STONE FARMS
SINCE 1901

• 1100 acres crop
• Pedigree seed since 2010

ValleyBio

• Cleaning grain in 2012
• Registered Seed Establishment in 2014
• 6 Employees

UniSeeds

• Hemp Breeding program since 2012
• First New Varieties available 2019

• 6 Employees
10 YEARS IN

2008 Feasibility
2009 First Crop, Stone Farm Brand
2010 First Pedigree seed crop
2011 Contracting acres for western processors
2012 Grain cleaning plant construction
2013 Registered Seed Establishment status
2014 Pedigree Cereals and Soy
2015 Authorized Importer status
2016 Fibre Sales; Cereals partnership
2017 First variety Registration Altair
2018 First variety Registration Altair

Stone Farms
Grower and Industry support
Invested in Genetics and Breeding
Focus services & Genetics
First Pedigree hemp
Building International Brand
Acceleration of Seed Program
Biofuels, Pyrolysis oils Energy
Shipping bulk grain to Winnipeg
Stone Farms Retail Brand
Closed retail brand
First Container Exports
Building seeds exports
ValleyBio
Canadian Hemp Production

PRODUCTION PERMITS IN CANADA

ACRES

YEAR

AB  Sask.  Man.  Ont  Que
What do you need to know to GROW industrial hemp?
### Industrial Hemp Production Calendar

<table>
<thead>
<tr>
<th>CROP MANAGEMENT</th>
<th>NOV</th>
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### Key Events:

- **Scouting**: Take Soil Samples
- **Crop Development**: Emergence
- **Fertilizer**: P, K Application
- **Planting/Harvesting**: Plant Seed
- **Post Control**: Pre-Plant Inoculant

**Top Row**
- **Iron**, **Magnesium**, **Potassium**, **Calcium**, **Phosphorus**, **Sodium**, **Chlorine**, **Boron**, **Zinc**, **Manganese**, **Copper**, **Molybdenum**

**Middle Row**
- **Iron**, **Magnesium**, **Potassium**, **Calcium**, **Phosphorus**, **Sodium**, **Chlorine**, **Boron**, **Zinc**, **Manganese**, **Copper**, **Molybdenum**

**Bottom Row**
- **Iron**, **Magnesium**, **Potassium**, **Calcium**, **Phosphorus**, **Sodium**, **Chlorine**, **Boron**, **Zinc**, **Manganese**, **Copper**, **Molybdenum**

**Columns**
- **NOV**: November
- **DEC**: December
- **JAN**: January
- **FEB**: February
- **MAR**: March
- **APR**: April
- **MAY**: May
- **JUN**: June
- **JUL**: July
- **AUG**: August
- **SEP**: September
- **OCT**: October
Hemp Genetic Variations

Hemp is a genetically diverse and variable crop that produces raw products in three distinct categories: seed/oil, fiber, and metabolites (cannabinoids, etc.)
Hemp Plant Types

- **Monoecious**: both male and females flowers are found on the same plant
- **Dioecious**: Separate male and female flowering plants
Planting - Site Selection

Jan - Mar

- Choose well managed, good productivity cash crop land, dryland or irrigated

- Know your:
  - Crop History
  - Soil structure and type
  - Weed loads - control strategy
  - Fertility levels - Soil test

- Hemp will grow on a variety of soil types
- Hemp will do best on soil with good fertility and drainage

Sandy Soil
- Lets the taproot seek moisture/nutrients from deep in the soil

Clay Soil
- Does not have quality drainage
- Impaired drainage can stunt growth
Planting - Planning

- Seeding rates: 15-30 lb/ac
- Higher seeding rates = closer together growth, less branching, self thinning
- Planting depth: 0.5”-1.5”
- Planting dates: May-15-June 30, 120 days

May - Jun
Planting - Equipment

- Conventional or no-till seed drill
- Corn seeder
- Air seeder
- Calibrate equipment to handle seed gently
Planting - Stand Count  1-2 weeks post plant

- Scout and check stand establishment
- Grain Minimum Stand  80,000 plants/acre
- Grain Optimum Stand  175 - 250k plants/acre
- Fibre Minimum Stand  150k plants per acre
- Fibre Optimum Stand  -- it depends
- CBD Minimum Stand  -- it depends
Crop Management - Nutrients

- Hemp is a heavy nutrient feeder
- It responds well to nitrogen, phosphorus, potassium and sulphur
- Soil testing is suggested to determine optimal soil amendments required
# 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>
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<tbody>
<tr>
<td></td>
<td>Hemp</td>
<td>Canola</td>
<td>Hemp</td>
<td>Canola</td>
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<tr>
<td>N</td>
<td>200</td>
<td>120</td>
<td>40</td>
<td>65</td>
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<td>P</td>
<td>47</td>
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<td>19</td>
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<td>K</td>
<td>211</td>
<td>75</td>
<td>10</td>
<td>17</td>
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<td>S</td>
<td>14</td>
<td>20</td>
<td>3</td>
<td>12</td>
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Source: (MAFRI)
Example Nutrient Application

- Pre-plant broadcast - keep N low, adding S
- Seed placed at time of planting - split N application
- Foliar application post tissue test - 3-4 weeks post planting
22gal/ac UAN-32 +S
Hemp fits well into typical rotations (3-4 years)

Rotating with legumes and cereals works well

Legumes deposit nitrogen which the hemp can then use the following year

Watch for white mold carryover

Cereals can help mitigate white mold risk
Weed Control

- Hemp is sensitive to residuals
- Ensure ground is free of chemical residues
- Conventional practice: glyphosate burn down pre-plant, very few registered weed control options
- Organic options: tillage, intercropping, row cultivation, heavier seeding rates
- In general, in-season chemical weed control needs should be low if planting conditions are good
Hemp Diseases

- White Mold
- Grey Mold
- Fusarium Crown/Foot/Root Rot
- Powdery Mildew
- Novel Leaf Spot
- etc.
Pests - Insects

- Cut worms, Seed maggots
- Aphids, Thrips
- Corn Flea Beetle
- Corn/Hemp Borer
- Japanese/lady beetles
- Stink bugs
- Grasshoppers, Leafhoppers
- etc.
Pest Control

- To date, no insects have been voracious enough to require control
- No insecticides registered for hemp
- Other field pests can include deer, birds, spiders, etc.
- Post harvest pests can include: flour beetles, spider mites, Indian meal moths and rodents
Pest Control

- Assure2 - On label
- Bromoxynil 16-028
- Ethafluralin On label
- Boscalid 11-009
- Matador 12-035
- Warrior 12-036

Need more equivalency with other cannabis PCP

New Priorities

- Insects: Corogen
- Soil Disease: EverGol, Root Shield, T22
- White Mould: Serenade, Priaxor, Acapela, Proline
- Broadleaf: Command, Everest, Chateau, Zidua
Grower Resources

www.uniseeds.ca

www.hemptrade.ca/eguide

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

http://hemp.cals.cornell.edu

https://norquest.ca/home.aspx
THANK YOU

Questions?