Excel Co-op: Responding to Biofuels

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George Green, General Manager of Excel Cooperative, put down the telephone and glanced at the row of model vintage Chevrolet Corvettes which lined the top of a bookcase. He sighed to himself as he thought about the tremendous changes in agriculture since any ‘Vettes like those had tooled around Monticello, Indiana. George had just wrapped up a call with one of his board members about the possibility that a new 100 million gallon ethanol plant would be located in Reynolds, Indiana. Reynolds, only six miles from Excel headquarters in Monticello, Indiana, had been designated BioTown USA by Indiana Governor Mitch Daniels, and rumors about a new ethanol plant there had been circulating for months. George’s board member had just heard another rumor that an announcement was coming soon.

“Join the crowd,” George thought, with four ethanol plants already operating or under construction in or on the fringe of his market area, it was a literal biofuels frenzy in Central Indiana. George, his board, and his management team had been discussing how to respond to the rapid expansion of ethanol processing capacity in and around the ten county market area served by Excel for the past year. For a farmer-owned farm supply and grain marketing cooperative, where were the opportunities? Where were the challenges? How should his organization respond?

While taking a 1969 Corvette Mako Shark out for a spin sounded awfully tempting, George knew it was time to make some decisions.

Excel Cooperative

Excel Co-op is a member-owned farm supply and grain marketing cooperative serving farmers in north central Indiana (Figure 1). Corn and soybeans are the primary crops, and pork production is the primary livestock enterprise in this region. Excel was formed in 1995 when Carroll County Co-op merged with White County Co-op, and these two counties remain the organization’s most important markets. The cooperative is engaged in selling various farm supplies to local agricultural producers. Product lines include petroleum, fertilizers, crop protection chemicals, seed, animal feed, and other related supply items. The cooperative also has a pork production (livestock) division and is engaged in the contract production of hogs. In addition, Excel purchases and markets grain grown
by local producers. While the most important divisions of Excel Co-op are Agronomy (three locations), Energy (three locations), Grain (three locations), and Feed and Livestock (two feed mills), there are some smaller divisions/departments that provide technology services, lawn and garden products, and environmental, health, safety, and training services. The latter division focuses on providing other agribusinesses and farm organizations training and compliance consulting in these regulatory areas.

Excel Co-op has the following mission statement:

- Enhance profitability of the members and their cooperative
- Maximize resources to provide quality products and services at competitive prices
- Aggressively adapt to the changing needs of the agricultural community
- Adhere to sound and ethical practices

Figure 1. Map of Excel Cooperative Facility Locations

Source: Center for Food and Agricultural Business, Purdue University, 2007
**General Trends in the Marketplace**

Globally, demand for corn is increasing due to major changes taking place in developing countries, especially in China and India. As income per capita increases in these countries, there is an increased demand for meat protein, which in turn increases demand for animal feed, in which corn is an important ingredient. In addition, a variety of political, economic, and social factors have combined to generate enormous interest in fuels from renewable feedstocks. In the U.S., this currently means ethanol from corn, and biodiesel from soybeans. At a state level, and perhaps responding to these global shifts, the newly formed (2005) Indiana State Department of Agriculture has articulated a strategy for expanding Indiana’s food and agricultural sector that includes a dramatic increase in production of biofuels as well as doubling pork production. As a result of both sets of factors (feed and fuel), among others, demand conditions for corn over the next few years are projected to be exceptional.

Indiana is the nation’s fifth largest corn producing state and fourth largest soybean producing state. In 2005, according to USDA, Indiana farmers marketed $1.51 billion in corn, while soybean cash receipts were also $1.5 billion, and receipts from the sale of hogs were $770 million (USDA, 2006a). Indiana reported an inventory of about 3.25 million hogs in 2005 and corn farmers produced around 889 million bushels of corn and 263 million bushels of soybeans in that crop year (USDA, 2007a; USDA, 2007b). Of that 889 million bushel corn crop, about 20% was fed to livestock in the state, about 30% was processed into a variety of food and industrial products by mills and plants located in the state, and about 50% was shipped out of state, primarily to the pork and poultry markets of the southeast U.S., and for export to international markets.

Excel’s market area touches a ten county region in north central Indiana. This region is characterized by intensive commodity agriculture and is home to some of the most productive soils in the state. The core of the Excel market area is White and Carroll counties. Since 2005, White County has been the leading corn producing county in Indiana (USDA, 2007c). Farmers in these two counties harvested about 237,000 acres of corn in 2006, some 39 million bushels (USDA, 2006b). Soybeans are the other major crop in the region, and in 2006 White and Carroll county farmers harvested about 197,000 acres of soybeans (10.6 million bushels) (USDA, 2006c).
For the ten county region, acreage dedicated to corn has been steady to slightly increasing since 1996, while acreage dedicated to soybeans has been trending lower (Figure 2, Figure 4). In 2006, farmers in the ten county region produced 171 million bushels of corn on just over 1 million acres (Figure 2, Figure 3) and 49 million bushels of soybeans on about 924,000 acres (Figures 4, Figure 5) (USDA, 2006b; USDA, 2006c). In 2006, before any (local) ethanol plants came on line, about 40% of this corn left the region, and was shipped via rail to the southeastern U.S. pork and poultry markets; about 35% of the corn was trucked to Lafayette, Indiana to feed one of the two massive Tate & Lyle corn processing plants located there; and the remainder was fed to livestock in the general area.

*The Other 8 Counties are Benton, Cass, Clinton, Howard, Jasper, Pulaski, Tippecanoe, Tipton.

Source: USDA, National Agricultural Statistics Service.
Figure 3. Bushels of Corn Produced in Excel's 10 County Market

*The Other 8 Counties are Benton, Cass, Clinton, Howard, Jasper, Pulaski, Tippecanoe, Tipton.
Source: USDA, National Agricultural Statistics Service.

Figure 4. Acres of Soybeans Harvested in Excel's 10 County Market

*The Other 8 Counties are Benton, Cass, Clinton, Howard, Jasper, Pulaski, Tippecanoe, Tipton.
Source: USDA, National Agricultural Statistics Service.
Figure 5. Bushels of Soybeans Produced in Excel's 10 County Market

*The Other 8 Counties are Benton, Cass, Clinton, Howard, Jasper, Pulaski, Tippecanoe, Tipton.
Source: USDA, National Agricultural Statistics Service.

Figure 6. Number of Head of Hogs in Inventory in Excel's 10 County Market

Source: USDA, 2002a.
Data on county-level hog numbers is limited, with the last available data from 2002. In that year, the ten county region surrounding Excel marketed about 1.82 million hogs, and reported an inventory of 990 thousand animals (Figure 6) (USDA, 2002). The ten county area also reported more than 25,000 dairy cows on farms in 2006 (Figure 7) (USDA, 2006d).

Agronomy Division

The Agronomy Division of Excel Co-op has three locations, in Bringhamurst, Idaville, and Reynolds, and offers a complete line of crop production inputs to area growers: herbicides, insecticides, fungicides; custom application of liquid and dry fertilizers and chemicals; soil sampling; and corn, soybean, wheat, and legume seeds. Precision or site specific services such as soil sampling with GIS and variable rate application (VRT) of fertilizer and lime are offered by Excel, but the organization is still evaluating their overall approach to this area, hence revenue and profit contributions from precision services are still modest. Competition in the Excel market is intense because there is overcapacity in
the area and product margins have been eroding. This situation is due in part to biotechnology advances and seed varieties with ‘input traits’ which require lower levels of (and lower cost) pesticides and herbicides.

Overall, Excel sales of plant nutrients have been relatively steady in recent years, with some minor ‘shuffling’ of accounts between Excel and competitors. Crop protection chemical volumes and margins have declined with rapid adoption of glyphosate tolerant seed. More than 90% of the soybeans and 65% (and growing) of the corn in the region is glyphosate tolerant. Custom application revenues have held up, however there has been a significant shift from pre-emerge to post emerge application. Looking longer term, George is well aware that the additional corn acres driven by growth in biofuel production could be a real boost for his agronomy business. In fiscal 2006, Agronomy Division sales were $16.9 million, accounting for 19% of total Excel sales, including 41,590 tons of fertilizers. The Agronomy Division represented 10% of the cooperative’s net operating income in fiscal 2006.

Competitors include independent organizations and branches of national crop input retailers in the Central Indiana area (Figure 8). In addition, Excel also faces competition from neighboring farmer-owned cooperatives. However, Excel is the market leader in White County, where it has a market share of about 50%. One of Excel’s major competitors is United Agri Products (UAP) located in Chalmers, Indiana. This location, a branch of a large, national company, is aggressively trying to expand. UAP has been through ownership changes in recent years. In the process, they closed a branch located between Delphi and Monticello, attempting to move sales from this branch to the Chalmers facility. While a full service operation, they have been aggressive with price in an attempt to build market share. UAP has two other facilities located on the fringe of the Excel market.
Other strong competitors are an independent organization (Monticello Farm Service), Crop Fertility Specialists (CFS), and Helena. Monticello Farm Service recently had a change of management, and now has an aggressive new individual at the helm. There are a total of three CFS locations in or around the Excel market, each a full-service provider of crop production inputs. Likewise, another national chain, Helena, operates a facility near Flora. While many agronomy plants have changed hands over the past few years, almost all of the plants have remained open as the new owners choose to operate the facilities instead of reducing capacity in the region.

Competition from neighboring cooperatives is also important. Co-Alliance, a large, rapidly expanding central Indiana cooperative, has a facility in Wolcott and serves the market area south and east of Excel. In addition, Co-Alliance and the smaller Frontier Cooperative (which serves Boone and Clinton counties, also south of Excel) are merging, and this has created some disruptions in the market. Co-Alliance has a 40,000 ton ‘hub’ plant in Scircleville. These very large ‘hub’ facilities focus on lowering service cost through scale economies and efficient coordination of logistics over a much larger...
service area than that covered by a traditional agronomy plant. North Central Cooperative (NCC), another large, rapidly expanding cooperative is a competitor to the north. NCC also has a 40,000 ton hub plant located in Mentone.

**Energy Division**

The Energy Division has two branches (in Chalmers and Flora) and offers farm and home delivery of diesel fuel, LP gas, and gasoline. Excel opened a new bulk petroleum facility in Chalmers in 2006 which replaced old bulk facilities in Chalmers and Monticello. The new bulk facility is state of the art and complies with all new state and federal guidelines for petroleum handling and storage. While Excel is closing a bulk facility in Monticello, they are building an unmanned card control facility on a busy street in the town, both to capture retail purchases of fuel and to serve several trucking firms located in the area. The new facility will be open in Spring 2007. In Flora, they also have a retail petroleum station, operated in partnership with a local entrepreneur. The firm offers E10 (10% ethanol, 90% gasoline) throughout their facilities and will be offering E85 (85% ethanol, 15% gasoline) at the new retail facility in Monticello. In addition, they offer B2 (2% biodiesel, 98% diesel) diesel through all of their facilities.

For fiscal 2006, the Energy Division’s sales were $24.6 million, 28% of total Excel sales. Total gasoline sales for fiscal 2005 were over 2.5 million gallons, total road diesel sales were around 2.5 million gallons, DX – four sales were 2.6 million gallons, heating oil sales were 404,000 gallons, and total LP sales were nearly 2.5 million gallons. Net operating income from the Energy Division represented 30% of the total in fiscal 2006. Excel holds more than 80% of the market in liquid fuels for on-farm use in its trade territory, and has very strong presence in bulk commercial fuels. They hope the investment they are making in new facilities will expand their share of the retail fuel business.

**Grain Division**

Excel Co-op’s Grain Division has three locations. Two facilities are located in Reynolds (White County). The Reynolds-North location has 2.0 million bushels of grain storage, while the Reynolds-South location has 1.6 million bushels of grain storage. A major upgrade at the Reynolds-South facility in 2003 greatly enhanced the shipping options for Excel and now the two Reynolds locations can ship 65 or 90 rail car loads on the CSX Railroad, and 25 rail car loads on the TPW Railroad. This
$850,000 project had a five year payout, is hitting all the numbers, and will be fully paid off in 2008. The Reynolds-South facility also has a 130 ton/day feed manufacturing plant (part of the Feed and Livestock Division) and sells livestock, horse and pet feed, and equipment. The grain department at Reynolds-South employs two grain merchandisers that assist farmers in the marketing of their grain.

The other Excel grain facility is located in Flora (Carroll County) and has 1.3 million bushels of grain storage capacity. The Flora location also has a 150 ton/day feed manufacturing plant (again, part of the Feed and Livestock Division), as well as a country store and warehouse. The country store has a unique drive-thru loading area for easy pick-up of bagged feed, pet food, salt, lawn fertilizer, and grass seed. In addition, there is also a greenhouse to serve spring and fall garden needs.

Excel owns a total 4.9 million bushels of grain storage and is currently adding another 700,000 bushel storage facility at its Reynolds-South location. George is considering adding additional storage capacity to the Reynolds-South location – they have land available for another 2.0 to 2.3 million bushels of commercial grain storage. While the first 700,000 bushel expansion cost about $2.2 million, each additional 700,000 bushel storage bin will run about $1.0 to $1.5 million. In general, George figures that commercial storage, with all needed support equipment, will cost about $2 per bushel. Thinking through additional expansion at Reynolds-South, George knows he has other factors to consider besides storage capacity. Speed of unloading, traffic flow, and convenience may become even more important points of difference with area farmers as ethanol plants come on line. And, addressing these areas may require additional investment.

In total, Excel markets between 10 and 11 million bushels of grain each year – about 2.0 to 2.5 million bushels of soybeans, and the rest corn. In fiscal 2006, grain accounted for 35% of the cooperative’s sales volume and 23% of its net operating income. Currently, most of its grain is shipped to the states of North and South Carolina and Georgia in 65 car trains, where it is primarily used as hog and poultry feed. The other major market is Lafayette, Indiana for the two Tate & Lyle corn processing plants.
Excel Co-op has two large competitors and several smaller ones that compete for grain in their market territory (Figure 9). Archer Daniels Midland (ADM) has a facility located in Brookston. This facility is 50% owned by Gold-Kist, a major southeastern poultry integrator. The ADM/Gold-Kist facility has about 2.5 million bushels of storage and can ship 65 car trains. Gold Kist invested in this facility in part to help them lock-up grain supply, anticipating that when the new ethanol plants come on-line, corn demand will be very high in the area and finding adequate supply of corn for its operations might be difficult. ADM also has a 3 million bushel storage facility in Clymers, which they own.

The Andersons, a diversified agribusiness firm that is an important regional grain and crop input organization, owns another 6 million bushels of grain storage in Clymers. About 50% of this is flat and upright storage that they constructed and about 50% is storage obtained when they purchased an old processing facility formerly owned by Bunge.
There is also an independent grain dealer, Hanenkratt Grain Co, based in Monticello. This is a small niche elevator that basically serves as a transportation firm. They have 10 to 15 semi trucks providing hauling services for farmers. Hanenkratt has very modest grain storage capacity.

Cargill’s nearest facility is south of Excel in Linden. It is a large, 3.3 million bushel facility (USDA, 2007d). Recently, Cargill has been offering a program where they will build on-farm storage for ½ the commercial price, if the farmer will commit to marketing their grain with Cargill for three years. To date, grower interest in the program has been modest, as most growers are hesitant to commit to a market for their production for an extended period of time. However, George has wondered if there might be some potential for Excel to get involved with on-farm storage in some way. Such a ‘condominium storage plan’ might be an interesting approach to expanding Excel storage capacity, and an alternative (or complementary) to building more on-site storage.

Tate & Lyle, a multinational agricultural processor, owns two large corn processing plants in Lafayette. These plants process in excess of 95 million bushels of corn annually into high fructose corn syrup and other products from corn. Corn for these plants comes almost exclusively from Indiana, most from a 75 mile radius of Lafayette, and the plants represent a major corn market in Central Indiana.

In addition to commercial storage, farmer-owned storage is an important source of storage capacity in the area. Statewide, about 65% of Indiana’s total grain storage capacity is located on farms (Figure 10).
Feed and Livestock Division

Excel Co-op works with individual pork producers in the contract production of hogs, producing 75,000 hogs annually. In addition, Excel mills produce feed for another 125,000 hogs. Some 2.0 to 2.5 million bushels of corn is fed to these animals annually. The cooperative has two contract nursery sites and numerous contract finishing facilities. They purchase weaner pigs from two independent producers and then transport them to their contract nursery facilities. Excel makes about 60,000 tons of feed annually through its two mills located in Reynolds and Flora, with the amount split roughly equally between the two.

While growth has slowed, the pork production business does continue to expand in the Excel trade area as integrators look for low cost sources of corn, and to take advantage of the two large pork processing facilities in Logansport (Tyson) and Delphi (Indiana Packers). The cooperative has invested in facility upgrades over time and with a second shift, George figures he can double his feed mill capacity if needed. For fiscal 2006, feed sales and sales of hogs (the firm rolls these two areas together in its financial statements) accounted for 18% of Excel’s sales volume and 37% of its net operating income.
Its biggest competitor in pork production is Hog Slat/TDN Farms, located in Flora. TDN contracts hogs all over Northern Indiana and feeds a total of about 200,000 hogs annually. United Feeds, a regional feed company headquartered in Sheridan, Indiana continues to serve the area. In addition, there are two farmer/integrators that have feed milling capacity and feed about 125,000 hogs annually. In total, there are at least 650,000 hogs in the area, and each hog will consume about 12 bushels of corn before heading to market.

**Other Divisions/Departments/Units**

Excel’s Technology Services Division focuses on computer system applications in small and medium-sized agribusinesses. The division provides a wide range of services, from PC troubleshooting to ISO 9000 business consulting and web design.

The Environmental Health, Safety, and Training Department offers on-site, hands-on training, off-site classroom sessions, and electronic access to programs tailored to client needs in the health and safety areas. In addition to training, this department assists with the development and implementation of safety and compliance policies and procedures. A wide variety of training and consulting services are offered in areas such as hazardous communications/MSDS and personal protective equipment, Worker Protection Standard, pesticides (Core Training, RT Training, etc.), anhydrous ammonia safety, and DOT drivers’ school (classroom).

The Flora Lawn and Garden Center offers a wide range of home and garden supplies and a variety of ornamental plants. It also has a greenhouse which is popular with local gardeners.

Combined, these divisions/departments/units represent less than 1% of total Excel sales, but account for about 2.5% of the cooperative’s net operating income. While relatively modest in terms of overall contribution, business in these areas has helped diversify the organization a bit, as well as help the cooperative turn cost centers into profit centers.
Management and Organizational Structure

George Green, General Manager of Excel, is a lifelong Indiana resident and comes from a family with deep ties to agriculture. His father, Dr. Joe Green, was a veterinarian who served as Head State Veterinarian of Indiana for several years. From his position as State Veterinarian, Dr. Green guided the legislation that created the Purdue University School of Veterinary Medicine. Following graduation from Indiana State University, George began his agribusiness career as a feed salesman. In 1982 he assumed his first management role as General Manager of the Kosciusko County Farm Bureau Co-op. In 1984 he became Manager of Carroll County Farm Bureau Co-op which would later become part of Excel Co-op. He was appointed General Manager of Excel Co-op at the time of the merger which formed Excel in 1996. He continued his education while serving as Excel Co-op’s General Manager and in December 2004 he received an MBA in Food and Agribusiness from the Krannert Graduate School of Management at Purdue University.

Individuals on Excel’s ten member board of directors are each elected to serve three year terms. Six of the board members represent a specific geographic district, and four are at-large members. Only four of the ten current board members remain from the original board formed in 1996 at the time of the merger. George feels good about the ‘new faces’ and the overall quality of the cooperative’s board.

In terms of organizational structure, George has one divisional manager. This person is responsible for the Agronomy Division and all three agronomy locations report to him. In addition, Excel has a Feed Marketing Manager to whom all feed sales representatives report to. In addition to these two individuals, all of the other facility and division managers and the CFO report directly to George. In total, Excel has about 100 full-time employees and adds another 25 employees during peak periods in spring and fall. George feels very good about the depth of his talent pool and the experience they bring to their jobs – many are in their 40s and have 20 or more years of experience under their belts. At the same time, he has some concerns about the next generation of management talent at Excel and wonders if he has enough ‘young tigers’ in the employee pipeline.
Excel Financial Performance

The cooperative generated around $91.3 million in sales in fiscal 2006, of which $57.3 million came from supply sales, $30.1 million came from marketing activities, and $3.9 million was service revenue (grain processing, custom application fees, feed grinding, shelling and weighing). The Excel board has issued a broad charge to George that the cooperative is to remain relatively balanced across the four core businesses of agronomy, energy, grain, and feed and livestock. Excel’s net income for fiscal 2006 was $2.5 million, up from $2.0 million in 2005, and a significant increase compared to 2004’s net income of $63,000. Their operating profit margin for 2006 was 2.96%, about the same as 2005 at 3.33%, and compared to 0.79% in 2004. Asset turns were 2.49 in 2006, while 2005 asset turnover ratio was 2.76. The firm’s debt-to-asset ratio for 2006 was 0.64, virtually unchanged from 2005, while in 2004 it was 0.62. Excel’s current ratio in 2006 was 1.19, compared to 1.17 in 2005, and 1.15 in 2004.

Excel has been a strong performer in recent years. In fiscal 2005 and 2006, the organization posted the highest return on patron investment (more than 20%) reported by cooperatives in the Indiana, Michigan, and Ohio region.

THE U.S. ETHANOL BOOM

The enactment of the nationwide Renewable Fuels Standard (RFS) was a historic commitment by the U.S. to renewable fuels such as ethanol and biodiesel. With the creation of a relatively secure future for continued growth in the demand for fuel ethanol and as gasoline prices have remained persistently high, U.S. ethanol production has increased dramatically. Ethanol production in 2006 reached the record amount of 4.9 billion gallons, an increase of 25% from 2005, and up 300% since 2000. The Energy Policy Act (EPACT) of 2005 requires the U.S. to produce 7.5 billion gallons of ethanol by 2012, which represents almost a doubling of the domestic ethanol industry in the next six years (Renewable Fuels Association). However, given actual and planned construction of ethanol plants, total production is expected to exceed this mandated figure (Figure 11). At the end of 2006, 73 ethanol refineries were being added to the existing 110 refineries, with an additional annual capacity of around 1.5 billion gallons coming on line when the refineries under construction are operational (Renewable Fuels Association, 2006).
There are a number of reasons for the boom in ethanol. First, was the boost provided by the Energy Policy Act of 2005. In addition, the American Jobs Creation Act of 2004 extended a $0.51 per gallon tax credit for ethanol used in gasoline. Ethanol received another boost in May 2006 when liability protection was eliminated for petroleum firms using MTBE as an oxygenate in their fuel. Ethanol is the primary alternative to MTBE as an oxygenate, and demand for ethanol jumped as a result of the regulatory change. Finally, there have been substantial improvements in the efficiency of ethanol production. Between 1995 and 2005 the amount of ethanol that can be obtained from a bushel of corn has increased from 2.3 gallons to 2.8 gallons.

While it has its critics, ethanol is widely viewed as an environmental friendly energy source. It is also renewable and supporters argue ethanol can help the U.S. reduce its dependence on foreign oil imports. However, the basic reason for the increased interest in ethanol production is that the combination of high oil prices, modest corn prices, and federal and state incentives have made ethanol plants very profitable. As recently as fall 2006, an ethanol plant could pay back the initial investment in the plant in less than one year.
The Ethanol Situation in Indiana

The bulk of ethanol production capacity in the United States is located in the Upper Midwest and Western Corn Belt, with the combined capacity in Iowa, Nebraska, Minnesota, South Dakota and Illinois accounting for 80% of current production. Indiana historically has not been a major producer of ethanol, having only a single plant operating in early 2006 that supplied about 2% of the nation’s total production. This plant, located in South Bend has a current ethanol capacity of 102 million gallons per year and processes about 38 million bushels of corn annually. A second plant capable of producing 40 million gallons of ethanol annually opened in fall of 2006 in Rensselaer. And, as of February 25, 2007, Indiana had six additional ethanol refineries under construction (Table 1, Figure 12). These eight total facilities either operating or under construction have a combined capacity of 657 million gallons of ethanol using 244 million bushels of corn, which is about 29% of 2006 Indiana corn production (844 million bushels). Six additional construction and expansion projects have been announced, and if these are completed, additional ethanol capacity of 650 million gallons requiring another 240 million bushels of corn would be created. Once operating, these 14 total refineries would require 57% of the 2006 Indiana corn crop.

However, 13 more refineries are in the ‘rumor’ stage, representing another 1.11 million gallons of ethanol capacity (412 million bushels of corn). The totals for those plants operating, under construction, announced, or rumored: 27 plants producing 2.42 billion gallons of ethanol requiring 896 million bushels of corn, or 106% of 2006 Indiana corn production. (In addition, three biodiesel facilities have also been proposed, with a combined annual capacity of 90 million gallons.) As mentioned earlier, 2005 data for Indiana corn movement show that out of 889 million bushels of corn produced in that year, 19% was used as animal feed in state, 29% was processed in state, and 52% was exported, primarily to the Southeast. Growing ethanol demand will change this corn utilization pattern dramatically.
There are several possible consequences of the boom in Indiana ethanol production. First, corn prices are likely to increase and as a result of the increased demand for corn, acres will increase, while there will likely be a reduction in soybean and wheat acreage. According to George Green, if an ethanol plant is built in an area, the corn basis will narrow by 10-15 cents in a 50-60 mile radius, making corn production more profitable. In addition, it is quite possible that there will be a change in crop rotations, with a shift towards more continuous corn in central and northern Indiana. Current forecasts are for an increase in corn acreage of 8% to 10% nationally in 2007.
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Considering to Rumored

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Source: Renewable Fuels Association (2006b)/Purdue University (2006)
Less certain is what will happen to soybean prices, since they will be stimulated by smaller acreage and greater demand for biodiesel, but at the same time depressed by the widespread availability of an ethanol co-product, a feed ingredient called Distiller's Dried Grains with Solubles (DDGS), and reduced soy crushing.

Moreover, since ethanol plants don’t usually store grain for more than ten days, but need to operate year round, more grain storage space will likely be needed. Since more corn will be needed for local ethanol plants, the volume of corn and soybeans exported from Indiana ports will probably decline and rail traffic to Southeast hog and poultry market will likely decline, although there is a possibility that some DDGS will be exported to these markets.

**DDGS**

Distiller's Dried Grains with Solubles (DDGS) is a co-product of the distillery industries and 98% of the DDGS in North America come from plants that produce ethanol for oxygenated fuels, while the remaining 1 to 2% of DDGS is produced by the alcohol beverage industry. DDGS are used in livestock feeds and according to the USDA they can substitute for a portion of corn or soybean meal in animal rations. Its overall feed value varies by specie depending on the different capacity of the species to digest the product. The maximum inclusion rates in efficient rations are considerably higher for cattle and other ruminants than non-ruminants, and usually are about 35% for cattle on feed and 30% for dairy cows, compared to about 15% for hogs and 10% for broilers (Informa Economics).

Depending on ethanol and by-products prices, DDGS account for almost 15% of an ethanol plant’s revenue. DDGS comprise about 32% of the corn input and this remains as a feed product from ethanol production process, so the feed industry in Indiana will change substantially after the additional ethanol plants come on-line. What will happen to the production of DDGS, given that it will probably exceed potential livestock use in the state? As a result of the likely supply-demand imbalance, Indiana DDGS could be exported to Pennsylvania, New York and other nearby eastern markets where large concentrations of dairy cattle are found. Another question is how will this potentially low cost feedstuff affect the number of hogs, poultry and cattle in Indiana?
EXCEL CO-OP AND ETHANOL

Given the quantity of corn produced in Excel’s ten county market, it is no surprise that the area is a hotbed of ethanol activity. Four plants are operating, under construction, or planned, and George will not be surprised to hear the announcement for the fifth plant any day. A summary of the plants, and their grain procurement strategies follows.

Rensselaer: Iroquois Bio-Energy broke ground on a 40 million gallon, 44,000-square-foot, $66 million, dry grind corn ethanol plant on September 1, 2005. The plant has about ten days of grain storage on-site. The firm has a contract with The Andersons to manage their grain origination and they are a minority equity investor in the facility. The refinery is capable of processing up to 15 million bushels of corn a year into 40 million gallons of fuel-grade ethanol. Privately held Iroquois Bio-Energy funded development of the plant using a combination of private funds and loans, along with $6 million in grants from the U.S. Department of Energy.

Clymers: The Andersons is the largest equity investor in this 110 million gallon ethanol plant, which is expected to come on-line in the first quarter of 2007. This plant is located adjacent to a major (6 million bushel) Andersons grain storage facility in Clymers.

Linden: Demeter Enterprises broke ground on a 100 million gallon ethanol facility in January 2006. Demeter is an operating company owned by Cargill, ASAlliance Holdings, a subsidiary of a Dallas merchant bank, and Fagen, the construction firm which has built about 2/3 of all ethanol plants constructed in the U.S. over the past five years. Cargill has a major grain storage facility in Linden, and will be managing grain procurement for the plant.

Boswell: Maize Agriproducts is planning an 88 million gallon dry mill ethanol facility in Boswell, Indiana to produce fuel grade ethanol, distillers grains, and CO2. Once complete, the state of the art dry mill plant will employ 40-45 employees, purchase over 32 million bushels of local corn, produce 88 million gallons of fuel grade ethanol, and 262,000 ton of DDGS annually. To this point, Maize Agriproducts has not yet formalized any relationships to originate their grain.
**Reynolds:** For months, rumors have been flying that VeraSun Energy would announce plans for a 100 million gallon ethanol plant in Reynolds. A number of activities in support of such an announcement have occurred, including rezoning a 250+ acre parcel north of Reynolds from agricultural to I-2, heavy industrial. This plant, if constructed, would have about ten days of grain storage on-site. As far as George knows, VeraSun Energy has not yet signed any grain procurement agreements.

**Biofuels and the Agronomy Division**

George wonders how the ethanol boom will affect his agronomy business. Clearly, growers will shift more land towards growing corn. The current allocation of planted acres between corn and soybeans is about 50-50, but this will probably change in favor of corn to 60-40 or perhaps even more. Corn requires more inputs than soybeans, and strong corn prices will encourage farmers to invest heavily to maximize yield. George fully expects his agronomy business to be at least 10-15% greater in 2007. How sustainable is this increase? What will it mean for his people and equipment resources? Can he service that type of increase through his existing infrastructure? How should he help prepare his growers for some of the agronomic challenges of continuous corn?

**Biofuels and the Energy Division**

Clearly, ethanol means transportation – transportation of massive amounts of grain to the plant, and transportation of massive quantities of ethanol and DDGS away from the plant. Much of this transportation will involve truck traffic. What opportunities exist for Excel in this area? They already have a thriving commercial fuel business, can they expand this with the increase in local transportation requirements? Should they consider entering the trucking business, and offer their services to the makers of biofuels?

**Biofuels and the Grain Division**

Excel Co-op buys around 9 million bushels of corn and 3 million bushels of soybeans in White and Carroll counties from farmers ranging in size from 600 to 8000 acres. The more corn it can control, the larger the cooperative’s bargaining power will be. How will these giant ethanol processing plants with their huge need for corn change the local grain markets? Excel has the physical assets and stra-
ategic railroad location to export grain to the Southeast livestock markets. If the majority of the grain is needed locally, how can Excel best use its multimillion dollar grain handling facility? Are there opportunities to partner with Tate & Lyle, to take on a greater role in procuring grain for existing processors? If (as?) VeraSun Energy finalizes its plans, can Excel align themselves in some fashion with this new entrant, or with one of the other ethanol refiners without a grain origination partner?

**Biofuels and the Feed and Livestock Division**

George knows that Excel’s Feed and Livestock Division also faces some important challenges. While the State of Indiana may want to double hog production, feeding hogs very high priced corn makes profits difficult to come by. Moreover, the introduction of DDGS also contributes to the uncertainty of the market and logistics will have to change. What can Excel do to maintain its profitability? What changes if any will it have to make with regard to its hog production? More broadly, what does this massive local demand for corn mean for Excel’s feed business?
DECISIONS

George took a last look at his model Corvette collection before leaving his office. Yes, it was a radically different agriculture. How should he educate his employees about the upcoming changes to ensure they are prepared to be successful in this new environment? He has an experienced and dedicated workforce that knows the Central Indiana market and is a great fit with the co-op’s culture. Do they possess the skill set to succeed in this rapidly changing environment?

More broadly, what is the role of a local grain and supply cooperative in this new agriculture that now serves the food, feed, and energy markets? Excel’s board of directors believes in balance across the cooperative’s four core businesses. Could such balance be pursued in light of the ethanol boom? And, even if it could, was it the right strategy for the organization? Each of Excel’s four core divisions face a significant set of strategic opportunities and challenges. It seems that several essential questions—what role? which partners? what investments?—and the timing of all the answers to these questions were on the table at the same time.

A challenge, he thought – yes it was. He loved the old ‘Vettes, and yet that 2008 Blue Devil Corvette with a 6.2L supercharged engine turning more than 650 horsepower he had been reading about in Car and Driver sure looked fun…
References

Center for Food and Agricultural Business, Purdue University, estimates.


