The Impact of Biotechnology on Western Canadian Agriculture

Maurice Delage
Delage Farms Ltd.
Delage Farms
Indian Head, Saskatchewan

- 22,000 seeded acres - Black Soil Zone (Heavy Clay)
- 32 years of operation
- Direct Seeded/ Continuous Crop
- Three/Four Year Rotation
- Crops - Spring Wheat, Canola, Lentils, Peas, Flax, and Canary Seed.
- Commercial Grain Operation
Our Vision

The continuous development of a family farm enterprise focused on grain production which will achieve:
Our Vision

• Financial performance allowing for a fair rate of return to capital, management and labour.
Our Vision

• A rewarding and safe environment to work and live in.
Our Vision

• A business capable of meeting financial, career and family expectations of future generations.
Our Vision

• Best practice in land management and environmental stewardship
Guiding Principles

• Grain will be worth less in the future than today, adjusted for inflation.

This drives operational efficiency
Guiding Principles

• Globalization of agriculture and agricultural markets demands we understand the interrelationship between global trends/markets and the direct impact on our farm on a daily basis.
Guiding Principles

Planning allows for us to manage the complexity of the business:

- Strategic planning
- Operational planning
- Market plan
- Financial planning
- Capital replacement plan
- Man power plan
- Task planning
Guiding Principles

Profit is the reward for taking risk.

Optimizing value creation on a farm is complex and demands a holistic integrated approach at all levels.
Typical Fertilizer rates

**Canola**

**Target Yield**  60 bu/ac

**5 year average**  53.6 bu/ac

- **Nitrogen**  130 lbs N  
  *5:1 ratio*

- **Sulfur**  26 lbs S

- **Phosphate**  35 lbs P

- **Potassium**  10 lbs K (granular)
One Pass System

Optimizing Inputs Costs
- Fertilizer
- Fuel
- Labor
- Equipment
- Precision farming

Optimizing Production Potential
- Fertilizer Efficiency
- Plant Population/Seedling Vigor
- Pest Management (Weeds/Insects/Disease)
- Crop Rotations/Varieties/Genetics
- Harvest Timing/Efficiency

Maximize Economic Yield Potential
Canada’s modern canola Industry is a direct result of biotechnology.

In 2013, more than 95% of Canola is Genetically Modified.
Breakthrough #1

The commercial introduction of biotechnology into canola in 1995 resulted in two major competing herbicide tolerant systems, Liberty Link and Roundup Ready.

The result was outstanding broad-spectrum post-emergent weed control. Which allowed for minimum tillage in canola.
Breakthrough #2
Hybrid Canola

• The introduction of hybrid canola significantly enhanced yields. 50 and 60 bu/ac yields common.
• Improved stress tolerance
• Quick crop establishment
Biotechnology has allowed for:

- 15 million metric tonnes of Canola production
- A domestic Canola crushing industry of 8 million metric tonnes
- Canola Exports of 7 million metric tonnes
Canada’s Canola industry contributes:

- $15.4 Billion to Canada’s economy
- 228,000 Canadian Jobs
- $8.2 Billion in employee wages
Future Traits

- Disease tolerance
- Pod shatter resistance
- Higher oil content
- Improved oil profile
- Stress tolerance
- Improved inbred lines
- More efficient use of fertility

Higher Yields

70-80 bu/ac
10-20 years
<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield, Dry</td>
<td>103 bu/ac</td>
</tr>
<tr>
<td>Engine Load</td>
<td>50 %</td>
</tr>
<tr>
<td>Yield, Avg-Dry</td>
<td>82 bu/ac</td>
</tr>
<tr>
<td>Rotor Speed</td>
<td>610 rpm</td>
</tr>
<tr>
<td>Temperature</td>
<td>79 °F</td>
</tr>
<tr>
<td>Nudge</td>
<td>0.0 in</td>
</tr>
<tr>
<td>Moisture</td>
<td>10.3 %</td>
</tr>
<tr>
<td>Header Lift Pres.</td>
<td>942 psi</td>
</tr>
</tbody>
</table>
Soybeans are here

Corn is Coming
Continuously find ways to lower unit costs of production

15-20 field experiments/year
The economic impact of biotechnology on Delage Farms is greater than $100/ac net profit on all our canola acres.
New technology is key to the long term viability of Delage Farms.

Technology is never neutral.