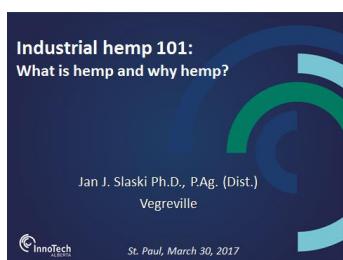


Presentation Summaries - St. Paul, March 30, 2017, and Whitecourt, April 4, 2017

Industrial Hemp and Flax 101 - Part 1



Dr. Jan Slaski – Agronomist, InnoTech Alberta

Email: Jan.Slaski@innotechalberta.ca

In 1938, the Opium and Narcotic Act banned cultivation, possession and processing of hemp in North America, resulting in a 60 year knowledge gap that became evident when, in 1998 Health Canada restored the ability to grow and supply hemp products to the market.

Highlights

- In dioecious hemp varieties, male plants start dying soon after they shed pollen, which results in lower yield of fibre of poor quality. In monoecious hemp varieties, all plants mature at the same time hence they produce stems of high uniformity and consequently, of higher fibre yield.
- In 2017 there was a high demand for both conventional and organic acres. The growth in the future will be additionally fueled by demand for fibre. In 2018, it is projected that more than 180,000 acres could be allocated to hemp production.
- There is a developing interest in processing of hemp and developing fibre processing/manufacturing opportunities. Companies are contracting farmers for grain production; driving exports growing 20% to 30% annually.

Industrial Hemp and Flax 101 – Part 2



Dr. Jian Zhang – Agronomist, InnoTech Alberta

Email: Jian.Zhang@innotechalberta.ca

Scientists from InnoTech Alberta and Agriculture Canada and researchers from Guelph studied flax grown in northern Alberta versus flax grown elsewhere. They found that there was evidence indicating that flax grown in northern Alberta has better nutritional value (approximately 50% ALA oil seed), and northern locations and climate contribute to higher Lignan content. Research continues to study grow

seasons, at various test plots, varieties that support northern conditions, and ways to better quantify and increase the quality of the flax plant.

Highlights

- Flax is a great opportunity for agricultural sustainability and diversification for our northern Alberta economy. There is a need to recognize the full value of the opportunity for biofibre food in local, national and international markets.
- Northern Alberta has an opportunity to increase value added bio-products which attracts entrepreneurs (local to international markets).
- Canada is the leader for flax seed production and is sold to multinational markets.
- Presently the largest fiber producers are China, Belgium, Belarus, France and Russia.
- Flax fibre is not a big producer in Canada; however, with Chinese markets looking at Alberta, opens an opportunity for linen production. Developing industry partnerships may be a solution to increase value added products, and increase profits for farmers.
- It would be beneficial for northern Alberta to explore further opportunities for a flax processor and the potential for a complete value chain.

Presentation Summaries - St. Paul, March 30, 2017, and Whitecourt, April 4, 2017

Pathways to Agri-Value Success: Alberta Programs and Services



**Patti Breland – Alberta Agriculture and Forestry
Biomaterials and BioProducts**
Email: patti.breland@gov.ab.ca

This team at the Alberta Ministry of Agriculture and Forestry is focused on maximizing the value of Alberta's bio-based resources by working with producers and manufacturers to create value fibre supply chains and working with other government ministries when needed. They connect people to raw material

sources, research, equipment, technical expertise, funding information, market access interactive tools, provide tours for international investors and access to networks that help foster development of their product ideas and technologies.

Alberta has many resources available to move industry ahead. These include, but are not limited to:

- Leduc Food Processing Centre
- Bio Processing Innovation Centre
- Alberta Innovates and InnoTech Alberta
- Colleges and university projects
- Apparel Innovation Center in Calgary

The Alberta Government invested in the **Pilot Decortication Facility** at Vegreville. Contact **Byron James, Supervisor of Research Farm and Pilot Facilities at 780-632-8219** to learn more about processing opportunity.

Industrial Hemp Seed Production Costs and Returns in Alberta, 2015

Industrial Hemp Harvest and Storage - Outlines growers, processor, and research experiences on the Prairies, helps guide harvest and storage practices to ensure quality requirements and includes three pre-harvest and harvest videos of industrial hemp in Alberta.

Flax Market Outlook



**Neil Blue – Alberta Agriculture and Forestry
Provincial Crop Market Analyst**
Email: neil.blue@gov.ab.ca

Highlights

- Flax abandonment rate over the last 10 years averaged about 4%, double that of canola.
- Canadian flax acreage is variable from 700,000 to 1.7 million acres, changing in reaction to price and comparative potential profit of alternative crops.
- Alberta five-year average flaxseed / linseed exports are about 55,000 tonnes per year.
- General trend is rising flax production and exports. Average flax export value is \$350 million Canadian and \$35 million from Alberta. Gross income of flax has been increasing over time. Flax is currently economically competitive with other crops.
- Canadian flax exports used to go through Thunder Bay to Europe. With more flax exported to East Asia, more flax is moving from the Canadian west coast. This favors exports and growth in Alberta's flax production, which currently averages 65,000 tonnes per year.
- Most of the flax grown in the south is under irrigation, which provides Alberta with an overall comparative yield advantage. Flax grown in northern regions results in better quality. Trend line yields are increasing. Both production and exports have stabilized or are increasing.

Capture Marketing Opportunities for Flax and Hemp – Part 1



Byron James (presented at St . Paul event)
Supervisor, Research Farm and Pilot Facilities
InnoTech Alberta, Crop Development and Management
Email: byron.james@InnoTechAlberta.ca

Lori-Jo Graham (presented at Whitecourt event)
Biomaterials Lead
Alberta Agriculture and Forestry
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Hemp is a natural biorefinery; the entire plant can be used for a multitude of applications. Some examples include cosmetics, biodiesel, household cleaners, bio based polymers, automotive, environmental products, pulp and paper and textiles. Currently, Health Canada allows only for the commercial use of the hemp stalk and seeds. The Canadian Hemp Trade Alliance (CHTA) is working towards the whole plant utilization.

Industrial hemp market opportunities continue to build including a number of growing success stories among Alberta's industry including: Biocomposites Group in Drayton Valley, Blue Mountain and Hart Fibre Trade, Just BioFibre, Hempco, Decortication Facility in Vegreville, etc.

Highlights

- The time is now for hemp. There is a wide range of product potential and it is still illegal in the United States to grow hemp for commercial purposes, giving Canada a competitive edge.
- There are demonstrated opportunities for Alberta; it a matter of bringing product to market, and the development of a long-term sustainable strategy to move this forward.

Capture Marketing Opportunities for Flax and Hemp – Part 2



Krista Kotlak – Field Crop Business Development Agrologist
Alberta Agriculture and Forestry
Email: krista.kotylak@gov.ab.ca

The Manitoba Agriculture's 2008 National Industrial Hemp Strategy that reported 'acreage under cultivation in Canada is on a strong upward trend', while the Hemp Industry Association's 2011 report estimated annual retail hemp sales have grown to over \$400,000,000. The flax industry update 2012 report "Global Demand for Flax is Growing: We'll be Ready" stated that the North American use of flaxseed in baked goods has tripled in the past decade, increasing industry demand.

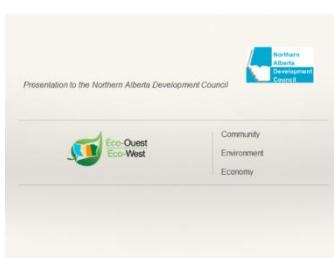
These reports all provide strong indications that the market demand for hemp and flax products and supports an increased need for raw materials and presents diversification opportunities for producers.

Highlights

- Flax seeds are available in ground form; cold pressed oil, and milled flaxseed. Hemp seeds are sold whole, cold pressed oil, and protein form.
- Licensing is required to grow, process, and transport industrial hemp. There are restrictions on where you can plant IH. Once you are licensed, reapplication is required for each year.
- Flax needs to be GMO free, while hemp must meet all quality and food safety specifications along with delivery requirements.

Visit www.agriculture.alberta.ca/customer-requirements on the Alberta Agriculture and Forestry website for further information

Northern Alberta Industrial Hemp and Flax Production – Part 1



Francois Catellier – Agricultural Business Advisor

Eco-Ouest (on behalf of CDEA)

Email: fcatellier@eco-ouest.com

Eco-Ouest is contracted by the CDEA and project partners for the Northern Alberta Hemp Procession Initiative (NAHPI). The project goal is to explore the feasibility and sustainability of a hemp processing plant in northern Alberta; to build on optimizing fibre processing, creating commercial samples to potential buyers around the world, and establishing contracts with potential buyers.

Highlights

- The study background demonstrates bio fiber production potential.
- Identifying the need for processing plants – interest in further exploring the driving market for hemp fiber, and planting long term contracts, etc.
- There is a tremendous production capability, natural advantage, and potential in northern Alberta.

Northern Alberta Industrial Hemp and Flax Production – Part 2

(St. Paul Seminar)

A number of Economic Development organizations presented a brief highlights and overview of past and current related agriculture projects underway in their regions.

Dianne Chiasson, representing Makenzie County NW Alberta, presented on area projects including MARA: Applied research in flax cultivar; 2015 partnership with InnoTech Alberta/REDI/MARA in, testing 6 industrial hemp cultivators; Smokey River Research Association published a Flax and hemp research (available online); and Mackenzie County partnership with CDEA (NW region) and Smoky River Economic Development to support the initiative in northwest Alberta.

Bob Bezpalko, Northeast Alberta Information HUB (Alberta HUB) provided a brief presentation to highlight the Alberta HUB service region, member communities, projects and initiatives to grow economic development in northeastern Alberta. Alberta HUB is a project partner with the Northern Alberta Hemp Procession Initiative (NAHPI).

JustBioFibre Structural Solutions Corp.



Terry Radford - President
JustBioFibre Structural Solutions Corp.
Email: terry.radford@justbiofiber.com

JustBioFibre, located in Calgary, Alberta develops and manufacturers sustainable building systems. Their innovative product is designed as a modular block wall system that is assembled by stacking interlocking blocks and the application of a bonding material between adjacent blocks and courses.

Highlights

- Buildings are a major consumer of energy; 50% of all energy consumed is for buildings. Using rapidly renewable hemp as a building material reduces energy requirements and sequesters carbon dioxide.
- JustBioFibre's requires hemp straw (inner core) for their modular block production:
 - Hurd or shiv – considered waste product right now, and consists of over 40% of the plant
 - 7,000 hectares required to provide enough hemp hurd for 35,000 tonnes of straw to supply 4 million blocks per year.
- Estimated cost for a processing plant is \$30 million
- To address the 4.5% of the US/Canada wall building market, Alberta needs 10 plants producing to produce 4 million blocks each per year.
- The opportunity is here. Alberta has an advantage; bulk of production is in the western prairies.

HEMPCO Canada



Charles Holmes – CEO
HEMPCO Canada
Email: charles@hempcoca.com

HEMPCO started as a small family company, 16 years in the industry (10 years as a bulk food processor). HEMPCO is a 0 debt, public trading company. They have grown an international customer base to countries such Korea, USA, Germany, UK, Japan, Mexico, and soon China. HEMPCO's primary processing facility is located in

Manitoba and they are expanding operations at their new Nisku location in a 56,000 square foot facility.

Highlights

- Sales for fiscal year end August 31, 2016 was \$5.2 million, growing 30%/year. Sales year to date are approximately \$5 million first 3 quarters.
- Nisku facility has a plan for \$100 million/year in hemp food sales alone by year 5.
- Preparing for change in legislation to process hemp leaves and flowers for CBD functional foods.
- Contracted over 6,000 acres in Alberta working with 24 farmers, of the total 45 farmers contracted this season, total acres is approximately 15,000 in Canada, and approximately 2,300 is organic. HEMPCO is always looking for more organic growers.
- HEMPCO has launched a CBD product. Eastern Europe is providing CBD (critical factor how our body functions – humans require CBD), HEMPCO is looking to build up their line in the European Union for nutraceuticals.
- The biggest obstacle is that industrial hemp is still associated with marijuana. Education is needed.

Haotai Linen / Blue Mountains Ltd.

Flax and Hemp Fiber Were Used In Textile

Flax and hemp 植物是最宝贵的生态资源之一，是绿色环保纤维。
在纺织工业的生产过程几乎是一样的，纤维生产，纺纱，织造，和印染后整理加工。

Shiming Wang – General Manager

Haotai Linen / Bluemts Ltd.

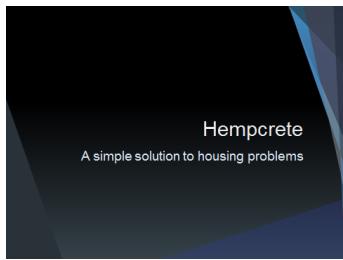
Email: haotailinen@hotmail.com

Haotai Linen is a textile firm based in China, which specializes in linen processing and provides fabric supply for companies such as Zara, H&M and others. Bluemts Ltd. Was founded in Alberta in 2013 to focus on fully utilizing Alberta's vast supply of biofibre including flax and industry hemp for textile industry.

Highlights

- The processing procedure for textile industry all over the world is very similar -Spinning-weaving or Knitting; and Dying
- Flax and hemp decorticator in China is designed for both short and long fibre; the decorticator process is the same.
- The long fibre has been supplied by France, Belgium and Netherlands, currently providing the best flax fibre quality material for the industry. 90% of long fibre linen is manufactured in China. The value of long fiber was \$3US per kilo = 600 meters
- Short fibre is utilized for low grade fabric productions. Short fiber is only available here in Alberta.
- China is the biggest fabric producer in the world however the majority of materials are imported. The cultivation of flax in China is shrinking to 100,000 acres in China, which is not enough supply the flax textile industry.

Northern Alberta Story – 8th Fire Innovations



Dion Lefebvre - Owner

8th Fire Innovations

Email: dion@8thfireinnovations.com

Born and raised in northern Alberta, Dion is a provincial pioneer in natural building with almost 5 years' experience in hempcrete construction. Dion shared his experience and knowledge of his "micro project", to showcase the potential of industrial hemp as a bio-mass in North America. He spoke about his coordinating efforts with industry associations, indigenous groups, governments, and post-secondary schools. The presentation also included information about some common threats, health and safety risks in housing today, the efficiency of hempcrete homes, and the opportunities and challenges advancing this industry.

Growing Our Northern Alberta Potential...What to Know and Next Steps



Dr. Jan Slaski - Agronomist
InnoTech Alberta
Email: Jan.Slaski@innotechalberta.ca

InnoTech Alberta, Vegreville research facility supports program activity from seed to final product. Their research continuum includes feedstock development, fibre processing, biocomposite research and market development.

Since 2002, researchers at the Vegreville facility have been conducting, evaluation, selection and breeding of new hemp varieties and developing best management practices permitting sustainable hemp production under Alberta soil and climate conditions.

Highlights

- The Canadian Hemp Trade Alliance discussing the necessity to remove obstacles to advance the hemp industry and to take advantage of the whole crop utilization, including grain, fibre and bioactive compounds.
- If you are a good grower of staple Prairie crops, not necessarily a good hemp grower. To avoid disappointment of crop failure you have to do your homework before putting hemp seeds in the ground and familiarize yourself with specifics of crop production.
- Hemp varieties in Alberta:
 - Finola – short variety and easy to harvest, good for food applications. Best choice for first time growers. X59 – produces large seeds and appreciated by some processors. If postponing harvesting, this is good variety however not so much in southern Alberta. Liked both by the construction / building and food industry.
 - Picolo - new variety that is picking up in Alberta. A short stem, grain-type variety similar to Finola.
- What do farmers need to know?
 - Hemp is a crop like no other – has to be grown under license from Health Canada;
 - Hemp can be grown in all five soil zones of Alberta;
 - Get contact from a processor before seeding
 - Wet years could be a problem
 - Bird feces is a concern, causing grain contamination
- Hemp is becoming a mainstream crop for Alberta.
- The E-Guide produced by the Canadian Hemp Trade Alliance is a great resource.
- The next Vegreville InnoTech field day is on July 20, 2017.