The Impact of Biotechnology on Western Canadian Agriculture

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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 52.6 bu/ac

- Nitrogen 130 lbs N
  5:1 ratio
- Sulfur 26 lbs S
- Phosphate 35 lbs P

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

Canola Council 2011

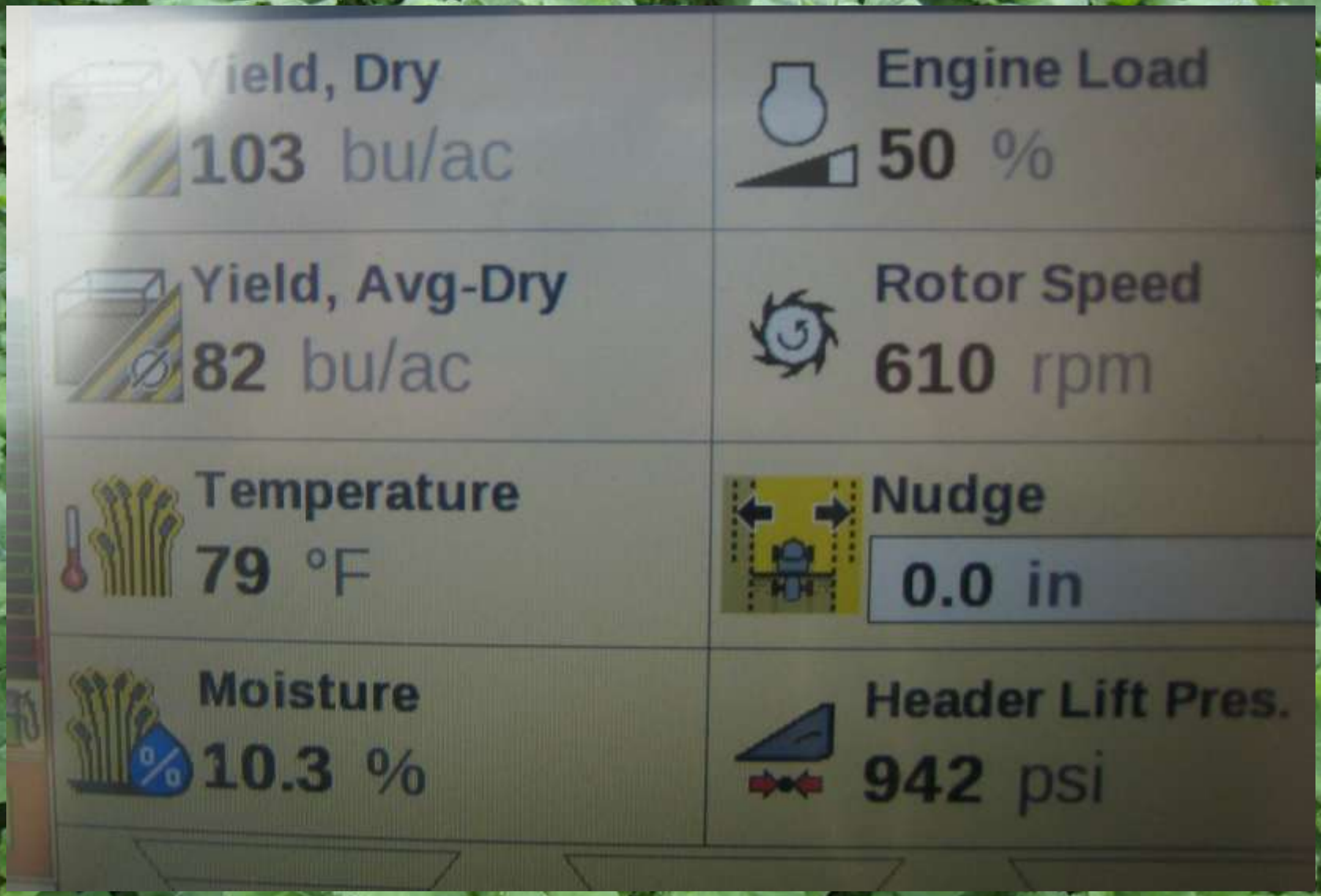

Canada’s Canola industry contributes:
• $15.4 Billion to Canada’s economy
• 228,000 Canadian Jobs
• $8.2 Billion in employee wages
Canola Council 2011

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

Exceptional Canola Yields in 2013




Soybeans are here
Corn is Coming

Continuously find ways
to lower unit costs of production

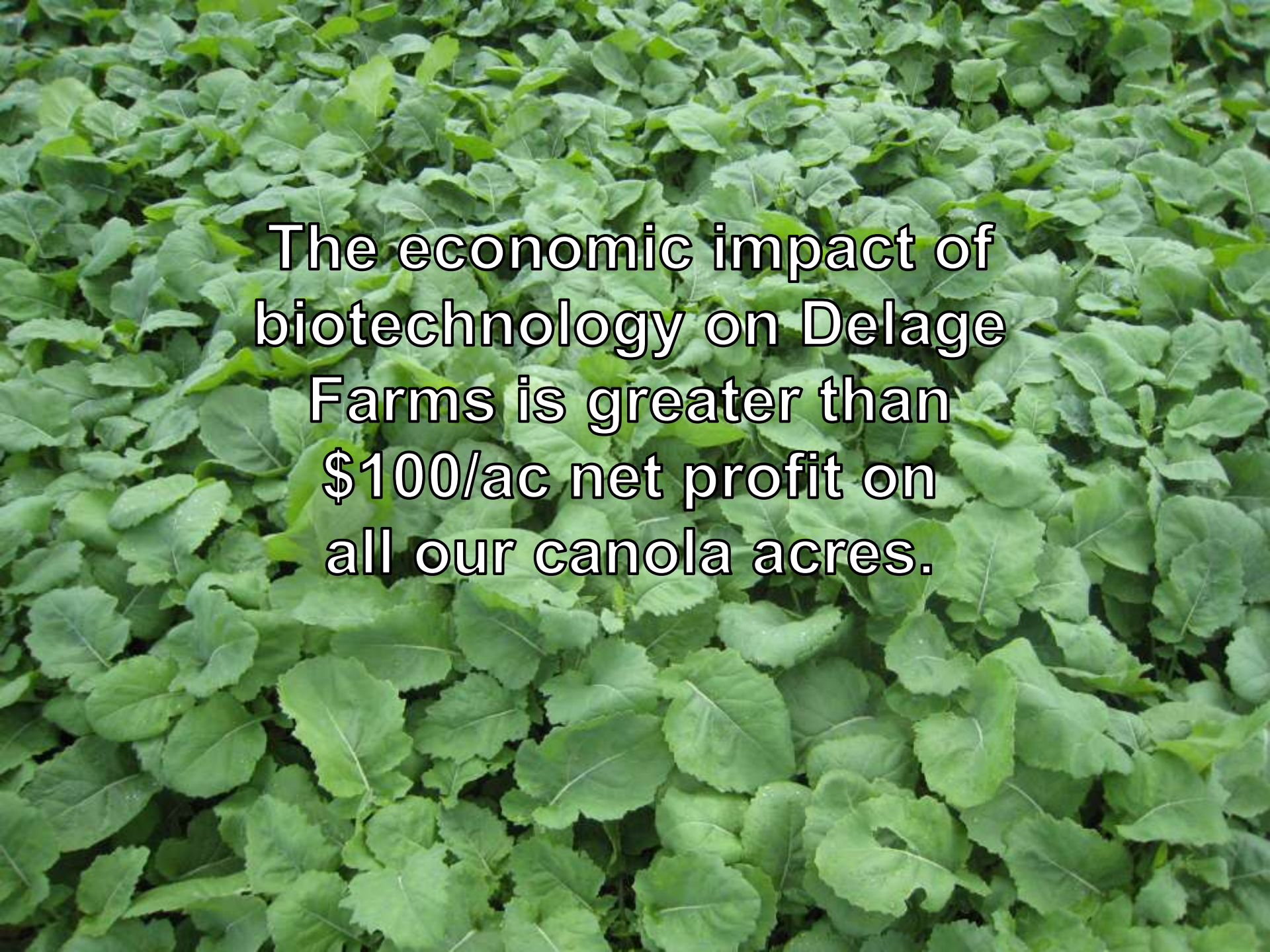
15-20 field experiments/year


BAYER
InVigor
L261


InVigor
L160S
Built-in sclerotinia tolerance.
InVigor
L160S


23-10RY
RICHARDSON


VICTORY
V-Class
Cargill


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


DELAGE FARMS