

# Perspectives on Hemp and other Natural Fibres in North America

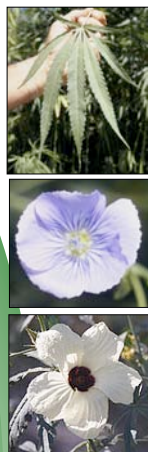
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# Presentation Overview

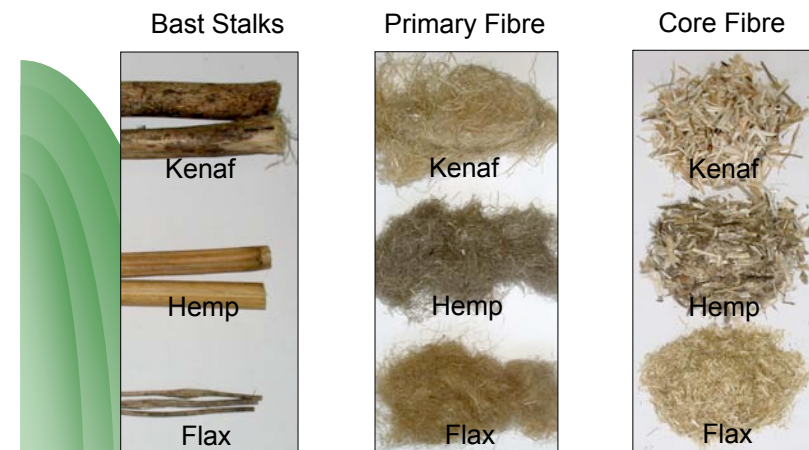
- Fibres discussed in North America (Hemp, Flax, Kenaf).
- Productions factors
- General Trends – Market Overview
- Research and Development Activities
- Future Challenges

## Fibre Production in North America:



- ◆ **Hemp:**
  - ★ Grown in Canada for Grain and Fibre.
  - ★ 3,531 Ha produced in 2004
- ◆ **Flax:**
  - ★ Grown in Canada and US for Grain.
  - ★ 1 Million Ha produced annually
- ◆ **Kenaf:**
  - ★ Grown in Southern USA for fibre.
  - ★ 1,800 Ha produced in 2004

## Bast Fibres of North America:



## Crop Production Factors:



- Fibres produced from stalks grown for:
  - ◆ Fibre only and Grain/Fibre crops
- Hemp regulations:
  - ◆ Legal to grow in Canada since 1998.
  - ◆ Prohibited to grow in US
- New seed varieties being developed:
  - ◆ Hemp grain and fibre.
- No subsidies for any fibres produced in North America.

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## Hemp: Fibre Only Crop Production



Seed planted with grain drill in 7" rows



The stand fills in quickly with warm soil and moisture.



Hemp crop being cut down in August 85 days after planting.



Hemp crop being turned to ensure even curing (retting).



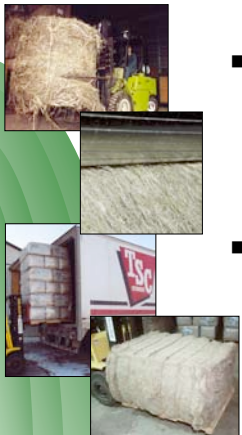
Hemp Stalks retting in the field in September.



Hemp Stalks being baled.

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## Fibre Processing Issues



- Current Processing Operations
  - ◆ Hemp: 1 plant in Ontario, Canada
  - ◆ Flax: 3 plants in Western Canada
  - ◆ Kenaf: 3 plants in Southern USA
- Need for more production capacity:
  - ◆ New technology sought after.
  - ◆ Capital Investment a challenge.

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## Trends for Fibres in North America

- ◆ Replacing fibre glass in composites
- ◆ Rising Energy prices make renewable resources attractive.
- ◆ Growing interest in bio-products
- ◆ Fibre availability stimulating new product development.
- ◆ New Government supported initiatives:
  - ★ Flax 2015
  - ★ Canadian Hemp Trade Alliance (CHTA)

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## Markets in North America (Core)



- Equine Bedding
  - ◆ Large Market
  - ◆ Hemp is well accepted, kenaf and flax entering market
- Garden Mulch
  - ◆ Top Mulch and Soil Amender
  - ◆ Replacement peat moss

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## Markets in North America (Core)



- Absorbent Products
- Cement/Plaster fillers
  - ◆ In fill with wood Frame Construction.
- Plastic Fillers for Extrusion:
  - ◆ Decking
  - ◆ Shingles

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## Markets in North America (Bast)



- ◆ Automotive Interior Parts:
  - ★ In Commercial Production.
  - ★ Mostly Compression Molding with PP
  - ★ Used by big three: Ford, GM, DaimlerChrysler
- ◆ New Applications in development
  - ★ Exterior panels with SMC
  - ★ Injections molding, RTM

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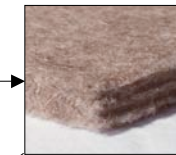
## Bast Fibre Car Part Production



Bast fibre stalks grown on an annual basis



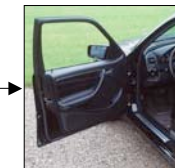
Bast fibre separated, refined and shipped to nonwoven producer



Bast fibre blended with fibrous plastic and formed into nonwoven



Nonwoven mat is molded into the shape of the interior trim part



Finished molded bast fibre car part is installed into vehicle

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## Markets in North America (Bast)



- ◆ Construction Products
  - ★ Wood panel replacements, stucco
- ◆ Consumer Products:
  - ★ Sporting Goods
  - ★ Acoustic Products (Speakers)
- ◆ Specialty Pulp and Paper
  - ★ Cigarette paper
- ◆ Nonwovens for horticulture and erosion control.

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## Research and Development

- New Private & University R&D underway
  - ◆ New process development.
    - ★ To replace fibre glass in plastics
    - ★ Reduce Production Costs
  - ◆ Fibre Modifications/Enhancements.
    - ★ Enzyme treatments
    - ★ Heat treatments
    - ★ Refinements of fibre for injection molding
  - ◆ Product Development
    - ★ New applications.

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## Future Challenges

- Expand Processing Capacity to produce refined qualities of fibre.
  - ◆ Capitalization of Sector
- Continued Product Development
  - ◆ New Applications
  - ◆ New Value Added Technology
- Continued Education and Training of end users about fibres.

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## Thank you for your Interest!



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