UniSeeds works collaboratively with agricultural producers to serve the agricultural market and improve life through plant genetics.

We are farmers serving farmers.
Mission

Le But:
Équilibrer la production entre les producteurs et l’industrie.
Vision

- Identify the market opportunities
- develop premium hemp genetics to serve those opportunities
- Overall create more value for our customers

Values

- Honesty, transparency, Integrity
- Respect, Accountability
- Innovation & Growth
- Excellence
Industrial Hemp In Canada

- The *Industrial Hemp Regulations* were introduced in 1998, Governed by Health Canada.

- Regulations ensure that Canadian industrial hemp contains less than 0.3% THC (tetrahydrocannabinol) in plant tissue, and below 10ppm in foods.

- Therefore, producers wishing to grow industrial hemp must apply for a growing license and can only grow those varieties approved by Health Canada.
2018 List of Approved Cultivars

- 51 Varieties Approved in Canada
- Certified Seed System
  - Purity
  - Germination
  - Maintains THC levels
  - Maintain monoecious genetics
Since Canadian production of hemp restarted in 1998, the Canadian Industry has been experiencing 50% annual growth on average in processing volumes.
Modern Hemp is following a similar path to Soybeans of the 1960's... on a tighter timeline

In 1966 there were seven registered soybean varieties in trials in Ontario, there are now over 200
Markets

WHERE AG’S AT
Top commodities by province and territory

LEGEND
- forage
- greenhouse crops
- eggs
- horticulture
- caribou, musk ox
- wild berries
- dairy
- cattle
- grains and oilseeds
- hogs
- poultry

Centre de Criblage
Marc Bercier
Seed cleaning

NORTHWEST TERRITORIES
YUKON
BRITISH COLUMBIA
SASKATCHEWAN
MANITOBA
ONTARIO
QUEBEC
NEWFOUNDLAND AND LABRADOR
PRINCE EDWARD ISLAND
NEW BRUNSWICK
NOVA SCOTIA
Hemp Grower Basics
Planting

- Site Selection
- Soil structure to avoid compaction

Seeding rates: 20-25 lb/ac  
Planting depth: 0.5”-1.0”  
Planting dates: May-15-June 30 , 120 days

- Variety selection

**Monoecious**: “One house”, both male and females flowers are found on the same plant

**Dioecious**: Separate male and female flowering plants
Hemp Agronomy

- Very little industrial hemp agronomy information available in Eastern North America prior to 2015

- University of Vermont- UVM Extension’s Northwest Crops & Soils Program 2016-17

- Cornell University 2017

- CHTA National Variety Trials - Eastern Canada 2018-19
2017 Planting Date Trials

- 2 sites in Ontario
- 1 site in Quebec
- Complete random block design
- 3-4 replications

Figure 2: Average grain yields (kg/ha) and coefficient of variation (CV) of industrial hemp varieties grown at Valley Bio Ltd., Cobden ON, 2017. Varieties planted on May 28th. Dotted lines indicate the average yield and average coefficient of variation for all cultivars.

Figure 3: Average grain yields (kg/ha) and coefficient of variation (CV) of industrial hemp varieties grown at Valley Bio Ltd., Cobden ON, 2017. Varieties planted on July 6th. Dotted lines indicate the average yield and average coefficient of variation for all cultivars.
Figure 4: Average grain yields (kg/ha) and coefficient of variation (CV) of industrial hemp varieties grown at Cerela Inc., St. Hugues, QC 2017. Varieties planted on May 20th. Dotted lines indicate the average yield and average coefficient of variation for all cultivars.

Figure 5: Average grain yields (kg/ha) and coefficient of variation (CV) of industrial hemp varieties grown at Cerela Inc., St. Hugues, QC 2017. Varieties planted on June 1st. Dotted lines indicate the average yield and average coefficient of variation for all cultivars.

Figure 6: Average grain yields (kg/ha) and coefficient of variation (CV) of industrial hemp varieties grown at Cerela Inc., St. Hugues, QC 2017. Varieties planted on June 15th. Dotted lines indicate the average yield and average coefficient of variation for all cultivars.
# Nutrient Up-take & Fertilization

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Total Plant (Kg/ha)</th>
<th>Grain (Kg/ha)</th>
<th>Uptake</th>
<th>*Suggested Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Hemp 200 Canola 120</td>
<td>Hemp 40 Canola 65</td>
<td>Hemp/day 6.7</td>
<td>70 to 90lb (Actual N)</td>
</tr>
<tr>
<td>P</td>
<td>Hemp 47 Canola 50</td>
<td>Hemp 19 Canola 35</td>
<td>Hemp/day 1.56</td>
<td>35 to 40lb</td>
</tr>
<tr>
<td>K</td>
<td>Hemp 211 Canola 75</td>
<td>Hemp 10 Canola 17</td>
<td>Hemp/day 6</td>
<td>As req’d per soil test</td>
</tr>
<tr>
<td>S</td>
<td>Hemp 14 Canola 20</td>
<td>Hemp 3 Canola 12</td>
<td>Hemp/day 6</td>
<td>As req’d per soil test</td>
</tr>
</tbody>
</table>

Source: (MAFRI)
Weeds, Disease and Pest Management

No registered pesticide in Canada
- European Corn Borer
- *Sclerotinia* Spp. “White mould”
Organic

- Hemp plants need optimum planting conditions in order to out compete weeds
- Heavy Nutrient Feeders

Conventional

- Pre-plant burn-off
- Assure II to control grasses
- On-going trials through minor use program; Edge and Pardner
Harvest
Drying, Conditioning and Storage
Pre-Cleaning & The Importance of Drying

- Harvest around 24% moisture content and dry down to 8% for storage
<table>
<thead>
<tr>
<th><strong>Grain Harvest Only CoP</strong></th>
<th>Per acre</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yield (lbs/ ac)</strong></td>
<td>1100</td>
<td>110000</td>
</tr>
<tr>
<td>Land cost (ac)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Seed cost (25 lb/ac at $2.5/lb certified)</td>
<td>62.5</td>
<td>6250</td>
</tr>
<tr>
<td>Field prep cultivation (ac)</td>
<td>40</td>
<td>4000</td>
</tr>
<tr>
<td>Fertilizer (ac)</td>
<td>70</td>
<td>7000</td>
</tr>
<tr>
<td>Seed Starter Fertilizer (ac)</td>
<td>15</td>
<td>1500</td>
</tr>
<tr>
<td>Fertilizer application (ac)</td>
<td>10</td>
<td>1000</td>
</tr>
<tr>
<td>Seeding (ac)</td>
<td>20</td>
<td>2000</td>
</tr>
<tr>
<td>THC testing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Harvesting (combine &amp; short trucking)</td>
<td>50</td>
<td>5000</td>
</tr>
<tr>
<td>Drying ($/lb)</td>
<td>17</td>
<td>1650</td>
</tr>
<tr>
<td>Storage</td>
<td>25</td>
<td>2500</td>
</tr>
<tr>
<td>Trucking to market ($/mt)</td>
<td>13</td>
<td>1250</td>
</tr>
<tr>
<td>Cleaning ($/lb)</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Crop Insurance</td>
<td>18</td>
<td>1800</td>
</tr>
<tr>
<td>Licencing</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>Fall tillage</td>
<td>35</td>
<td>3500</td>
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<tr>
<td><strong>Totals</strong></td>
<td>375</td>
<td>37500</td>
</tr>
</tbody>
</table>

**Break-even cost ($/lb)** $0.34
**Sale Price** $0.65
**Revenue** $715.00 $71,500.00
**Return** 340 34000
**Total Tonnage** 0.50 49.9
**Bushels** 26.19 2619
**Cost of Production**

### Dual Crop Fiber CoP post grain harvest

<table>
<thead>
<tr>
<th></th>
<th>Per acre</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yield (mt/ac)</strong></td>
<td>2.5</td>
<td>250</td>
</tr>
<tr>
<td>Stubble swathing (ac)</td>
<td>15</td>
<td>1500</td>
</tr>
<tr>
<td>Harvester or Baler (ac)</td>
<td>75</td>
<td>7500</td>
</tr>
<tr>
<td>Fiber Collection (mt)</td>
<td>25</td>
<td>2500</td>
</tr>
<tr>
<td>Trucking to Market (mt)</td>
<td>75</td>
<td>7500</td>
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<tr>
<td>Nutrient Removal Value (ac)</td>
<td>125</td>
<td>12500</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>315</td>
<td>31500</td>
</tr>
<tr>
<td>Breakeven cost ($/mt)</td>
<td>$126.00</td>
<td></td>
</tr>
<tr>
<td>Sale Price</td>
<td>$176.32</td>
<td>0.08 cent/lb</td>
</tr>
<tr>
<td>Revenue</td>
<td>441</td>
<td>$44,080.00</td>
</tr>
<tr>
<td>Return</td>
<td>126</td>
<td>12,580.00</td>
</tr>
</tbody>
</table>

### Combination Dual Purpose Crop

<table>
<thead>
<tr>
<th></th>
<th>Per acre</th>
<th>Totals</th>
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<tbody>
<tr>
<td>Total Costs</td>
<td>690</td>
<td>69000</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>1156</td>
<td>115580</td>
</tr>
<tr>
<td><strong>Return</strong></td>
<td>466</td>
<td>46580</td>
</tr>
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</table>
WHAT'S GOING TO MAKE HEMP THE NEXT BREAK THROUGH CROP ON THE FARM?

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2025</th>
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<tbody>
<tr>
<td>Acreage</td>
<td>100,000</td>
<td>1M</td>
</tr>
<tr>
<td>Economic Impact</td>
<td>$50M</td>
<td>$1B</td>
</tr>
</tbody>
</table>
Genetics & Agronomy

Hemp missed out on the “green revolution”

- Plant Traits
- Diversity
- Plot trials
- Data

Regulatory Environments

- Controlled Substances Act
  - Review of the Industrial Hemp Framework (in progress)
  - Ease of access for growers
- Industry Oversight
  - Seed purity to food safety
- Canadian Grain Commission
  - Industry Standards

Health Canada

CFIA-ACIA

Canadian Grain Commission

Market Acceptance

- Dual use Fibre - Grain
- Expanded Food Grade Products
- Off Grade Options
Grower Resources

https://www.youtube.com/channel/UCm2hRq_XfqK3vQ5102-tiow

www.valleybio.com

www.hemptrade.ca

http://www.uvm.edu/extension/cropsoil/hemp

http://hemp.cals.cornell.edu