales volume and prepay volume have a negative effect on margin while application dollars and percent of sales that are from FluidGro products have a positive effect on margin. More specifically, for every \$1000 spent with Centennial, a customer's margin decreases by 0.0239 percent and for every \$1000 of prepay dollars taken the customer's margin decreases by 0.0622 percent. However for every \$1000 spent on application service margins increase by 0.308 percent and for every percentage of sales that is spent on FluidGro products customer's margins increase by 1.08 percent.

Table 4.2: Regression Results from FluidGro Sales Data by Customer

<i>Regression Statistics</i>	
Multiple R	0.32439682
R Square	0.105233297
Adjusted R Square	0.071784074
Standard Error	22.21247061
Observations	1112

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	35.27386142	2.829173224	12.46790445	1.41391E-22
Sales \$	-2.39139E-05	1.54411E-05	-1.548713046	0.124403462
Application \$	0.0003079	0.000202676	1.519174032	0.131668075
Prepay \$	-6.22271E-05	3.68517E-05	-1.688583239	0.094211723
% of Sales for FG	108.9890664	51.43420559	2.118999703	0.036404254

The regression model may have potential problems that may violate the classical assumptions. One of those is the potential for multicollinearity. The independent variables sales dollars, application dollars, and prepay dollars are all components of each other. Sales contain application and prepay, and prepay may be used to pay for application so there is potential for collinearity. Table 4.3 shows how the variables are correlated. Application and sales are closely correlated. This indicates that it may be difficult to accurately estimate the coefficients of these variables. All other variables show less correlation.

Table 4.3: Correlation of FluidGro Sales Data by Customer

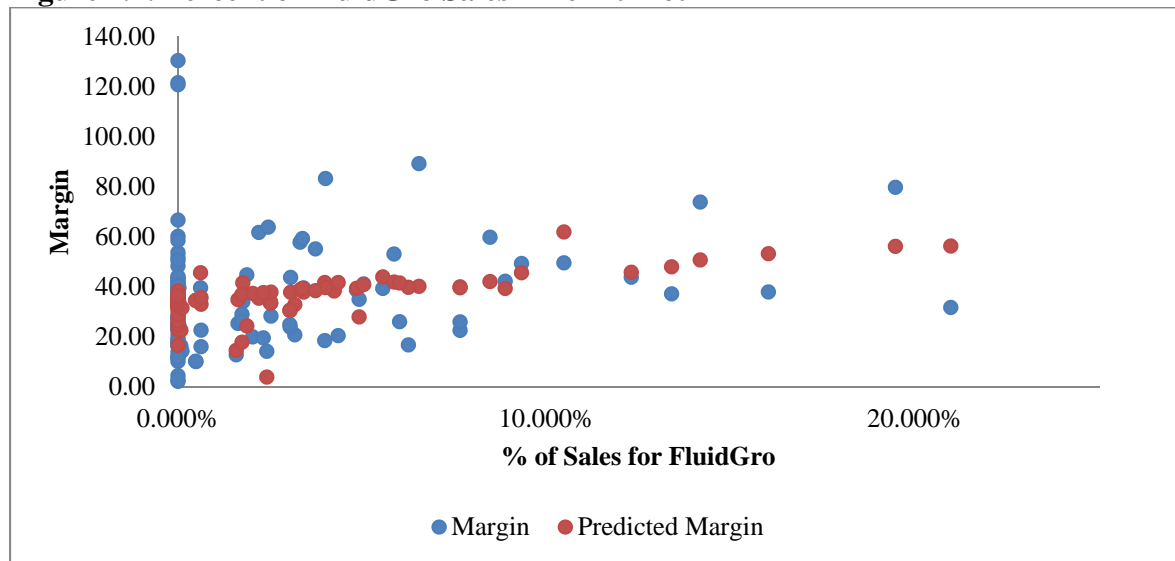
	<i>Sales \$</i>	<i>Application \$</i>	<i>Prepay \$</i>	<i>% of Sales for FG</i>
Sales \$	1			
Application \$	0.722154905	1		
Prepay \$	0.104439856	-0.041663119	1	
% of Sales for FG	-0.035245409	0.066117369	-0.003257503	1

4.3 Effects of FluidGro on Profitability

Looking at the equation that was estimated using regression and the regression data, it can be stated with 95% confidence that FluidGro sales percentage is a predictor of customer profitability for Centennial based on a *tStat* of 2.119 which is greater than the

critical value of 1.970 (Table 4.2). Figure 4.1 shows that percentage of sales for FluidGro can predict profit as indicated by the line fit plot. As percentage of sales that are from FluidGro increases, the margin per customer increases. Also, the plot verifies that this variable is an accurate predictor of customer margin. As percentage of sales that are FluidGro increases, margin per customer increases. This validates that FluidGro products are key to the company’s profitability and that increasing sales through effective marketing strategies of FluidGro products will increase profits for Centennial.

Figure 4.1: Percent of FluidGro Sales Line Fit Plot



4.4 Methods

Firms across all types of businesses are searching for ways to increase company profitability. Centennial has an opportunity to increase its profitability by increasing FluidGro sales. Table 4.4 illustrates the major issue that Centennial faces in regards to increasing the sales of FluidGro. From 2008 to 2009 the sale of FluidGro products grew by 118%. However, since 2009 the company has only seen a growth rate of 19%. Centennial

believes that if it can find ways to grow this business it can achieve a higher level of profitability.

Table 4.4 Annual FluidGro Sales by Product

Product	2012 YTD			2011			2010			2009			2008		
	Sales \$	Product Vol	Margin	Sales \$	Product Vol	Margin	Sales \$	Product Vol	Margin	Sales \$	Product Vol	Margin	Sales \$	Product Vol	Margin
32 Cal-iber	\$20,885.67	7079.89	33.12												
Aquacon Plus	\$277.91	72.00	57.25	\$22,013.38	6140.00	54.05									
Beet NiK	\$1,755.00	250.00	50.14	\$48,994.95	6642.00	53.31	\$10,921.37	1613.00	52.00	\$3,713.72	583.00	48.98			
Falsh Guard	\$918.75	30.63	57.50	\$32,719.19	1,204.25	51.40									
K Boost	\$5,025.51	4.44	63.34												
N Capsulate	\$85,518.32	22203.68	41.58	\$297,057.00	77351.45	41.59	\$271,288.07	34603.36	66.76	\$265,069.37	49618.92	64.43	\$206,978.74	41636.93	63
N TruZT	\$1,394.40	280.00	34.74												
N TruZT Plus	\$8,117.99	5.55	46.64												
Slo Ride	\$20,606.58	2724.69	72.49	\$122,127.96	18312.54	67.24	\$205,509.33	34603.36	64.64	\$182,590.33	30857.38	64.51			
Stress Out	\$3,599.03	724.06	60.77	\$16,941.74	3181.75	63.78	\$12,885.23	2108.23	69.73	\$1,310.00	325.00	54.10			
Total Sales	\$148,099.16	33374.93	43.43	\$539,854.22	112831.99	50.26	\$500,604.00	72927.96	65.64	\$452,683.42	81384.30	64.31	\$206,978.74	41636.93	63.14

Chapter 3 discussed how individual products affected profitability along with how certain marketing theories could be implemented to increase sales volume. The data explained previously explained how FluidGro sales positively affect margin on individual accounts; however these cannot be increased without incurring costs.

According to Seth Klein, technical engineer for Centennial, a heat exchanger like the one Centennial would need to produce ortho-phosphate based fertilizers would cost \$145,000 installed. Looking at just one product, 3-18-18 fertilizer, Mr. Klein estimates that Centennial would have a \$1.25 per gallon cost advantage over buying the same product from another supplier. Using just this one product and the Net Present Value rule to evaluate the investment, Table 4.5 shows a positive NPV for the investment in the heat exchanger. Revenue is sales revenue from the sale of the one product, 3-18-18 fertilizer, and cost manufacturing cost including labor and raw materials. No sales or inventory cost is accounted for.

Table 4.5: Net Present Value of Heat Exchanger (in \$000)

Period	Cost of Purchase	Revenue	Operating Cost	Repair	Cash Flow	Discounted Cash Flow
0	\$(145.00)				(145.00)	\$(145.00)
1		\$35.00	\$(20.00)		\$15.00	\$13.64
2		\$37.80	\$(21.60)		\$16.20	\$13.39
3		\$40.82	\$(23.33)		\$17.49	\$13.14
4		\$44.09	\$(25.19)		\$18.90	\$12.91
5		\$50.70	\$(28.22)		\$22.48	\$13.96
6		\$59.83	\$(30.47)	\$(3.00)	\$26.36	\$14.88
7		\$70.60	\$(32.91)		\$37.69	\$19.34
8		\$76.25	\$(35.55)		\$40.70	\$18.99
9		\$79.30	\$(36.97)	\$(3.00)	\$39.33	\$16.68
10		\$80.88	\$(38.45)		\$42.43	\$16.36
Interest Rate	10%					
NPV=	\$8.28					

In evaluating the NPV of the heat exchanger, some assumptions were made. An interest rate of 10% was used as an opportunity cost because if a retail location is achieving its goal of 10% net profit before tax then the heat exchanger must return more than that or the company should just re-invest in current operations. Revenue was also assumed on a growth curve starting out at 8% annually and peaking at 18% before falling back to 2% revenue growth in year 10. This was based on previous experience of similar product launches within Centennial. Operating costs were established by Mr. Klein based on current price of raw materials and labor costs, taking into account a cost savings when purchasing in larger quantities in years when revenue growth peaks. Repair costs were also taken from Mr. Klein's projected budget. A ten-year life was used to examine the NPV, however, the life of this machine should be nearly double but the life of a single product is uncertain after ten years. Usually there are improvements to the product and some creative destruction to extract more value from the market.

It has been established that an increase in FluidGro Sales will have a positive impact on the profitability of Centennial. A plan will be developed and be ready for implementation to increase overall profit for Centennial. Based on the NPV analysis of the heat exchanger, Centennial should proceed with the installation of this piece of equipment to help them improve and increase their product line up under the FluidGro brand. Also, based on market based management and Porter's generic strategy theories, Centennial should work to establish a wholesale division to more effectively market their products to a larger market which would both increase sales as well as increase margin on the retail sales of the FluidGro products by lowering overall costs. Based on the analysis of the sales data it was established that an increase in sales of FluidGro products per customer will have a

positive impact on sales margin, therefore Centennial should look to use the items discussed in this thesis to increase sales.

CHAPTER V: CONCLUSIONS

The objective of this thesis was to examine the effects that the FluidGro brand of products had on Centennial and how implementing effective marketing strategies can increase sales and profits for the company. This was accomplished by using sales data to determine the effect that FluidGro had on profitability and that using Porter's Generic Strategies, Market Based Management, Blue Ocean Strategy, and Vendor Managed Inventory can all increase sales and positively affect Centennial's profit.

The linear regression model built to predict sales margin showed that FluidGro sales had a positive impact on an individual customer's profitability. This confirms the belief that FluidGro products had a large positive impact on the profitability of Centennial. By using market theories and concepts, it was purposed that implementing a few key initiatives would increase sales of FluidGro products and thereby increase profitability for Centennial.

Because these plans have not been put into action and rely on concept, it is difficult to conclude whether or not these plans will succeed. However, based on the research, moving forward with any or all of these plans should enhance FluidGro sales by enhancing the profitability of Centennial. To ensure maximum return, FluidGro and Centennial should move forward with the wholesale division first. This would give Centennial the most return on the smallest, least risky, investment. The ability to increase revenue on a profitable product in conjunction with lowering overall cost of production through economies of scale makes the wholesale expansion the first step for FluidGro. Following the wholesale division, would be investment in a heat exchanger. The addition of the line of products that can be produced by this equipment would be beneficial to both the retail and wholesale divisions of the company. The initial investment of \$145,000 makes it

lower than wholesale expansion because FluidGro and Centennial have minimal experience in selling these types of products. Perhaps before installing the heat exchanger, Centennial should procure finished product from other suppliers and attempt to sell it on the retail side to learn more about it and how to extract the most value from it before taking advantage of the cost savings of manufacturing it.

FluidGro is a brand that still has a lot of potential for Centennial Ag Supply. With effective marketing, expanded production, and increased market share, FluidGro can lead to increased sales and profitability for Centennial Ag Supply.

WORKS CITED

- Association, Grocery Manufacturers. *GMA*. n.d. www.gmaonline.org.
- CropLife. *CropLife 100*. January 1, 2012. <http://www.croplife.com/> (accessed January 1, 2012).
- Kent Olsen, Michael Rahm, and Michael Swanson. "Market Forces and Changes in the Plant Input Supply Industry." *Choices*, 4th Quarter 2010.
- Klein, Seth, interview by Brandon Laws. *Manager of Special Projects* (April 19, 2012).
- Koch, Charles G. *The Science of Success*. Hoboken: John Wiley & Sons, Inc., 2007.
- Krause, Mark. "Impacts of Product Differentiation on the Crop Input Supply Industry." *Choices*, 1st Quarter 2011.
- Mauborgne, W. Chan Kim and Renee. *Blue Ocean Strategy*. Boston: Harvard Business School Publishing Corporation, 2005.
- Meer, Daniel Yankelovich and David. "Rediscover Market Segmentation." *Harvard Business Review*, 2006.
- Nass. *NASS.USDA.GOV*. May 27th, 2012. <http://www.nass.usda.gov/>.
- Porter, Michael. "The Five Competitive Forces that Shape Strategy." *Harvard Business Review*, January 2008.
- Rust, Roland T., Christine Moorman, and Gaurav Bhalla. "Rethink Marketing." *Harvard Business Review*, January 2010.
- U.S. Small Business Administration. *SBA.gov*. n.d. www.sba.gov.
- Wallin, Cynthia, Bryan Ashenbaum, and Elliot Rabinovich. "Vendor Owned Inventory Management Arrangements in Retail." *Journal of Business Logistics*, 2007.
- Wernerfelt, Birger. "A Resource-based View of the Firm." *Strategic Management Journal*, 1984: 171-180.
- Yankelovich, Daniel, and David Meer. "Rediscover Market Segmentation." *Harvard Business Review*, 2006.
- Zane, Christopher J. "Creating Lifetime Customers." *Retailing Issues Letter*, September 2000.