

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?

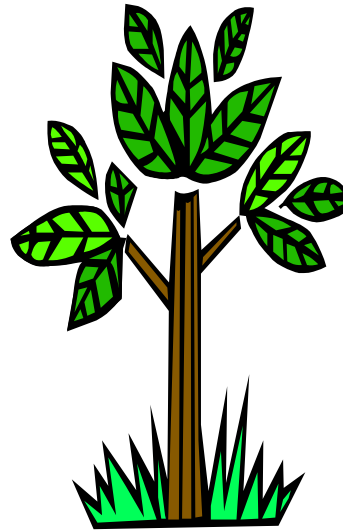
- Cannabis Hemp
 - Contains cannabiods
 - < 0.3% THC
- Dual Purpose
 - Grain and Fibre



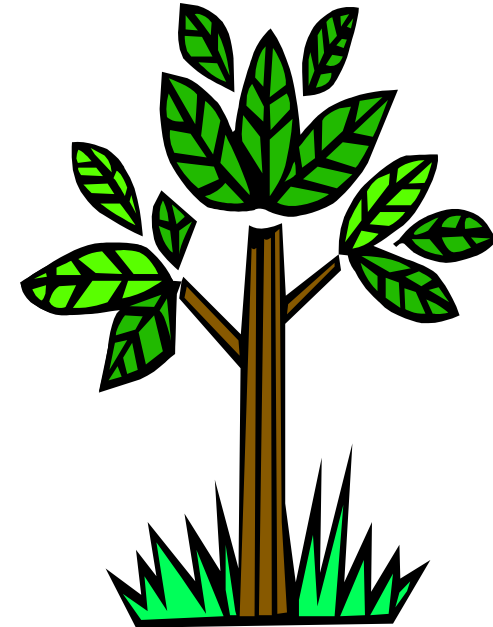
Grain



Dual Purpose



Fiber

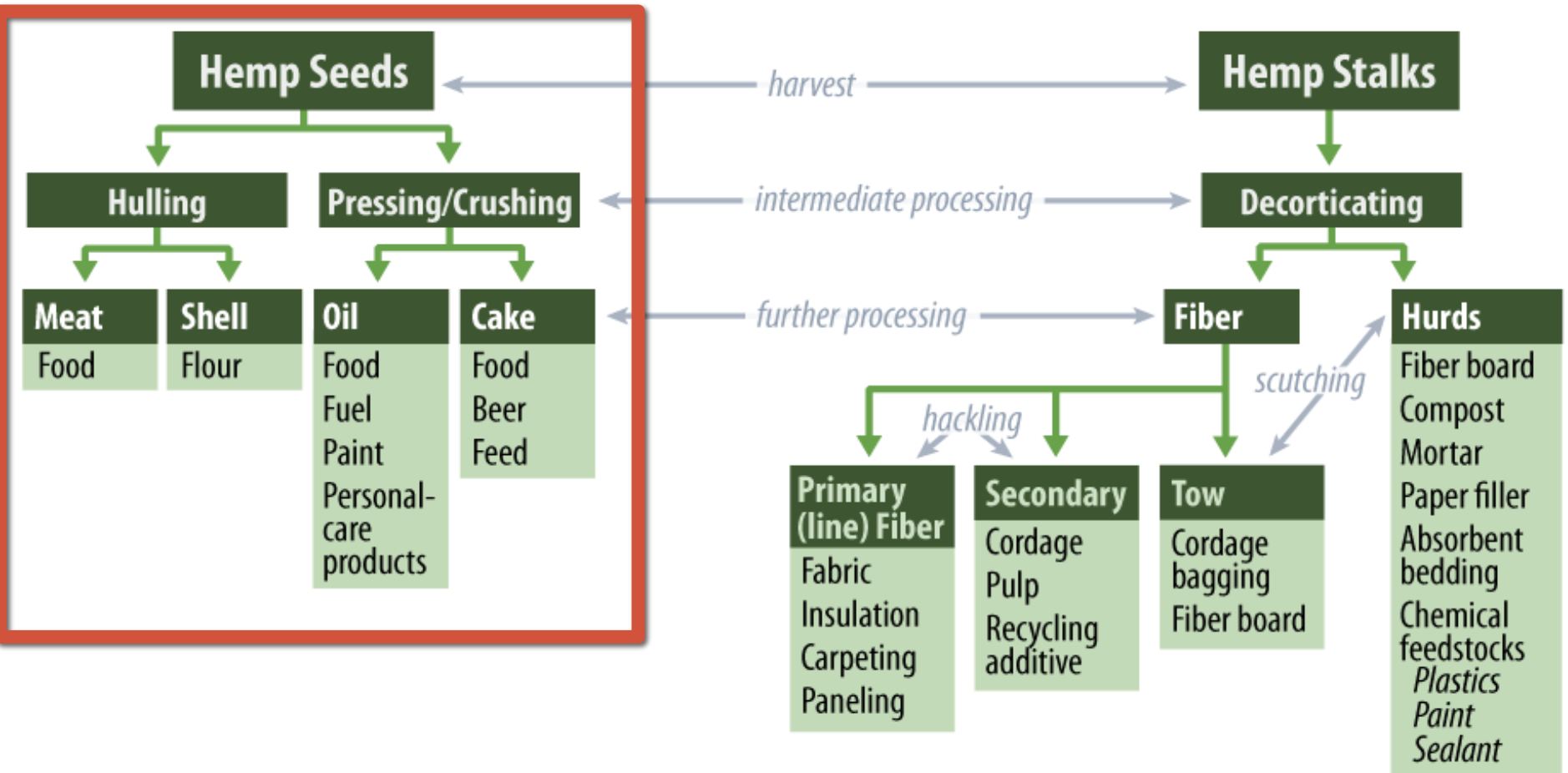


The Other Stuff

> 0.3% THC

Market Prospects

Industrial Hemp



Adapted from Kraenzel et al., 1998



Industrial Hemp



Industrial Hemp Acres in Canada: 2014

| | AB | SK | MB | Totals |
|----------------|-----------|-----------|-----------|---------------|
| Finola | 18282 | 14218 | 1109 | 33709 |
| CFX-2 | 3443 | 23981 | 1064 | 28488 |
| HempNut | 3630 | 11406 | 4537 | 19573 |
| CRS-1 | 160 | 417 | 15032 | 15609 |
| CFX-1 | 0 | 2257 | 49 | 2726 |
| Totals | 25544 | 53374 | 27298 | 97379 |

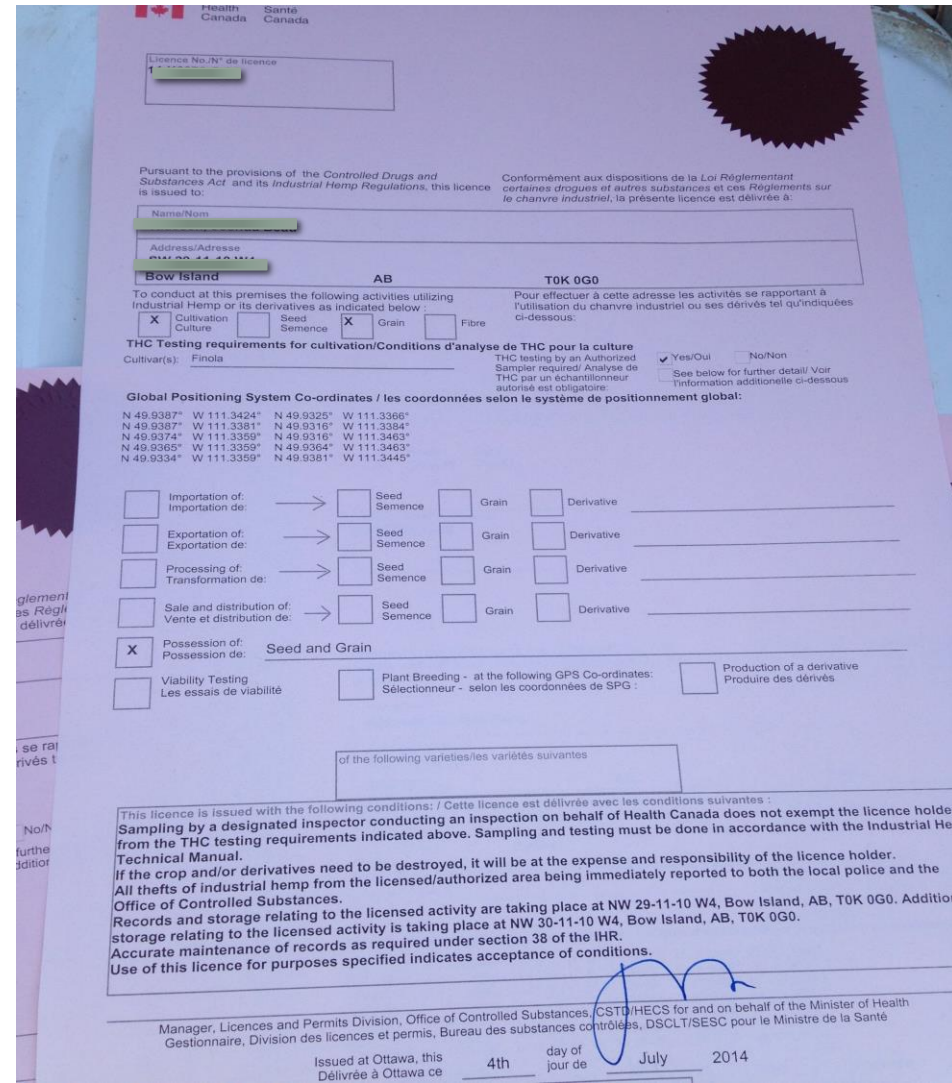
Recipe for Success

- 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



Health Canada / Santé Canada

Licence No./N° de licence: 1

Pursuant to the provisions of the *Controlled Drugs and Substances Act* and its *Industrial Hemp Regulations*, this licence is issued to: / Conformément aux dispositions de la *Loi Réglementant certaines drogues et autres substances* et des *Règlements sur le chanvre industriel*, la présente licence est délivrée à:

Name/Nom: [Redacted]

Address/Adresse: [Redacted]

Bow Island AB T0K 0G0

To conduct at this premises the following activities utilizing Industrial Hemp or its derivatives as indicated below: / Pour effectuer à cette adresse les activités se rapportant à l'utilisation du chanvre industriel ou ses dérivés tel qu'indiquées ci-dessous:

Cultivation / Culture Seed / Semence Grain Fibre

THC Testing requirements for cultivation/Conditions d'analyse de THC pour la culture: Finola. Yes/Oui No/Non

Global Positioning System Co-ordinates / les coordonnées selon le système de positionnement global:

| | | | |
|------------|-------------|------------|-------------|
| N 49.9387° | W 111.3424° | N 49.9325° | W 111.3366° |
| N 49.9377° | W 111.3381° | N 49.9316° | W 111.3394° |
| N 49.9374° | W 111.3359° | N 49.9316° | W 111.3463° |
| N 49.9365° | W 111.3359° | N 49.9364° | W 111.3463° |
| N 49.9334° | W 111.3359° | N 49.9381° | W 111.3445° |

Importation of: / Importation de: Seed / Semence Grain Derivative

Exportation of: / Exportation de: Seed / Semence Grain Derivative

Processing of: / Transformation de: Seed / Semence Grain Derivative

Sale and distribution of: / Vente et distribution de: Seed / Semence Grain Derivative

Possession of: / Possession de: Seed and Grain

Viability Testing / Les essais de viabilité: Plant Breeding - at the following GPS Co-ordinates: / Sélectionneur - selon les coordonnées de SPG: Production of a derivative / Produire des dérivés

of the following varieties/les variétés suivantes

This licence is issued with the following conditions: / Cette licence est délivrée avec les conditions suivantes:

Sampling by a designated inspector conducting an inspection on behalf of Health Canada does not exempt the licence holder from the THC testing requirements indicated above. Sampling and testing must be done in accordance with the Industrial Hemp Technical Manual.

If the crop and/or derivatives need to be destroyed, it will be at the expense and responsibility of the licence holder.

All thefts of industrial hemp from the licensed/authorized area being immediately reported to both the local police and the Office of Controlled Substances.

Records and storage relating to the licensed activity are taking place at NW 29-11-10 W4, Bow Island, AB, T0K 0G0. Additional storage relating to the licensed activity is taking place at NW 30-11-10 W4, Bow Island, AB, T0K 0G0.

Accurate maintenance of records as required under section 38 of the IHR.

Use of this licence for purposes specified indicates acceptance of conditions.

Manager, Licences and Permits Division, Office of Controlled Substances, CSTO/HECS for and on behalf of the Minister of Health / Gestionnaire, Division des licences et permis, Bureau des substances contrôlées, DSCLT/SESC pour le Ministre de la Santé

Issued at Ottawa, this / Délivrée à Ottawa ce 4th / jour de July 2014

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



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**

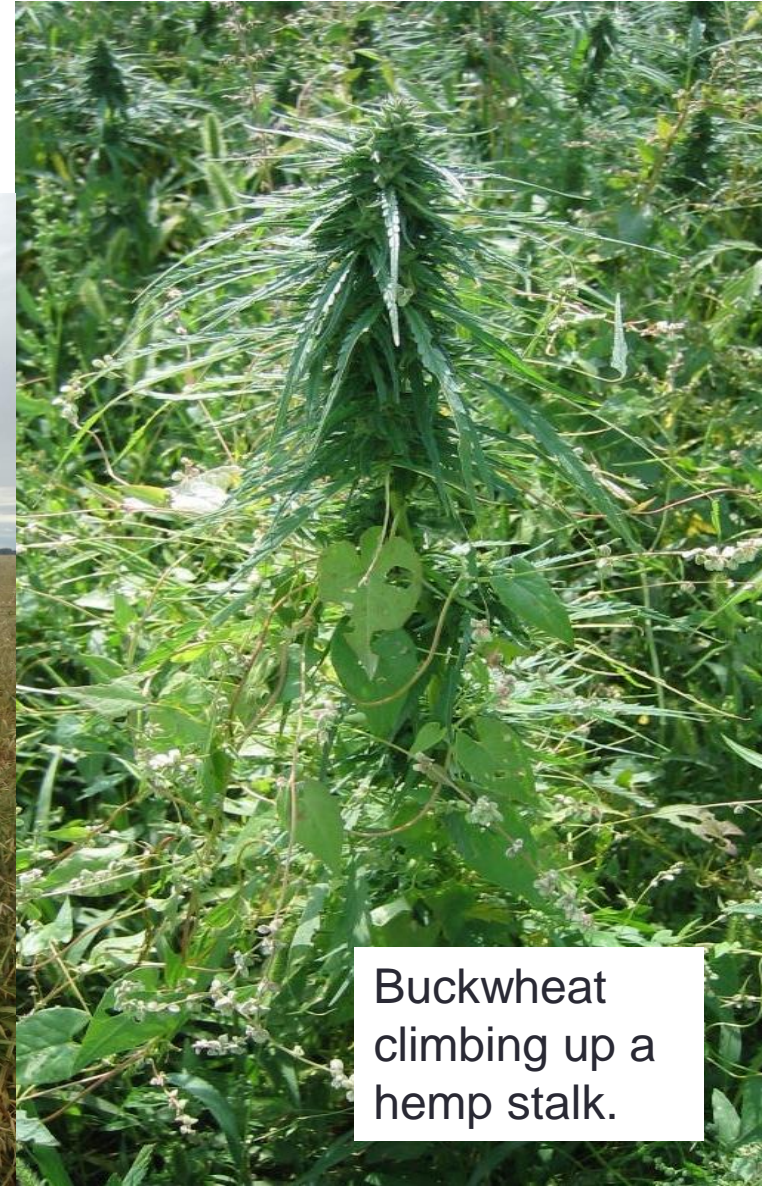
Fababean Plowdown: SSNS 1

- 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....



Buckwheat
climbing up a
hemp stalk.

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 paper work
- Pick the best fields
- Exceptional fertility
- Have proper equipment
- Good luck with mother nature!



Questions?

