William H. Hejl

World Association of Beet and Cane Growers

Sugar Situation in the World
World Association of Beet and Cane Growers
Bill Hejl, President
If you want to form an association with three farmers...

You must shoot two of them!
What is the WABCG?

5.6 Million Farmers

Who associate to promote beet and cane production
## 31 Countries:

### Beet:
- Austria
- Belgium
- Canada
- Denmark
- Finland
- France
- Germany

### Cane:
- Australia
- Brazil
- Fiji
- India
- Jamaica
- Kenya
- Malawi
- Mauritius
- Mexico
- Pakistan
- South Africa
- Sudan**
- Swaziland
- Tanzania
- Uganda
- Zambia

**Associate member

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### 2007 ASSBT

**Sugar is a Byproduct**
50 Million Beet and Cane Growers Produce Energy

The World Sugar Situation:
- Production increases
- Increasing demand: Food & Fuel
- Higher fuel prices drive demand for more beet and cane
Balancing Food and Energy

Result:
- Higher prices
- Government action

Will conversion to Bio-Fuels be:
- Efficient?
- Stable?
- Sustainable?

It must be:
- High prices have driven investment
- Better than trade deals
The Beet and Cane world

World Sugar Balance
(Million tons, raw value)

2005/06 Surplus: 2.7 Million Tons
2006/07 Surplus: 6.1 Million Tons
World Prices

Sugar Consumption Growth in Major Consumers

Min tonnes, raw value

India  EU-25  Brazil  China  USA  Russia  Mexico  Indonesia  Pakistan  Egypt

Increase in sugar consumption between 1984 and 2005
Sugar consumption in 1984

Increase in sugar consumption between 1984 and 2005...

29
Future Sugar Consumption
(million tons)

- 28 Demand Growth 2005 – 2013

Brazil's Sugar and Ethanol

- Sugar Production: Up 9 Million Tons
- Sugar Exports: Up 7 Million Tons
- Ethanol Production: Up 3 Billion Gal.
- Ethanol Exports: Up 1.6 Billion Gal.
BRAZIL: TOTAL DEMAND FOR SUGAR IN 2013 (PREDICTED)

<table>
<thead>
<tr>
<th>SUGAR</th>
<th>DOMESTIC MARKET</th>
<th>EXPORT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/07</td>
<td>10.900</td>
<td>19.660</td>
<td>30.560</td>
</tr>
<tr>
<td>2013/14</td>
<td>13.000</td>
<td>27.000</td>
<td>40.000</td>
</tr>
<tr>
<td>Growing</td>
<td>2.100</td>
<td>7.340</td>
<td>9.440</td>
</tr>
</tbody>
</table>

Where's the other 21 mln tons?

World Fuel Ethanol Production

- Other
- Brazil
- USA
Fuel Ethanol Production outside Brazil and the US

<table>
<thead>
<tr>
<th>Country</th>
<th>2005</th>
<th>2006 Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>Thailand</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>China</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>EU</td>
<td>1200</td>
<td>1400</td>
</tr>
<tr>
<td>Australia</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>Canada</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>Colombia</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

World Sugar and Fuel Ethanol
The Global Fuel Ethanol Market
900 Million Gallons or 1.5 Days of Global Gasoline Consumption
### World Sugar and Fuel Ethanol

#### Key players

<table>
<thead>
<tr>
<th>Country</th>
<th>Current</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>16.1</td>
<td>27.0</td>
</tr>
<tr>
<td>USA</td>
<td>14.7</td>
<td>25.0</td>
</tr>
<tr>
<td>EU</td>
<td>1.5</td>
<td>14.0</td>
</tr>
<tr>
<td>Japan</td>
<td>-</td>
<td>6.0</td>
</tr>
<tr>
<td>China</td>
<td>1.0</td>
<td>5.0</td>
</tr>
<tr>
<td>India</td>
<td>0.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Thailand</td>
<td>0.1</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>33.7</strong></td>
<td><strong>79.4</strong></td>
</tr>
</tbody>
</table>

**Consumption: Bln litres**

- **60.0**
- **11%**

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### World Sugar and Fuel Ethanol

#### Key players.

<table>
<thead>
<tr>
<th>Country</th>
<th>Current</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Brazil</td>
<td>27.1</td>
<td>45.4</td>
</tr>
<tr>
<td>8% USA</td>
<td>0.0</td>
<td>0.5</td>
</tr>
<tr>
<td>50% EU</td>
<td>0.5</td>
<td>11.8</td>
</tr>
<tr>
<td>100% Japan</td>
<td>-</td>
<td>10.1</td>
</tr>
<tr>
<td>Molass China</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Molass India</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>100% Thailand</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>27.6</strong></td>
<td><strong>67.8</strong></td>
</tr>
</tbody>
</table>

**Consumption: MMT Sugar**

- **60.0**
- **11%**

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**Where's the 40.2 Mln tons?**
Brazil Sugarcane Production in 2010

- ISO estimates they can increase 7% per year.
- But, how are they doing?
  - 2.7% for 05/06.
  - 13% for 06/07

- At 7% they get to 574 million tons of cane by 2010.
- At 2.7% they are 122 million tons short. They will be hard pressed to get this done on 5.17 million acres in three years.
Distance in Brazil
- Bags
- 400 meter drop in 3 miles
- Trucks not Railroads

"Bio-Fuel Cane"
- Japan
- 300% more bagasse
- Now Bio-Fuel corn
### Some Facts About India

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographical area (million hectares)</td>
<td>328.73</td>
</tr>
<tr>
<td>Land utilization (million hectares)</td>
<td>306.06</td>
</tr>
<tr>
<td>Population (millions)</td>
<td>1055</td>
</tr>
<tr>
<td>Rural population (% of total)</td>
<td>72.2%</td>
</tr>
<tr>
<td>Work force (millions)</td>
<td>402.5</td>
</tr>
<tr>
<td>Per capita land (hectares)</td>
<td>0.33</td>
</tr>
</tbody>
</table>

### Russian Imports:

- **2005:** 3.43 million metric tons
- **2010:** ZERO
Australia:

- Typhoon Larry
- 1,000 year drought

World Sugar and Fuel Ethanol
Will Ethanol Destabilize World Sugar Markets?

- What happens if (or when) crude oil prices fall?
- What happens if (or when) crude oil prices rise further?
KWS
- Increase sugar per hectare from 10 Metric Ton to 15
  - Breeding
  - Winter sown beets

EU Reform
- Close 33-50 factories in 2007 alone
- 12.5% cut
  - No compensation
- 21 million ton down to 12 by 2013
Bioethanol sites (EU)
running and planned (Sep. 2006)
fuel 21 technical concept

production capacity:
- Bioethanol: 130,000 m³/a

raw material charge:
- Sugar from raw juice (WZL): 66,000 t/a
- Sugar from thick juice (from other plants): 156,000 t/a

number of employees:
- Beginning: 50 employees
- Permanent post: 32 employees

Diagram:
- Sugar factories
- Ethanol production: 130,000 m³/a
- Raw juice: 7,410 t/a
- Sugar beet: 1,258,308 t/a
- Ethanol beet: 1,274,485 t/a
- Sugar: 1,130,000 t/a
- Thick juice from other plants
- Ethanol factory
World Association of Beet and Cane Growers

Nordzucker Factory

World Association of Beet and Cane Growers
World Association of Beet and Cane Growers

Nordzucker Factory

- 20,000 tons per day
  - 32 people during week
  - 26 on the weekend
- 30,000 ton factory in France

Technology Brings Sustainability:
Biotech Beets

Traditional sugarbeet system  Roundup Ready® sugarbeet system

May 30, 2006, 8-leaf stage Field scale demonstration planting,
Bunger, Idaho USA
<table>
<thead>
<tr>
<th>Traditional Idaho System</th>
<th>Ideal Roundup Ready System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plow</td>
<td>Pre-plant burn down</td>
</tr>
<tr>
<td>Pack seed bed (roller-harrow)</td>
<td>No-till or minimum till plant</td>
</tr>
<tr>
<td>Apply pre-plant herbicide</td>
<td>Post emergence Roundup X 2</td>
</tr>
<tr>
<td>Plant</td>
<td>Harvest</td>
</tr>
<tr>
<td>Post emergence spray X 3-5</td>
<td></td>
</tr>
<tr>
<td>Harrow</td>
<td></td>
</tr>
<tr>
<td>Cultivate X 3</td>
<td></td>
</tr>
<tr>
<td>Lay-by herbicide treatment</td>
<td></td>
</tr>
<tr>
<td>Hand weed</td>
<td></td>
</tr>
<tr>
<td>Swath weeds</td>
<td></td>
</tr>
<tr>
<td>Harvest</td>
<td></td>
</tr>
</tbody>
</table>

Technology Brings Sustainability

Conventional beet
June 5, 2005
3 traditional treatments

Roundup Ready® beets
June 5, 2006
1 Roundup treatment
U.S. Ethanol Imports

- Perfect storm of high oil prices & MTBE transition is boosting U.S. imports of ethanol in 2006.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total U.S. Ethanol Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>46 million gallons</td>
</tr>
<tr>
<td>2003</td>
<td>61 million gallons</td>
</tr>
<tr>
<td>2004</td>
<td>161 million gallons</td>
</tr>
<tr>
<td>2005</td>
<td>115 million gallons</td>
</tr>
<tr>
<td>2006</td>
<td>600 million gallons</td>
</tr>
</tbody>
</table>

That's 3,811,252 metric tons of sugar
U.S. Ethanol Imports 2006*

- Year to date = 600 million gallons of ethanol (nearly 2 billion liters).
- Brazil accounts for 85% of imports or 343 million gallons (1.3 billion liters) YTD.
- CBI nations = 106 million gallons (401 million liters) YTD, mostly from Jamaica.
- DR-CAFTA nations (El Salvador) = 14 million gallons (55 million liters).


Annual Production with 2 Percent Annual Growth & Decline

4.5% in 2005

USGS Estimates of Ultimate Recovery
Remember 1.158 BBls?
Ultimate Recovery

<table>
<thead>
<tr>
<th>Probability</th>
<th>1.158 BBls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (95 %)</td>
<td>2,248</td>
</tr>
<tr>
<td>Mean (expected value)</td>
<td>3,003</td>
</tr>
<tr>
<td>High (5 %)</td>
<td>3,956</td>
</tr>
</tbody>
</table>

2016 Tar sands and coal gas
Only add 3BBls/year

2% Growth & Decline

High Prices Can Affect Demand
4.1% Decline
1979-1983

History
Mean

7.8% Growth
1983-1973

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

WABCQ
More Sugar to Ethanol

Less Sugar for Food Use
### Sugar or energy

#### Beets or Corn

<table>
<thead>
<tr>
<th></th>
<th>Beets</th>
<th>Corn</th>
<th>NGPlains</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US</strong></td>
<td>$41.30</td>
<td>$1.75</td>
<td>$5.00</td>
</tr>
<tr>
<td><strong>RRY</strong></td>
<td>$41.30</td>
<td>$1.75</td>
<td>$5.00</td>
</tr>
<tr>
<td><strong>NGPlains</strong></td>
<td>$1.75</td>
<td>$5.00</td>
<td>$5.00</td>
</tr>
<tr>
<td><strong>Average tons or bushels per acre</strong></td>
<td>21.31</td>
<td>18.74</td>
<td>166</td>
</tr>
<tr>
<td><strong>Gross value of Production</strong></td>
<td>$889.10</td>
<td>$772.98</td>
<td>$282.38</td>
</tr>
<tr>
<td><strong>Cash expenses</strong></td>
<td>$422.78</td>
<td>$340.81</td>
<td>$193.48</td>
</tr>
<tr>
<td><strong>Allocated Overhead</strong></td>
<td>$642.17</td>
<td>$444.30</td>
<td>$200.33</td>
</tr>
<tr>
<td><strong>Value of Production less total costs</strong></td>
<td>-$84.66</td>
<td>-$111.16</td>
<td>-$119.36</td>
</tr>
</tbody>
</table>

### World Association of Beet and Cane Growers

#### World Fuel Ethanol 2005

**Cash costs**

- **USA (corn)**: $1.22 per gallon
- **Brazil (cane)**: $0.72 per gallon
- **THailand tapioca**: $0.13 per gallon ($1.07 actual)
- **EU sugar beet**: $1.94 per gallon

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Source: Christoph Berg, F.O. Licht’s Sugar & Ethanol Brazil, March 05
World Association of Beet and Cane Growers

Brazilian Government

Ethanol support since 1978:

- Guarantee ethanol fuel price (≤ 65% of gasoline price) Now 60% of gas price!
  (both prices were controlled by the government)
- Tax reduction (-5%) for alcohol fueled vehicles;
- Subsidized loans for ethanol producers to improve capacity; ($500 Million per year)
- Obligatoriness for fuel stations to sell ethanol fuel (all over the country);
- Maintenance of ethanol fuel stocks to guarantee the supply and price.

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Sugar vs energy Cane

<table>
<thead>
<tr>
<th></th>
<th>Ethanol Price per gallon</th>
<th>Production costs</th>
<th>Gross value of Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$1.75</td>
<td>$.50</td>
<td>$1.25</td>
</tr>
<tr>
<td></td>
<td>$3.00</td>
<td>$.50</td>
<td>$2.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Sugar Price</th>
<th>Shipping 2 cents refining to white 4 cents:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$.089</td>
<td>$.149</td>
</tr>
<tr>
<td></td>
<td>$.178</td>
<td>$.238</td>
</tr>
</tbody>
</table>
Beet and Cane Growers:
• Production increases
• Increasing demand: Food & Fuel
• Higher fuel prices drive demand for more sugar

A better Old German Proverb:
We don’t inherit Our farms from our Parents
We borrow them from our children.
July 1-14, 2007
Brisbane, Australia

Thank you