



AN INTRODUCTION TO INDUSTRIAL HEMP



Hemp - *Cannabis sativa* is one of the oldest and most versatile plants known and has been cultivated for over 5000 years.

It has been said that there are over 25,000 uses for Industrial Hemp - which can replace many products currently made from cotton, timber or petrochemicals.

The first ropes spun from hemp fibre were made in China c. 2800 BC.



A fragment of paper has been discovered made from hemp fibre dates back to c. 100 BC.

By 220 AD, ancient Chinese techniques of hemp sowing, cultivation, and processing had become fairly advanced.

HEMP GROWING FACTS

- Can grow to a height of 15 ft
- Needs very little fertilizer and no pesticides because -
 - Overcomes most diseases and pests
 - Shades out weeds a few weeks after sowing.
- Excellent rotation crop as over 50% of the nutrients are returned to soil and available for following crop
- Strong demand for organic hemp seed





USES FOR INDUSTRIAL HEMP

WHOLE STALK

HEMP SEED

BAST FIBRE

TEXTILES

FABRICS
DIAPERS
CLOTHING
SHOES
SOCKS

TECHNICAL TEXTILES

CORDAGE
NETTING
CANVAS
CARPETING

INDUSTRIAL

GEOTEXTILES
BRAKE/CLUTCH LININGS
CAULKING
COMPRESSION -
MOLDED PARTS

HURD (CORE)

BUILDING MATERIAL

FIBRE BOARD
INSULATION
HEMPCRETE
FIBERGLASS SUBSTITUTE

INDUSTRIAL

ANIMAL BEDDING
MULCH
COMPOST
CHEMICAL ABSORBENT

PAPER

PRINTING PAPER
FINE & SPECIALTY
NEWSPRINT
CARDBOARD &
PACKAGING

HEMP NUT

FOODS

GRANOLA
PROTEIN POWDER
MILK
BIRDSEED

SEED CAKE

(AFTER PRESSING)
ANIMAL FEED
PROTEIN RICH FLOUR

ENERGY/ENVIRO

FEEDSTOCK FOR
BIOCHAR
EROSION CONTROL
BLANKETS

HEMP OIL

FOODS

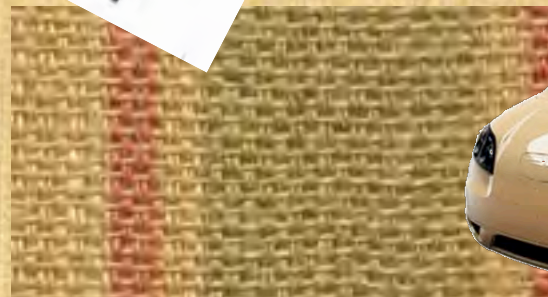
SALAD OIL
MARGARINE
SUPPLEMENTS

BODY CARE

SOAP
SHAMPOO
HAND CREAM
COSMETICS

TECHNICAL PRODUCTS

PAINT
SOLVENT
VARNISH
PRINT INK
LUBRICANT
BIOFUEL



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ENVIRONMENTAL BENEFITS

HEMP PAPER

65% of our boreal forests are cut to produce paper. Deforestation has added an estimated 120 billion tons of CO₂ into the air.

Hemp can produce up to 4 times more useable fibre per acre than forests over a 20 year period.

Can be recycled 7-8 times (compared to 3 times for wood fibre paper).

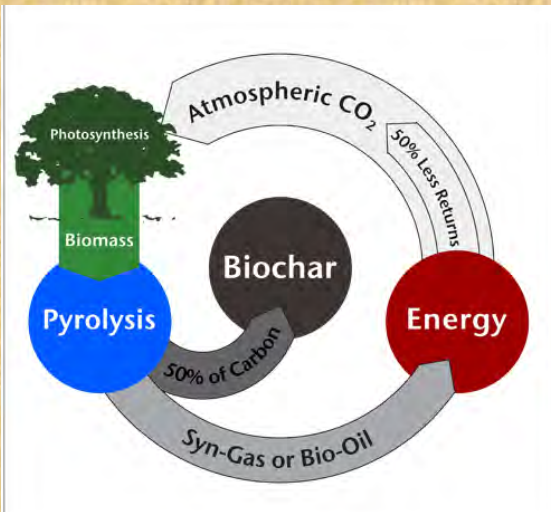
Can be processed chlorine free.

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BIOFUEL/BIOCHAR

Fuel can be made from local, renewable plant resource and as a by-product of hemp seed flour milling. It is 11% oxygen and contains no sulphur.



Hemp stalks can be converted into biochar, a carbon sequestering energy source for soil regeneration, requiring less water & fertilizer & producing higher crop yields



TEXTILES

- Cotton consumes 16% of pesticides used – more than any other crop (1 kg per hectare)
- Organic cotton and hemp must travel more than 12,000 km from India or China
- A local hemp textile industry would be a resource for clothing, household and automotive applications

SO WHY ISN'T HEMP GROWN EVERYWHERE?



- There has been an intensive and consistent effort in the USA to link industrial hemp (IH) with its naughty cousin. In actual fact IH has only traces of the active ingredient tetrahydrocannabinol (THC).
- Who benefits from suppressing industrial hemp? The timber, agro and petrochemical industries perhaps?

THERE ARE CHALLENGES

- No local, enduring advocacy group (Ontario Hemp Alliance has been inactive since 2009)
- Undeveloped markets – marketing requires a lot of time and work
- Licensing and THC testing can be a deterrent
- Challenges to harvesting - specialized equipment
- Large investments required for some processing industries – (textiles, automotive, building materials)

Harvesting





Hemp stalks →
← seeds

Biofuel
processor ↓



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Greg Herriott, 20 year veteran of
Hempola, offers to buy hemp seed
grown within 100 mile radius of his farm

OPPORTUNITIES



Growing Hemp in York Region for Oilseed Works Inc.



Oilseed Works Inc.

- Since 1995
- 1996 HEMPOLA®
- 1997/98 R&D industry standard for hemp oil
- 1999 invented hemp flour & O-3 dressings
- 2001 launched HempWood™ & HPPM
- 2005 R&D hemp bio-diesel
- 2009 TFPC Local Hero Award
- 2011 EDC Hometown Hero Small Business



HEMPOLA®

- Currently 27 product SKUs
- Retail line enjoys national distribution
 - Bulk ingredients division
- Food, Personal Care, Industrial products



The Value of Hemp Foods

- Rich in Omega 3, 6 and 9 beneficial fats
- High in PROTEIN • High in FIBRE
 - GLUTEN FREE by nature
- Excellent flavour compositions



Flour Power – Food AND Fuel from each harvest

- 70% food as flour and 30% oil for: food, industry, bio-diesel plus fibre potential
 - Hemp, flax & sunflower
- Answers the debate over “Food VS Fuel”



The Classic FP Customer

- Mid-size bakery using 8,000 MT flour/year
 - Fleet of 40 delivery trucks daily
 - Substitute 5% hemp flour = 400 MT
- access 150,000L bio-diesel for truck fleet



The Potential of Bio-diesel

- July 2011 Canadian mandate 2% Bio-D
 - 600 million litres • Renewable
 - Carbon neutral = carbon credits
- Accountable sustainable business practice



Hemp Market in Canada: SEED

- 40,000 acres in Canada in 2011
- Up from 25,000 acres in 2010
- In 2015 over 84,000 acres licensed for cultivation
- All based on market demand... Dr. Oz
- The “canola” experience... parallel?



Hemp Production Basics

- Valley Bio indicates \$660 per acre with inputs at \$487; net \$173 per acre
- Grey County & New Tecumseth 2011 produced \$750 per acre/\$263 net per acre
- Licensed and purchased by OSW Inc.



Comparative input cost/revenue per acre

Ottawa/Prescott	CORN	RR SOY	HEMP	ORGANIC HEMP
Tillage	30	0	40	40
Seed	65	80	84	84
Seeding	20	28	20	20
Fertilizer	100	0	75	0
Chemicals	75	50	0	0
Insurance	5	5	17	17
Harvest	45	45	80	80
Drying	86	0	33	24
Cleaning	0	0	82	60
Fall Tillage	30	0	30	30
Storage	69	20	16	12
Transport	92	25	10	10
Total input costs	617	253	487	377
Yield bushel/acre	135	36	30	22
Yield ton/acre	3.68	.98	.55	.40
Price - \$/ton	205	440	1210	1760
Revenue	755	432	660	704
Net revenue/acre	138	179	173	327
Grey/New Tecumseth			263	

Worth a try?

