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World Outlook: Sugar versus Energy

Excerpts from American Society of Sugar Beet Technologists Address March 1, 2007

As President of the World Association of Beet and Cane Growers, I will discuss world dynamics today as they relate to sugar beet growers. So, how will the world's food and energy production and consumption achieve balance in the future and at what cost to consumers and the environment? The simple answer is: Higher prices, and a multitude of government actions will continue to influence supply and demand.

As the price of fossil fuel increases it will be ever more challenging for markets, and governments, to achieve balance between beet and cane's use as food or fuel and prevent disruptions. Therefore, food ingredient costs will certainly increase along with energy.

If rising food costs concern you, remember, just a couple of years ago $2 gasoline was the end of the world. Now it would be a price break. Consumers will not eat less to reduce the price of energy and they will not consume less energy to reduce food prices.

Since consumers drive this revolution we must also consider that: If the availability of fossil fuel supplies, and the affects of their usage on the environment, drive the world's governments to do extraordinary things to replace those same fossil fuels with bio-fuels, will the net energy balance of the conversion of food crops to energy be efficient, stable and sustainable? It will have to be or there will be chaos.

High fossil fuel demand and disruptions have already created price levels which have driven an unprecedented global storm of investment in, and debate about, bio-fuels.

If the investment and debate is wise, and results in enlightenment rather than friction, the energy revolution may well do more to improve the economies of the world than all the trade agreements ever enacted.

Market access without value creation is meaningless. The best cure for high prices is still high prices and the production that follows high prices drives economies quite well. Having said all that lets take a quick tour around the beet and cane world to see what the trends are.

On a global perspective our friends at the International Sugar Organization think there will be another increase in the sugar surplus in the 2006 to 2007 marketing year. But how much excess sugar will there be? They also have a big question mark as their price prediction for next year. Why is the ISO so uncertain about sugar prices even with this?

Because they have seen these major increases in consumption between 1984 and 2005, primarily in India, Brazil and China, and they predict the trend will continue to 2013.

Can the world's growers keep up with demand for 13 and 28 million more metric tons of sugar by 2009 and 2013? Perhaps, more important than that we should ask: Is it wise for Brazil to increase from its present 40% share of the world's sugar export market to over 50% by 2010? The ISO predicts Brazil will only produce 7 of the 13 million new tons the world

Figure 1

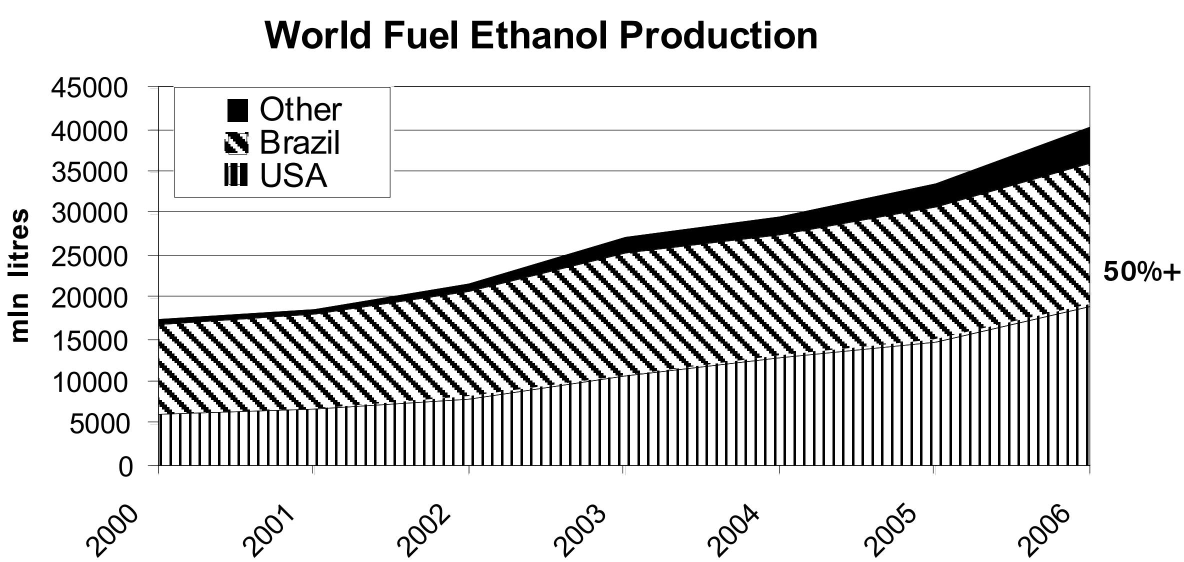


Figure 2

World sugar and Fuel Ethanol Key Players

Consumption: MMT Sugar

Country	Current	2010
100% Brazil	27.1	45.4
.8% USA	0.0	00.5
50% EU	0.5	11.8
100% Japan	–	10.1
Molass China	0.0	.0
Molass India	0.0	0
100% Thailand	0.0	0
Total	27.6	67.8

will demand by 2010. And that's only if they don't divert even more cane to ethanol. However, Brazil's own projection is that they will produce only 7 of the 28 million new tons needed by 2013. And that's only if they can keep planting an extra million and half new acres to cane each year.

An examination of how bio-fuel production may affect conversion of beet and cane to fuel instead of sugar is seen in Figure 1. The US is about to jump ahead of the Brazilians on ethanol production and that will also draw on the ethanol Brazilians produce for export and put further demands on cane for ethanol. Look at how much higher the Brazilian percentage use of ethanol is with roughly the same gallons of usage. Look at how small the rest of the world is in comparison to Brazil. They can't supply a fraction of the world's needs; and they know it.

That far smaller scale of world production outside Brazil is concentrated in the EU and China. Even if the Brazilians do convert more cane to ethanol, the world is just scratching the surface of potential ethanol trade at 900 million gallons. That is only one and a half days of global gasoline consumption.

We use 140 billion gallons of gasoline per year in the US alone and that number is predicted to increase to 142 billion gallons this year. If gasoline prices rise, ethanol demand will draw cane and beet sugar from the world market. Sweetener users will need to raise their bids for sugar, or beet and cane growers will devote more and more of their production to bio-fuels. And the world will not likely produce as much as the US projection of 60 billion liters or only 11% of our gasoline usage. But what does this ethanol mean in terms of sugar?

If you convert each of those liters of ethanol to gallons and convert the gallons to 14 pounds of sugar and convert those pounds to metric tons this, Figure 2 shows the amount each country will have to convert from cane or beets to meet this new bio-fuel demand.

Where or where will the world come up with this many tons of sugar to make this much ethanol?

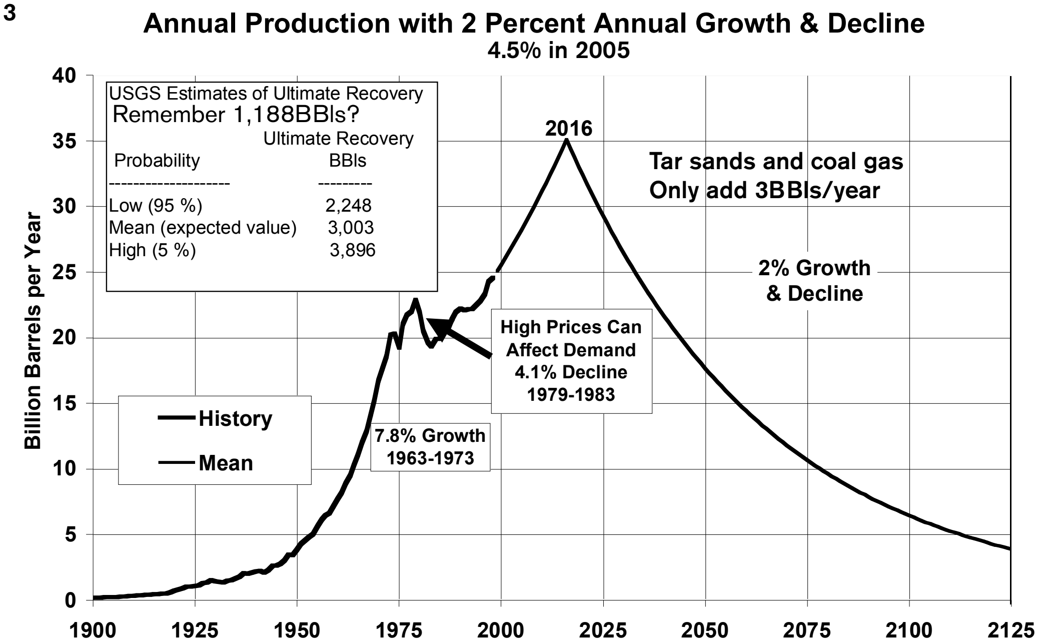
It won't be easy to do because planting cane is much harder and more expensive than planting beets or corn. And the Brazilians have to beat these freight cost problems because they have six different gauges of railroad. Thus they have to use trucks to transport sugar. They load 130 pound bags by hand at the factory and off load them by hand at the port. They also have good brakes on those trucks since they drop 1,200 feet in 3 miles to get to the port.

The world's cane growers do have a long history with bio-fuels and Japan has the first new conventionally bred cane variety designed specifically for bio-fuel production.

It produces 300% more bagasse which makes more ethanol. I have also seen a picture of a 15 foot tall corn variety with no ears bred just for bio-fuel production.

But, in India, it will be difficult to either increase or change cane production; even with dramatic new varieties since nearly all the land is occupied by people. And with 75 million people dependent on sugar for a living it will take them a long time to adopt any new technology in that country. Their production did increase dramatically this year, as did Thailand's, but that was mainly due to

Figure 3



Note: U.S. volumes were added to the USGS foreign volumes to obtain world totals.

rainfall after prolonged drought. Russia, the world's largest sugar importer is projected to be self sufficient by 2010 though. They paid 19.8 cents for sugar in 2005 and don't plan to do it again. A Fargo, ND farm machinery manufacturer has 200 of his 300 employees making beet and other equipment for Russia, Ukraine, and Kazakhstan. The Australians have had a very tough year and there is little sign that their drought will subside any time soon so they won't increase production for some time.

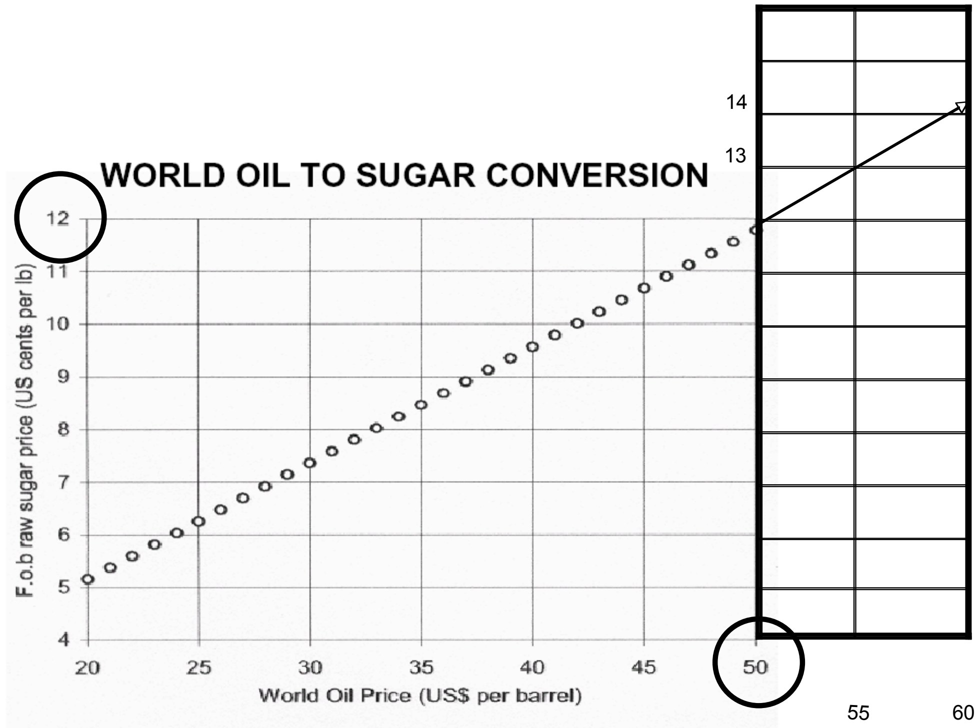
But, more than weather and production increases or decreases the world's beet and cane growers understand that the bio-fuel debate has far more impact than just sugar.

But we should ask ourselves, how many of you think oil will fall below $50 a barrel again? If not, then the other question is the all important one that should drive all our activity in the next two decades if we want our children to live in a better world. To make that better world EU beet growers and technologists are planning a 30% increase in sugar per hectare in the next five to ten years. They use genetic markers to speed up plant breeding and will soon be able to plant beet seed in the fall and gain two weeks of growing season by doing so. They also plan to release new varieties that will reduce beet storage losses through less respiration.

Will they do it and will the rest of the beet world keep up? While they are making those advances though they are also reducing total sugar output by closing half of their factories this year and they will reduce exports and further cut sugar allotments 12.5% without compensation to accomplish their reforms.

Production of beets has ceased in Ireland. The country of Trinidad and Tobago has also quit growing cane due to the effects of EU reform and that has led to the formation of an International Sugar Trade Coalition of developing countries that want to prevent further erosion of the prices that support their cane industries. Some countries like Fiji, Tanzania, and even Great Britain, have launched bio-fuel efforts to capture some of their lost sugar revenue. British Sugar, British Petroleum, and Dupont are also working on bio-butanol from beets in Great Britain. In fact there are

Figure 4



Source: LMC Sweetener Analysis, January 2005 some 50 beet to ethanol projects happening where the survivors of EU reform are located.

Nordzucker has distributed data on their beet to ethanol project. One facility, located near one of their large sugar factories, will use raw and thick juice from its sugar factories to make ethanol. It will start the year with raw juice from the nearby sugar factory and then bring in thick juice from its other factories to fill out an entire processing year. They will eventually expand the factory to use wheat as the primary feedstock and then the raw and thick juice will be a supplement to handle any excess beet production they can't market as sugar.

Within Europe, German beet factories have automated the scale house so they work just like an ATM without needing a PIN. In two years the US will use Radio Frequency ID in the harvester tractor to tell each truck where its beets came from and who owns them and the truck will transmit that information each time it dumps beets at the piling station.

We have seen an amazingly clean 20,000 ton a day factory with a ceramic tile floor. What's missing though? We only saw one person running a pay loader in the yard during the entire three hour tour; and he shut that down half way through. They do have people there. We just never saw them. They are also working on using trailers loaded on rail flat cars and unloaded by crane at the factory to reduce road traffic at these huge factories. A French factory had to cut back to 23,000 tons per day to reduce road traffic.

The big news in US beet production is bio-tech beets. And look at what technology can do for the environment and for beet producer's bottom line. That's a lot less diesel fuel and tractor time as well as pesticide cost. You don't need to see the numbers to know that this technology spells "more tons and sugar per acre." This is the one area where US beet growers are ahead of the rest of the world. They are happy to let us be there too…for now. At the molecular level, the sugar from bio-tech beets is identical to what you have used all along. That's because there is no protein in sugar and bio traits are carried on DNA; which is a protein.

We've covered the world but in North America, the 7% of US ethanol production that can come in tariff free under the Caribbean Basin Initiative, has the potential to remove 7 million metric tons of sugar from the world market by 2010. This is based on the projection that we will continue to add 3 billion gallons of production per year. Because if you have done the math, the U.S. president's goal of 35 billion gallons by 2017 requires a three billion gallon increase each year, every year, for the next ten years.

We even imported 35.7 million gallons of ethanol from China last year. As proof that this might happen, the US is getting most of Brazil's exports now and will continue to do so unless the EU or Chinese bid higher for them. And the Brazilians paid the tariff on most of their exports to our country so it wouldn't have increased their exports to the US if the tariff had been removed. The US will probably continue its headlong drive into bio-fuels to stay ahead of the projected peak of world oil production sometime this century.

The U.S. Department of Energy has charts with various dates based on how much oil is discovered in the next 40 years. The main point though is that none of the charts show much oil in use 90 years from now. The further the peak moves to the right, the steeper the downhill side of this curve as seen in Figure 3. And the more we need something to replace foreign oil.

So if oil stays above $50 a barrel, which roughly equates to 12 cent sugar on the world market, all the world's beet and cane producers will be hard pressed to meet energy demand for ethanol and that means they will also be hard pressed to keep up with food demand for sugar as seen in Figure 4. And that means the 11 million new US corn acres needed to meet this year's ethanol demand will likely come from soybeans and wheat but some corn acres will compete with beet production since $3 corn at 175 bushels per acre ($325 net) competes quite well with 23 cent white sugar on a 20 ton beet crop. ($360 net) since you don't have to wake up at 1 in the morning to harvest corn or own an interest in a beet factory.

Sweetener users will have to pay more for sugar to keep reliable, quality domestic production in the United States. US corn will continue to compete with Brazilian cane because the current U.S. corn to ethanol price is close to $1.07 per gallon with the new enzyme extraction methods and Brazilian ethanol has to pay more freight to arrive at the end market. Corn ethanol will compete with cane ethanol especially if the new US farm bill energy title has anywhere near the Brazilian government's support for ethanol.

The world's cane farmers will have to choose between sugar and ethanol as well. Fifteen cent sugar plus two cents freight and 4 cents to make it white gets within a penny of the US current 23 cent white sugar price. Remember though, we only stand a chance of meeting the energy needs of a robust world economy if we use all the conservation and new technology we can dream of to compliment all the bio-fuel we can produce. Sucrose bio-fuel must complement corn bio-fuel, and cellulosic bio-fuel must someday complement them both when oil and bio-fuel prices reach the $80 per barrel required to pay for the $4 to $5 dollar per gallon projected construction costs of cellulosic factories. So, the world's beet and cane growers, who own their factories, now choose between sugar for food or energy.

And one more time, beet and cane growers:

1. Are using technology to ramp up production.

2. But we will be hard pressed to keep up with demand for sugar and ethanol.

3. Because we are certain that as fossil fuel prices rise sugar will increasingly be called upon as a feedstock for fuel, resulting in increased demand.

Let's all continue to work together to make this better German proverb come true. "We don't inherit our farms from our parents; we borrow them from our children. And pay our children back with interest."

This year the World Association congress will occur down under in Brisbane Australia, July 1-14 and an Aussie will assume the presidency. You're all welcome to attend.

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