INDUSTRIAL HEMP:
AGRONOMIC FUNDAMENTALS

Kendra Meier, BSc., MSc. Candidate, A.Ag
Agronomist

Hemp Genetics International, Inc.
Hemp Production Services, Inc.

Garry Meier, Bert Vandenberg, Kevin Friesen
Where it began…
What is Industrial Hemp?

- Cannabis Hemp
  - Contains cannabinoids
  - < 0.3% THC

- Dual Purpose
  - Grain and Fibre

- Dual Purpose
  - Grain and Fibre

- The Other Stuff
  - > 0.3% THC
Market Prospects

Industrial Hemp

Hemp Seeds
- Hulling
  - Meat
    - Food
  - Shell
    - Flour
- Pressing/Crushing
  - Oil
    - Food
    - Fuel
    - Paint
    - Personal-care products
  - Cake
    - Food
    - Beer
    - Feed

Hemp Stalks
- Decorticating
  - Fiber
  - Hurds
    - Fiber board
    - Compost
    - Mortar
    - Paper filler
    - Absorbent bedding
    - Chemical feedstocks
      - Plastics
      - Paint
      - Sealant

Harvest
- Intermediate processing
- Further processing
- Hackling
- Scutching

Adapted from Kraenzel et al., 1998
Industrial Hemp
## Industrial Hemp Acres in Canada: 2014

<table>
<thead>
<tr>
<th></th>
<th>AB</th>
<th>SK</th>
<th>MB</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finola</td>
<td>18282</td>
<td>14218</td>
<td>1109</td>
<td>33709</td>
</tr>
<tr>
<td>CFX-2</td>
<td>3443</td>
<td>23981</td>
<td>1064</td>
<td>28488</td>
</tr>
<tr>
<td>HempNut</td>
<td>3630</td>
<td>11406</td>
<td>4537</td>
<td>19573</td>
</tr>
<tr>
<td>CRS-1</td>
<td>160</td>
<td>417</td>
<td>15032</td>
<td>15609</td>
</tr>
<tr>
<td>CFX-1</td>
<td>0</td>
<td>2257</td>
<td>49</td>
<td>2726</td>
</tr>
<tr>
<td>Totals</td>
<td>25544</td>
<td>53374</td>
<td>27298</td>
<td>97379</td>
</tr>
</tbody>
</table>
Recipe for Success

• Health Canada Regulations
  • Licenses
  • THC Sampling

• Genetics

• Agronomy

• Consultation

• Luck with Mother Nature
Health Canada Regulations

- Cultivation license is required
- Hemp controlled substance
- License is free
  - Map with GPS Coordinates
  - Landowner Consent
  - Criminal Record Check
- THC Sampling
- Some varieties exempted
- Approved HC sampler
- Cost $300/field
Genetics

- Different genotypes for different regions and farming systems

Breeding Objectives:
- Higher yields
- Shorter plants
- Larger seeds
- Shortened maturity
- Low stable THC content
- Easier harvestability
- More weed control options
Agronomy

- Field selection
- Seeding
- Fertility
- Weed Management
- Disease Management
- Harvest Management
Field Selection

• Pick your best land
  • Well drained

• Medium textured

• Fertile(!!)

• No residual herbicide

• Allergen Free (wheat)
Seeding

• Last crop seeded

• 20-25 lbs/acre

• Warm soils
  • 8-10°C

• Shallow, but seed into moisture
  • ½ to ¾ inch
Fertility: Conventional Production

- The more fertility, the more productivity
- Fertilize according to high protein wheat and canola

0 lb N

100 lb N
Fertility: Organic Production

- Grow on your best land
- Follow: perennial alfalfa breaking, green manure plowdown or fallow

CFX-2 Hemp grown on fababean plowdown
Fababean
Plowdown: SSNS 1

• Small seeded

• Fallow in spring

• Plant July 1st

• Incorporate in fall

• 70+ lbs N/acre
Weed Management

- Field Selection
- Crop Competition
- Crop Nutrition
- Working on more options….
Disease Management

- Few disease vectors
- ROTATION IS IMPORTANT
- Sclerotinia sclerotiorum
  - Humid conditions
- Botrytis cinerea
  - Secondary infection
Pest Management

- Little Economic Impact
  - Bertha Army Worms
  - Flea Beetles
  - Grasshoppers
Harvest Management

• Timing
  • Green plants
  • Minimizes fibre wrapping and seed damage
    • 12-18% moisture
    • Less than 25% green seeds in bracts
Straight Combining

- Minimizes fibre wrapping
- Draper headers
- New knife and guards
Swathing

• Advised when crop is susceptible to shelling from wind or maturity

• Only if no rain in forecast

• Best crops 5ft tall or less

• Let dry for approximately 2 days

W. Von Roessel
Fibre Management

- Depends on height of fibre
- Incorporate with disk
- Bale and remove
- Harrow and burn
Coming in 2016

• New Varieties
  • Picolo: Small seeded, short stature
  • Katani: Larger seeded, moderate short height
  • Grandi: Larger seeded, moderate height

• Agronomic Research
Summary

• Obtain proper agronomic information based on your farming system

• Do the proper paperwork

• Pick the best fields

• Exceptional fertility

• Have proper equipment

• Good luck with mother nature!