Ag Processing Inc

International Association of Seed Crushers

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"Biodiesel's Growth and its Impact on the Oilseed Industry"

Good morning. It is a pleasure to address this distinguished group. For those of you who are unfamiliar with AGP, we are a regionally federated cooperative owned by nearly 220 local and regional cooperatives that are in turn owned by nearly 300,000 farmer stockholders. Our primary business is soybean processing and vegetable oil refining.

In 1995 AGP entered both the ethanol and soydiesel businesses. Our 50 million-gallon ethanol plant is located in Hastings, Nebraska and our 20 million gallon soydiesel plant is located in Sergeant Bluff, Iowa. We recently announced expansion of our Iowa plant and construction of a new plant at our St. Joseph, Missouri crushing and refining site. Our two biodiesel plants will have capacity for 55-60 million gallons annually when complete.

Introduction:

Biodiesel is on the threshold of becoming a viable diesel fuel extender in the United States. Our technical work is largely complete, regulatory compliance has been achieved, product facilities have been built and satisfied customers are spreading the positive experience.

The United States Congress took action to partially "detax" biodiesel as part of the "JOBS" bill signed by President Bush in October of 2005. The tax provisions were extended in the Energy Bill. The provisions expire at the end of 2008 but are expected to be extended in 2007 or 2008.

Biodiesel is a term that covers a broad array of fuels and fuel additives derived from various feedstocks each having specific properties. Biodiesel is commonly defined as a methyl or ethyl ester derived from vegetable oils, animal fats or various waste fats and oils.

Raw vegetable oils and fats, while exhibiting some characteristics of petroleum oil, are generally unsuitable for use in modern diesel engines without either modification to the engine or the fat source. Through a chemical process known as esterification the fat source is reacted with an alcohol in the presence of a catalyst. The esterification reaction converts the raw fat source into an ester that is highly compatible with modern diesel fuels and diesel engine technology.

Market Penetration:

Nearly 80 percent (40 billion gallons) of diesel fuel use is for on-road transportation. Rail, marine and other off-road applications consume the transportation balance (10 billion gallons). Diesel fuel use in these applications dwarfs the current and future production capabilities of the vegetable oil and animal fat industry. Hence, petroleum based hydrocarbons will continue to be the workhorse for diesel engines as far as the eye can see.

Does that mean that there is no place for biodiesel? Keep in mind that ethanol, a fuel that has been in commercial production since the 1930's, now has a market penetration of just over 3% of the gasoline pool That 3 percent market penetration accounts for over 1.8 billion bushels of corn – or about 15 percent of the crop. Ethanol is an important contributor to the total demand for corn and an important extender for the domestic liquid transportation pool.

It will be a long time before biodiesel reaches the market penetration level of ethanol. However, there are niche markets where the unique properties of biodiesel have their place. These niches are beginning to open up and will continue to emerge as policy and prices encourage renewable fuel production and consumption.

The Supply/Demand Equation:

At the outset it must be understood that economic forecasts about the future of biodiesel rests on assumptions about the structure of a three legged stool. For the moment, one leg is fixed. The fixed leg is the government incentive -- $1 per gallon of vegetable oils and animal fats and $.50 per gallon of recycled and non-listed vegetable oil. The second leg of the stool is raw material prices. The third is petroleum prices. The trick is to estimate the spread between raw material prices and petroleum prices and then related that to the government subsidy in order to determine the economic viability of biodiesel. Many investors want to know how much biodiesel can be produced without widening the spread to the point that biodiesel is priced out of the market.

Raw Material Availability:

Soybean oil is the mother of all oils in the United States. Soy has about an 80 percent market share that has held steady for over 20 years. In addition, soybean acreage has recovered to levels not seen since 1980. Around 10 million acres of soybeans were lost in the early 1980's due to depressed returns and the attractiveness of farm program crop such as wheat, feedgrains, cotton and rice. Provisions of the 1980 Farm Bill allowed farmers to grow their program crop base. Soybeans did not have a target price or deficiency payments at that time so farmers reacted to the government signals by switching to protected crops. The 1985 farm bill corrected the "race for base" signal but did not allow planting flexibility or subsidy neutral income and price supports. By 1990, "triple base" and "0/92" provisions began to encourage market-based planting decisions. Soybean planting began a slow rise as a result. The 1996 Freedom to Farm legislation decoupled income supports from planting decisions and unleashed pent up demand for soybean crop rotations. Today soybean acres and production are at historically high levels. Most analysts see some fluctuation in soybean acres but no big increase or decrease as farmers have reached an agronomic equilibrium on crop rotations.

Near Term Soybean Oil Availability:

For purposes of this paper I assume a near term soybean crop of around 3 billion bushels, domestic crush of 1.7 billion bushels and oil yield of 11.3 pounds per bushel providing about 19 billion pounds of soybean oil.

I also assume that human food use will prevail in the demand equation. This is logical from an economic perspective since there are a few substitutes for food and many substitutes for energy. As evidence one need only look to the market response of ethanol producers in 1996 when corn prices reached historically high prices. Ethanol plants could not compete with livestock feed markets when corn was rationed by price. It took until 1999 (four years) for ethanol production to exceed 1995 after drought hit the 1996 crop.

Soybean oil carryover has drifted between 1 and 2 billion pounds over the recent past. Soybean oil carryovers significantly above 2 billion pounds are abnormally high and due largely to what are likely to be one-time events. These events include very high oil yields and transfat reformulation. Other edible oils account for around 3.5 billion pounds of total consumption and are from sources such as corn, cotton and sunflower. Oils from these feedstocks are typically higher prices than soy and unlikely to be used for biodiesel purposes unless historic price relationships change.

Near Term Animal Fat and Waste Grease Availability:

Unlike soybean oil, animal fats and waste greases have no carryover from which to draw. Animal fats and waste greases are rendered or processed for use in soap, food, feed, industrial and export markets. They are consumed as they are made available. Supply is a byproduct of other activities such as animal slaughter and fast food preparation. Products clear the market at whatever prices it takes.

The historic price discount between these feedstocks and soybean oil has varied from 25-75 percent. Apples to apples, biodiesel price comparison using different feedstocks is difficult without knowing the quality of soybean oil and the quality of alternative feedstock used as a beginning point in the conversion to biodiesel. Generally, conversion yields are lower and processing losses higher for lower quality feedstocks.

In 2003 total US tallow and grease production was 8.6 billion pounds. Of this amount 1.6 billion pounds goes to edible and technical tallow, 5 billion for inedible tallows and grease and 2 billion pounds for yellow grease. At the right price and assuming no technical barriers, a significant portion of these feedstocks could be bid away from their current uses toward biodiesel.

The "JOBS" legislation provided that animal tallows and fats will receive the same incentive as soy. Thus, if economics were the only consideration, tallows and animal fats would be the feedstocks of choice as long as they are priced below soy. I would expect animal fats and tallow/soybean oil price spreads to narrow as biodiesel demand rises. Similarly, yellow grease is incentivised at $.50 per gallon. Yellow grease prices would be expected to rise to approximately a $.07 per pound spread to soybean oil ($.50/gallon).

My assumption is that a significant demand increase from the fuel side will quickly drive non-soy feedstock prices up to the price of soybean oil (discounted by the difference in tax incentive). This result can be predicted due to the byproduct nature of the raw materials. There is little domestic supply response as a result of a demand increase. At some price point users will either reduce usage and/or switch to soybean oil and vegetable oil byproducts as substitutes for the animal fat and waste grease materials.

Esterification Capacity:

It is important to note that the above domestic feedstock availability does not consider the available esterification capacity. There are a few reliable estimates of actual esterification capacity. Esterification and transesterification are processes long used by the oleochemical industry as front-end processes in the manufacture of soap, detergents, cosmetics and other products.

The National Biodiesel Board has over 50 manufacturing members who claim total capacity of over 350 million gallons (2.7 bl. lbs. oil). USDA has registered over 40 entities as eligible for the CCC biodiesel production incentives. USDA does not publish capacities. Dozens of other plant projects are in various stages of planning and development.

Claimed capacities should be viewed in the light of actual production history. It is safe to say that very little, if any, biodiesel has been produced outside the USDA program. In FY2004 production under the USDA program totaled 18.8 million gallons – only slightly above FY2003. Only five plants accounted for 85 percent of the subsidy program since starting in 2001. At the end of FY2005, only 18 of 32 registered plants claimed production incentives in any amount. In FY2005 only 66 million gallons were reported through USDA. Based on extrapolation from first and second quarter of FY06 CCC results, actual production will be about 150 million gallons (1.2 bl. lbs.). Obviously, this production is a far cry from the claimed capacity figure.

The difference between actual production and claimed capacity is best explained as hopes, dreams, and timing. Some capacity is still on the drawing board. Some is under construction and some are finding that making quality biodiesel takes more time that planned. Another factor is the availability of swing capacity in oleochemical and petrochemical plants. If all capacity in these plants was switched to methyl ester production would be substantial. One must assume that profitability for non-biodiesel uses of these facilities is currently greater than for biodiesel. Despite all this, I believe there will be real and dedicated capacity to convert around 2 billion pounds of fats and oils by the end of 2007.

Supply and Demand Balance:

The question is often asked "How much biodiesel will the market take"? My response is always "as much as we produce". Again, we need only look at ethanol as our guide. The gasoline market will absorb as much ethanol as is produced. The real question is: at what price? I believe that biodiesel demand will be virtually unlimited when biodiesel is priced at a discount to diesel fuel. Will the price of diesel fuel, in relation to fats and oils (the diesel/fat spread) be greater or lesser than the tax incentive? That is a question I can't answer. But, it is the critical question that determines profitability.

So what is predictable?

Long-term domestic feedstock soybean oil availability of 1-2 billion pounds coupled with 1-2 billion pounds of installed and under construction conversion capacity indicates that the industry is already to the point that further capacity increases (if utilized) will likely impact trade flows.

Both vegetable oils and animal fats are imported and exported. If biodiesel demand exceeds my benchmark 1-2 billion pound demand estimate, domestic to foreign fat and oil spreads would widen and exports would decrease, imports would increase or both.

Centrec Consulting Group looked at some econometrics that predicts price impacts from a demand shock. The assumptions were that diesel fuel stays at historically high prices of around $1.20 per gallon (rack untaxed $40/barrel crude) soybean oil is 23 cents per pound and 100 percent of the tax incentive is passed through to the consumer.

The results of the model indicate that 700 million pounds of new demand raised the price of soy oil 3 cents and 1.5 billion pounds raised it 6 cents per pound. These price increases resulted in two percent blends (B2) going from a slight discount to diesel at 700 million pounds to a premium at 1.5 billion pounds of use.

The conclusion from this exercise is that at $40 petroleum prices and 23 cent soybean oil biodiesel producing can only pull about 700 million pounds (90 million gallons) from domestic soybean oil supplies before B2 blends move to a premium over diesel. Beyond 700 million pounds either B2 must be sold at a premium or trade flows will be impacted to keep feedstock prices in check. Higher fuel costs of $50 or even $60 per barrel would allow 1.5 billion pounds to be pulled from supplies for biodiesel and still be competitive.

The Centrec analysis is consistent with work done by Promar International for the United Soybean Board. Promar constructed a matrix in which they found 23 cent crude soybean oil to be breakeven for biodiesel when petroleum is $40 per barrel. Obviously, both crude oil and soybean oil are higher than $40 and 23 cents respectively today. The breakeven for soy biodiesel is 35 cents per pound at today's crude oil price of $70 per barrel.

Many in our industry question how crude soybean oil can be at 26 cents per pound today when traditional stocks-to-use analysis indicate that the price should be lower. Historically, stocks above 2 billion pounds are associated with prices of 20 cents or less. Similarly, stocks closer to 1 billion pounds are associated with prices around 30 cents per pound. The answer lies in the "energy" premium.

So, if you look at the situation from different angles you can come to some rational predictions about how big the soy-bean biodiesel industry can become and also what impact it will have on the soy complex.

Let's start with petroleum:

As I stated earlier, $70 crude oil allows for biodiesel producers to pay up to $35 cents per pound for soy oil. My own view is that biodiesel producers will call on soy oil supplies to the point that breakevens are reached, but they do not currently have the production capacity to do so. Biodiesel producers will also search for lower cost feedstock alternatives. Unfortunately, many non-soy feedstocks will not be readily accepted by consumers, jobbers, terminals, and others in the supply and use chain.

Some producers are positioned to take advantage of off shore feedstocks and/or biodiesel. While this may be a wise risk management and feedstock diversification strategy, long-term trends indicate that global feedstock arbitrage opportunities will be limited. I come to this conclusion based on the following indicators:

1) High (above $40/barrel) crude oil prices increase the fuel value of fats and oils globally.
2) Governments from South America to South East Asia are implementing their own domestic biodiesel programs which will be the first stop for otherwise discounting feedstocks.
3) Europe has the most aggressive biofuels program which includes more profitable biodiesel conversion incentives and more serious greenhouse gas reduction requirements.

While current EU biodiesel specifications strongly favor rapeseed feedstocks, other feedstock derived biodiesels are gaining ground. In addition, South East Asian feedstocks are likely to be used in direct burn electricity generation applications for greenhouse gas reduction purposes. Global production and availability of vegetable oils is very small compared to the global energy market. High energy prices will quickly drain feedstocks for domestic use first, Europe second and North America third.

Assuming that farmers need $6.00 per bushel to sustain soybean planted acres, oil would need to go above 30 cents per pound in order to exceed 50% of product value. In this environment, meal would drop to around $150 per ton. As noted previously, $70 crude oil could justify 35 cent soybean oil and $120 meal. Sustained $70 crude would justify increased soybean crush driven by oil values for the first time in history.

Future Raw Material Availability:

Future raw material availability for biodiesel production is significant. Additional sources include expanded soybean acreage, higher oil soybeans, and higher oil soybean substitute crops, greater domestic crush and imports of foreign oils or their esters.

Expanded Soybean Acreage:

Soybeans could capture another 10 million U.S. acres due to global increases in demand for protein fed meat such as poultry and pork. These acres will primarily be drawn from small grains such as wheat where US comparative advantage is slim or nonexistent. If all the additional oil were available for fuel, the supply impact would be an additional 500 million gallons.

Higher Oil Soybeans:

If the soybean oil yield were to increase from 18 percent to 20 percent – a level already achievable – soy oil availability would increase by 10 percent. At an assumed future domestic crush of 1.8 billion bushels the additional oil would amount to 1 pound per bushel or 1.8 billion pounds or 230 million gallons.

Higher Oil Crops on Conservation Reserve:

Sunflower and canola are crops with higher oil content than soybeans. Depending on yield assumptions, either crop could produce 10 gallons per acre more oil than soybeans. Oil could come from switching out of soybeans to these oil crops or from switching out of other crops to sunflower or canola. Alternative oilseeds are climatically compatible with the northern tier and high plains states. These are primarily wheat and other small grains growing areas. Coincidentally, these are the areas with the highest concentration of Conservation Reserve Programs (CRP) government idled ground. Ten to fifteen million acres could be freed up to plant oil crops simply through release of the government ground. A conservative 10 million-acre CRP release could yield 600 million gallons of biodiesel raw material without drawing acres from other crops.

Expanded Domestic Soybean Crush:

About 1 billion bushels of soybeans can be exported assuming a crop of around 3 billion bushels and a domestic crush of 1.8 billion bushels. If the value of oil began to exceed the value of protein, crush would expand and additional oil would be available. Similarly, if protein were to lead the way, crush could expand and additional oil would be available. The bottom line is that roughly 11 billion pounds of oil leaves the United Sates in the form of raw soybeans. At the right oil or protein price level crush will expand and additional oil will be come available. The biodiesel raw material of exported beans equivalent is 1.4 billion gallons.

Imports:

Lurking out beyond our shores are hundreds of millions of pounds of raw materials in the form of animal fats, waste greases, and raw fats from various sources. At the right price, our virtually open border will allow imported raw materials to supply US demand for biodiesel. Obviously, for a domestic biodiesel producer the prospect of imports is not savory. However, reality is that commodities will find a home where their value is greatest when borders are open. Any significant run up in domestic prices will draw imported materials to meet demand and equalize domestic and foreign prices (less duties and freight).

Gauging the impact of trade flows is one of the more tricky exercises. Imported vegetable oils are subject to an import duty but imported animal fats are not. Also, vegetable oil and animal fats are exported. Some exports are government sponsored and would be expected to continue. Other exports are commercial. It could be expected that commercial exports of fats and oils would come under pressure as domestic demand increases. For example, there has been 1 billion pounds of inedible tallow and grease exported in past years.

Conclusions:

I have estimated domestic near term economically available raw material from all sources at 260-520 million gallons (2-4 billion pounds) or about one half to one percent of transportation diesel fuel use. Existing esterification capacity is already around 150 million gallons. At the point when biodiesel production capacity exceeds non-food feedstock availability crude oil prices will determine the true energy premium for fats and oils. That time has not yet arrived but will likely be fully realized within the next 12-24 months. Sustained petroleum prices above $70 per barrel would become a "game changer" for the American soybean crushing industry. Likewise, a return to $40 crude oil will make biodiesel a breakeven proposition if veg oil is 23 cents or more.

My longer range estimates of availability from increased soybean oil acres, soybean oil content, idle acres, switched acres, increased domestic soybean crush amount to nearly 2.7 billion gallons (about 5 percent of transportation diesel fuel use). Government policy and sustained petroleum above $70 would be needed to exceed soy-based biodiesel above 250 million gallons.