What do you know about hemp?

An innocent enough and seemingly simple question posed to a 40+ year veteran of Canadian agriculture about six years ago. The fact was I didn’t know anything about it (in retrospect). Like many other people I considered “hemp” and “marijuana” as one and the same. I knew little more, other than it was also a term used to describe rope and sack cloth and some people (hippies and “weed” smokers) wore clothing made from hemp. But, most importantly to an agricultural consultant in Canada, it was not on the radar screen as a major or even minor crop grown in this country. Who cares?

Fast forward to the spring of 2014. Today I am the President of the Canadian Hemp Trade Alliance; the national industry association for industrial hemp in Canada, a shareholder of the first publically traded hemp food company in the world and a shameless advocate for the potential of this crop in Canada and the world. I know a lot more about hemp now than I did back then; not as much as the passionate people I have come in contact with during my journey of learning but, along with my past experience in the agricultural industry and first-hand knowledge of the growth and development of the canola industry, I now recognize the potential for this amazing plant.

In the April 17th issue of the Western Producer the question was posed “Will Canada ever develop another canola or deliver a discovery that revolutionizes global agriculture?” I think the answer to that question is an emphatic “YES” and the crop that will do that is Hemp – Cinderella 2.0.
HEMP - Cinderella 2.0

Introduction

Why is hemp important?

Industrial hemp is quite possibly the most important plant on earth. Its DNA structure is closely aligned with human DNA so, as a food source, it offers protein, omegas and dietary fibre in perfect proportion to our nutritional needs. Edestin is a globulin protein found only in hemp seeds which makes hemp the superior source for this protein in the plant kingdom. Edestin is a type of plant protein that is similar to protein found in the human body and thus is perfectly suited to aid in meeting the body’s cellular needs - such as DNA repair.

For food consumers, hemp seeds have it all. Hemp is naturally gluten free, non GMO, free of trypsin inhibitors, dairy free and virtually free of any form of residual chemicals. Hemp protein is highly nutritious and easily digested and hemp seed oil is cold pressed to retain all of its natural nutritional value. Hemp seed oil is a perfect balance of Omega 3-6-9 ideally suited for optimal human nutrition. The hemp seed/grain is also an excellent source of a wide array of minerals and vitamins.

Beyond nutrition, the hemp plant provides the strongest, most durable, longest lasting natural soft bast fibre on the planet. It has the characteristics to provide durable clothing, shelter, building materials and an endless number of diverse products to satisfy human needs and wants. For the fibre industry hemp has proven to be an excellent natural insulator and fire retardant product. It has applications as a high quality pressboard material, hempcrete, composite and plastic substrate product.

As a medicine, the application and value of industrial hemp is largely undiscovered at this point but it contains important building blocks to be an abundant source of medicinal applications based on early stage scientific testing and results.

Equally important are the agronomic advantages of industrial hemp. It is an environmentally friendly crop with respect to low input requirements and beneficial returns to the soil and atmosphere. For farmers, industrial hemp offers an excellent rotation crop that has a high ‘return per acre’ even without the huge investment in science and research experienced by other crop alternatives in Canada over the past few decades (canola, flax and peas to name a few).

So why do we know so little about the potential of this plant? And where has it been all our lives?

Great questions.

1. History

Hemp has been cultivated on planet earth for over 10,000 years. It has been a bountiful source of food and fibre, tracing its roots back to ancient China and Mesopotamia. The uses of the plant evolved from simple rope and coarse woven fabric to paper and sail cloth. As far back as 2700 BC and continuing on
through Roman times hemp seed and flower tops were known to provide medical comfort from a variety of ailments.

The plant’s Latin name is *Cannabis sativa* L., a name it still bears today representing the genus of plants which includes a wide variety of industrial hemp cultivars and marijuana strains. There are four main cultivar groups within the *Cannabis sativa* L. family – one cultivated for fibre, one for food, one for dual purpose (seed/grain and fibre) and one for medicinal purposes.

In history, hemp was a vital crop for North America. Many early settlers produced hemp for clothing, sail cloth and rope. In fact, in the early 1600’s it was a law of the land that American farmers were required to grow hemp. Many important historical documents and art masterpieces are on paper or canvas made from hemp – in fact the word canvas has its roots in hemp or, more accurately, Cannabis.

In the early 1900’s Henry Ford revolutionized the automobile industry by introducing the Model T. But Henry’s vision extended well beyond that early design breakthrough and mass production concept. Henry envisioned a car made out of hemp and fueled by gasoline produced from hemp. In the 1930’s he produced a prototype of the automobile with a seemingly invincible body.

Later in the decade – 1938 to be exact - Popular Mechanics published an article on hemp describing hemp as the “new billion dollar crop”. No other crop has ever been quantified in such a financial magnitude in its day. A billion dollars in 1938 was quite unimaginable by everyone regardless of their economic status. The article went on to demonstrate “over 25,000 uses for the plant... ranging from dynamite to cellophane”. Hemp was coming into its own as a viable crop for North American farmers and a potential solution for literally thousands of consumer needs.

Unfortunately this article was “too little, too late”, as one year prior (1937), The Marijuana Tax Act was passed making it illegal to produce marijuana and, by association, any plant of the *Cannabis* family. The smoking of marijuana had come to the attention of the US Federal Bureau of Narcotics and President Franklin D Roosevelt. In spite of opposition from the American Medical Association, the act was passed and the moratorium began. During the Second World War hemp production was encouraged on a temporary war measures basis, as hemp rope and jute supplies for the troops had been cut-off from traditional southeastern Asian sources. During this time the US Government built fibre/cordage processing facilities across the Mid-western states. But once the war was over the planting embargo was re-instated.

Beyond the obvious visible similarities between hemp and marijuana plants and the stated difficulty in distinguish one from the other, there are numerous theories and articles speculating on the real reasons why hemp was included in the Drug Act. The Cannabis Conspiracy suggests that major US industrialists like Randolph Hurst, Andrew Mellon and the Du Pont family used their considerable political and
economic influence to sideline hemp feeling that products from hemp threatened their industrial empires. If hemp filled the need for products that would supplant their current sources of paper and steel and offer an alternative to Du Pont’s recent discovery of nylon these barons of industry could, potentially, suffer great losses. By vilifying ‘Cannabis’ rather than ‘marijuana’ the Drug Act became the instrument that ended the legal production of both plants in one fell swoop. Whether these allegations are accurate or not is somewhat benign at this stage. What is important is the fact that hemp is still viewed as a Controlled Substance in both the United States and Canada and this status is a significant impediment to the expansion of the industry.

The stigma associated with the erroneous linkage of hemp to this narcotic regulation remains to this day. The word hemp is improperly used interchangeably with marijuana and additionally, many advocates for the deregulation of hemp are also outspoken advocates for the legalization of medicinal marijuana, adding confusion and perpetuating common misconceptions and ignorance. Granted, today in Canada, there is federal access to medicinal marijuana.

In 1998 the Canadian government rescinded the law against planting industrial hemp, although it is still highly regulated and monitored by Health Canada. This liberation was the result of hard work and commitment from a small, dedicated group of entrepreneurial Canadians. Industrial hemp remains a Controlled Substance but for the first time in 60 years farmers were able to grow it, food and fibre manufacturers were able to process it and exporters were able to ship product outside Canadian borders.

In the early years of renewed hemp production in Canada the market focus was on the development of plants to fill demand from the fibre sector. Production spiked above 30,000 acres in response to pledged opportunities in that market; but processors failed to execute on their contracts and many growers were left with unsold bales of hemp fibre. This was a rocky start for the resurgence of the hemp industry and it left many farmers with a bad experience and a financial nose bleed.

![Hemp Production in Canada](chart)

Source: Statistics Canada
Again, in 2005 and 2006, supply exceeded demand and large unsold carry-overs dictated a severe drop in production in subsequent years. False starts such as this are typical in the development phase of a new crop. Since 2009 the focus of hemp production has been driven by the demand for its nutritious food value and processing has stabilized with consumer demand on the climb, resulting in a more reliable growth trend and product uptake. There is now some balance between supply and demand in Canada with an exceptional outlook for the future and an exciting growth trend taking place.

In the United States it is still illegal to grow industrial hemp for commercial purposes. The US Drug Enforcement Administration (DEA) remains strongly opposed to the importation of viable hemp seed citing the Controlled Substances Act. This stance is frustrating the production of industrial hemp even though the 2014 US Farm Bill, Section 7606 explicitly states that industrial hemp is approved for research by state agriculture departments and universities. The Farm Bill did not contemplate the need for a change in the laws with respect to the import of seed and this single oversight has largely paralyzed hemp production for research and breeding purposes in the US in 2014. Nevertheless, thirty-three states have introduced pro-hemp legislation and fourteen states have approved cultivation of industrial hemp so it is just a matter of time before hemp acres are commonplace across the USA. This stalemate will be resolved as current amendments will limit the DEA’s role and responsibility under the scope of the Farm Bill, Section 7606.

So that’s where we are today. Canadian farmers can grow hemp as long as they comply with Health Canada’s regulatory requirements to apply for a production licence, submit samples and provide GPS coordinates for hemp production fields so the crop can be inspected (when required) and quickly identified. As an industry we can conduct research on food and fibre applications however, medical research of hemp plant, leaves and flowers is not permitted under the current commercial hemp regulations but can be conducted under a research permit. We can process grain and fibre products and we can sell them domestically and for export. Interestingly, in Canada it is currently illegal to feed hemp to cattle, hogs and poultry in the commercial food chain as hemp products and co-products have not yet been approved by the Canadian Food Inspection Agency (CFIA) as a feed ingredient. Research is underway to start registering hemp as a chicken feed. With this said, it is legal for humans, their pets and other companion animal (such as horses) to consume hemp.

When will it be legal to grow industrial hemp generally in the United States and how long will it take them to catch up to the progress we have made since 1998? The answer is anyone’s guess but, based on the pressure coming to bear from many States in the Union, and consumers in general, it would seem the answer is “sooner rather than later”. Three years? Not likely. Five years? Possibly. Ten years? Most certainly. Currently, research cultivation trials are underway in Kentucky and Colorado.
2. Hemp Markets

There are three market segments for products derived from industrial hemp – food, fibre and medicine. Within those primary categories are many sub categories. The following image is an excellent depiction of this concept.

Hemp Food

Industrial hemp is an excellent source of important basic human nutrition. Its constituents include high quality, digestible plant protein and the full complex of amino acids, the building blocks of life. Hemp is a complete source of essential fatty acids; products which humans require for basic nutrition and must be included in our daily diet. No other food source provides both protein and omegas in the quantity or ideal proportions quite like hemp.

The Canadian Hemp Trade Alliance’s Long Term International Strategy describes hemp as follows:

Initially, it is important to understand the composition of hemp seed. According to the pie chart on the right, hemp is comprised (by volume) of 33% protein, 44% oil and the remainder is carbohydrate, moisture and ash. Only 5% of the oil is saturated fat leaving 39% as the “good fats”. Importantly, hemp contains a complete complex of essential fatty acids (EFA) - that is, Omegas 3 (SDA), 6 (GLA) and 9 (oleic acid). By weight, hemp protein represents 50% of the whole seed which makes it the highest percentage of all comparable protein sources.
Hemp oil offers the perfect balance of Omega 3 and 6 as part of the complete spectrum of fatty acids. No other plant or marine source of oil is so finely attuned to the human body and its basic nutritional requirements. The adjacent chart provides a comparison to other popular sources of vegetable oils. Fish oil is another popular source of Omega 3 but it does not offer the sustainability of plant based omegas and it has been criticized due to the negative impact on fish stocks and the presence of heavy metals in the oils from the current marine sources. Hemp is by far the superior choice for this critical nutritional human requirement.

Hemp also leads the traditional candidates as one of the best sources of dietary protein as it is high in protein content and significantly easier to digest than other plant and dairy sources. Hemp is non-dairy and naturally gluten free which are common allergy or food preference characteristics preventing people from opting for milk or wheat protein sources. It is also an excellent protein option for vegetarian or vegan diets. Hemp processors market hemp protein in a wide spectrum of concentrations from the 30% range (which is a high dietary fibre product) to 50% and 70% concentrations. It is quickly becoming a popular ingredient for smoothies and energy recovery drinks.

The “Modern Uses” chart also demonstrates numerous other existing and potential uses for hemp in food including salad oils, margarine and supplements. Some companies are currently working with hemp oil and powder to enhance the product’s bioavailability and sustainability as well as looking for creative ways to incorporate it in familiar foods as a source of enrichment or food supplement.

Canada leads the world in the production and processing of industrial hemp for the food market.

Canadian hemp food processors have established themselves as the global leaders in the field of hemp seed processing and refining. This leadership role is a result of the early deregulation of planting of hemp in Canada and the entrepreneurial focus of the industry’s innovators like Hemp Oil Canada Inc. and Manitoba Harvest.
Animal Feed
The utilization of hemp products in pet foods is allowed in Canada and in the USA but feeding approvals for poultry and livestock have not yet been granted by the Canadian Food Inspection Agency. While this is not currently a problem it potentially will become one if the proper research is not conducted in due course. Hemp is an allowed feed in the EU.

Pet food, on the other hand, is a different story. This evolving market sector represents a large and fast growing consumer category, as pet owners tend to spend a great deal on their pets’ health and well-being. Like humans, the high cost of health care is a strong incentive to maintain animal health through diet and exercise. For the hemp food industry this segment represents another extremely large, high margin target market.

But longer term there will be a need to market low value hemp co-products into commercial animal feed channels. This is true for all commercially processed grain and oilseed crops. Currently, this is a small problem as most material from the food sector is being utilized in human consumption products however, with expanded acreage will also come an expansion of refuse material. The feed market is the best alternative to place this lower value material so it is necessary to have the feeding trial research completed and approvals in place in advance of this pending problem. How much hemp actually finds itself heading to the feed market will depend on alternative products developed and the various values attributable to these product streams.

Hemp Fibre
The market for hemp fibre products in Canada, at present, is very small. In other countries industrial hemp fibre is popular as a source of insulation, matting, rope, fabric and composite applications. Due to its light weight, malleability and strength it is used regularly by automobile manufacturers for door panels and interior parts. As a textile product, hemp has been gaining in popularity as decortication and refining processes improve. US farmers are looking at hemp as a cleaner crop alternative than cotton as it requires much lower application rates or even the complete removal of some chemical products.

The hemp plant has long been known for its tensile strength and durability characteristics and its fibre has been used for thousands of years as a premium source of rope and canvas. It continues to be used for these purposes and has also found applications in the animal bedding market and some basic insulation products. But these are relatively low value markets, well suited for the fibre as a dual crop
opportunity where the primary value comes from food. The challenge to utilize hemp in higher value fibre applications has proven more elusive and has been the focus of research for a number of years.

In Canada we are fortunate to have two public/private fibre research facilities in Winnipeg, Manitoba (Composites Innovation Centre) and in Vegreville, Alberta (Alberta Biomaterials Development Centre) which are conducting extensive product development projects. These projects range from fabrics that are equal to or superior to cotton, to sophisticated materials using bio composite fibres, to breathable building materials and a superior and eco-friendly substitute for fibre glass.

As mentioned, the automotive industry is quickly embracing hemp as a premium product for high-end vehicles such as Mercedes and BMW. As many as 60 different parts in an automobile are currently made from or include hemp. Building on the vision of Henry Ford, the leading car manufacturers in the world see the benefits. Soon we should expect to see exterior panels made from hemp in a production setting. Hemp may also prove it has the capacity to replace a steel chassis offering the same safety along with reduced weight and the resulting improved fuel consumption. One day we might see a car made from hemp, powered by hemp fuel – just as the inventor of the Model T had envisioned. In addition, hemp is showing promise in the area of nanotechnologies in the paper and other industries.

Non-food Oil Applications

A further sub category for some lower value applications of hemp is the industrial potential for hemp seed oil. With hemp production still relatively low, most of the oil produced from the plant is being utilized in the high value food market. This makes it relatively uncompetitive for industrial applications such as resins, lubricants and even bio fuel at this time. But longer term, the bio-fuel opportunity could prove critical to the potential expansion of the industry as a lower value product which can be a suitable off-take for a product which might otherwise restrict processing economics and efficiency.

On the higher value side, hemp oil is finding its way into the cosmetics industry; a premium market currently in need of oil based products which are “natural” as opposed to chemical. There are already many product lines available offering hemp enriched skin creams, hair products, salves and lotions. The components of hemp make it an excellent product for skin creams and lotions and the natural SPF factor
of 15 means it also acts as a protector from the sun’s harmful UV rays. Is there anything this amazing plant doesn’t do?

**Hemp Medicine**

The third product category for industrial hemp is as a source of medicine or natural healing by way of a compound in the plant known as a cannabinoid. The *Cannabis sativa* plant is the only source of cannabinoids in the plant kingdom – and the concentration of the beneficial cannabinoid – cannabidiol or CBD can be higher in industrial hemp varieties than it is in marijuana strains. While other plants may produce ingredients that influence the cannabinoid receptors in the human body only *Cannabis* contains cannabinoids. (More on cannabinoids to follow).

### 3. Marijuana vs. Hemp

Let’s set the record straight – hemp is not marijuana. They are plants from the same species – *Cannabis sativa* L.- but they differ in the same respect that canola is different from mustard and spring wheat is different from durum wheat. They share some characteristics but also offer their own uniqueness.

Of primary importance is the fact that industrial hemp varieties are extremely low in delta-9 Tetrahydrocannabinol (THC), the psychoactive element most commonly associated with marijuana. The maximum allowable level of THC in industrial hemp, as determined by Health Canada and recognized is 0.3% in dry weight field samples. This compares to a range of 10% to 15% THC in marijuana strains. Even so, after harvest the levels of THC in raw ingredient hemp foods require testing to be less than 10ppm THC while the fibre products do not as they are not consumed.

Anyone who does consume a hemp food product will not fail a drug test for THC. The concentration levels are far too low. People who consume hemp-based foods will also not experience a “high” from the products. Hemp plant breeders are already working with cultivars that have extremely low measures of THC and future varieties will be THC “free”. This is a reasonable concern from consumers but it is simply not a factor and takes away from the focus on the true nutritional benefits in the plant.

As a further comparison, the simple rule of thumb is that hemp is grown outside and marijuana is grown inside. As Canadian and US federal legislations are relaxed on the controlled production of medical marijuana this may not always be the case, but for now it is an accurate distinction. From a cropping perspective hemp is handled in much the same way as many other North American field crops. By all measures it is a typical oilseed crop which can be harvested before going to seed for textile and high-value fibre applications, or post seeding for food and general building material uses. Harvesting is done by way of a traditional combine or swathing technique. In Canada, harvesting, processing and use of the plant leaves, branches and flowers is currently prohibited commercially.

Hemp seeds are cold pressed to extract oil and meal cake or, alternatively, they are hulled to produce shelled hemp seeds. These base products may be further refined or utilized in the manufacture of value added foods or food ingredients.
Controlled Substances and Cannabinoids

At the present time industrial hemp is classified as a Controlled Substance under Schedule 2 of the Government of Canada’s Controlled Substances Act. As such it is regulated by Health Canada rather than as a common agricultural product administered by Agriculture and Agri-Food Canada. This classification introduces a wide range of regulatory requirements for anyone who wishes to grow, process, transport, export or import industrial hemp. It is treated as a narcotic product as opposed to an agricultural one. Before anyone can legally engage in the industrial hemp cultivation or processing value chain they must comply with Health Canada hemp procedures. They offer a comprehensive list of forms and procedures on their website. The actual Industrial Hemp Regulations is a twenty-seven page document which outlines what one can and cannot do in relation to the production and processing of industrial hemp. (More on this in Regulations & Impediments following).

There is one element of the industrial hemp plant in which the United States and the EU is well ahead of Canada with respect to research and product development. That is in the area of cannabinoids. This is somewhat remarkable given it is illegal to produce industrial hemp in the US but for whatever reason they do not prohibit the research on the plant species. What exactly are cannabinoids and why should you know about them? According to Wikipedia...

Cannabinoids are a class of diverse chemical compounds that act on cannabinoid receptors on cells that repress neurotransmitter release in the brain. These receptor proteins include the endocannabinoids (produced naturally in the body by humans and animals), the phytocannabinoids (found in cannabis and some other plants), and synthetic cannabinoids (manufactured chemically). The most notable cannabinoid is the phytocannabinoid Δ9-tetrahydrocannabinol (THC), the primary psychoactive compound of cannabis. Cannabidiol (CBD) is another major constituent of the plant, representing up to 40% in extracts of the plant resin. There are at least 85 different cannabinoids isolated from cannabis, exhibiting varied effects.

Marijuana strains of Cannabis sativa L contain higher levels of THC and varying levels of CBD while industrial hemp varieties contain very low levels of THC and varying levels of CBD. CBD is known to manage anxiety, stress and seizures and may provide a host of additional medical benefits although this is still untested. The potential for new applications of industrial hemp in the medical sector rests solely on our ability to conduct testing and analysis of CBD’s. According to Dr. ElSohly Cannabis contains 85 different cannabinoids that have potential for health benefits. At the present time Health Canada strictly restricts the handling, research and product development of cannabinoids derived from Cannabis sativa L. plants to a few approved labs.
Because cannabinoids are considered (potentially) to be medicine, any research done in this area is closely monitored by Health Canada. One of the agencies that is licenced to conduct testing on CBDs is the Canadian Consortium for the Investigation of Cannabinoids in Montreal. [www.ccic.net](http://www.ccic.net). “The purpose of the Canadian Consortium for the Investigation of Cannabinoids (CCIC) is to advance our understanding of the role of cannabinoids in health and disease through research and education”. Hallelujah!

Unfortunately, private sector labs are not allowed to conduct research on the hemp plant. As a result, the possible benefits as a medicinal product and as an exceptional crop alternative for Canadian farmers is limited to the progress (and budget) of this single entity.

But this is where we as Canadians may fall behind the United States as this activity is not illegal there and numerous private research labs are currently importing plant material and CBDs and developing products based on tests of *Cannabis* plants. Dozens of companies are sprouting up across the US claiming to offer “CBD rich” products and medical marijuana/CBD concoctions. Some of these claims may have merit but many of them are simply shell companies trying to get in on what is becoming known as the “Green Rush” akin to the “Gold Rush” of 1849. It many respects it is the “wild west” all over again played out on a modern day playing field of politics, science and marketing.

How can this even happen if it is illegal to grow hemp in the US and illegal for Canadian hemp producers to handle whole hemp plant material? Good question.

US researchers are importing crude CBD from Europe and China and fuller extracting from that material to create finished products. They are also processing the plants overseas and importing the extractions
of CBD as a cost saving measure. Unfortunately this essence material is being called “hemp oil” which is a misnomer since it is not an oil at all. Hemp food products like hemp oil and protein powder do not contain any CBDs (as it is not in the seed or grain) and, as a result, is causing some confusion with respect to what is being sold as “hemp oil”.

**Regulation & Impediments**

Many farmers and processors interested in the opportunities prevalent in the industrial hemp industry lose interest when faced with the unique requirements of Health Canada’s Hemp Section. Filling out a simple but comprehensive application form is only the beginning. Candidates must provide proof of their criminal record (this check is provided by the Hemp Section free of charge), provide GPS locational data, to maintain crop documentation, submit samples at various points in their process and to inspection checks where and when required during the growing season.

The Industrial Hemp Regulations came into force on March 12, 1998 and have remained unchanged since that time. As part of the recent federal Red Tape Reduction Commission Review some proposed changes were tabled in recognition of the excessive bureaucracy and as an attempt to reduce the burden on the industrial hemp industry. Alas, the proposed changes can best be described as tweaking the existing regulations with very minor impacts. These proposed changes include:

- Reduction in the minimum acreage requirement from 4 hectares to 2 hectares;
- Inclusion of clear criteria of what would be considered a single area for the cultivation of industrial hemp. The suggested criteria would clearly delineate what is considered a continuous field based on systematic criteria and would allow for small divisions within a single field; and,
- Retain the prohibition on cultivation within 1 km from school grounds. Reduce the prohibition on cultivation in other areas to 500 metres of the following specific areas: community centres, recreation centres, community arenas, sports fields, public playgrounds, public pools, public parks or public libraries; OR,
- Remove the prohibition on cultivation locations entirely.

The real question posed by the Canadian Hemp Trade Alliance is “Why is industrial hemp still governed by Health Canada’s Office of Controlled Substances at all when it has proven over the past 15 years to be a safe and useful crop?” While these proposed changes all have merit, they fall far short of the changes necessary to unburden industrial hemp from the injustice of being classified as a drug in the first place.

**Canada vs. the United States of America**

Canada is currently the recognized leader in the global production and processing of hemp and hemp food products. Total exports in Canadian dollar value approached $40 million in 2013 and are poised to exceed $50 million in 2014. The legalization of industrial hemp production in Canada in 1998 has created this opportunity but it has been slow to develop due to the continued regulation of production and processing and consumer hesitation to use “hemp” due to the uncertainties and myths surrounding the crop. As consumer awareness and knowledge improves, the demand for hemp is growing at spectacular rates. According to The Hemp Industries Association (HIA), a US based non-profit and sister association
to the CHTA, in 2013 the annual retail sales of hemp products in the USA exceeded $581 Million at a growth rate of 24%.

Source: Statistics Canada

The Canadian Hemp Trade Alliance has outlined the industry goals in their Long Term International Strategy document issued in January 2013. Representing all segments of the industry from production through to consumption the alliance has articulated three primary goals:

1. Education through promotion and communication
2. Research – products and varieties
3. Market development

These are all critical areas required to overcome the stigma of hemp and reinstate it as a food staple in mainstream food channels.

In the USA it is illegal to produce industrial hemp for commercial application – food, fibre or medicine however research is now allowed under state law. The US Drug Enforcement Administration (DEA) is charged with national oversight of all Controlled Substances and regards industrial hemp as a Schedule 1 substance along with heroin, LSD, methamphetamine and Ecstasy. It is also illegal to import viable hemp seed into the United States without an import permit under allowance of the Farm Bill Section 7606.

However, it is not illegal to import processed hemp products into the US; and Canadian processors have responded to a rapid growth in demand from the US by shipping $38 million worth of hemp seeds, oil and protein powder into that market in 2013. Herein is the opportunity.

Just to be clear, Health Canada and the DEA do not make the laws in regard to narcotics or industrial hemp. Their role is to enforce them and facilitate the procedures designed around issues such as import,
export and possession. The power to change the law rests with the government in power and the legislative process.

Recent developments in the United States have opened the door to potential production of industrial hemp. To date, thirty-three states and Puerto Rico have introduced pro-hemp legislation and twenty-two have passed pro-hemp legislation. In February of 2014 President Obama signed the Farm Bill which included an Amendment to allow production and research of industrial hemp at State and University sites.

In addition to the Farm Bill amendment, two standalone industrial hemp farming bills have been introduced in the 113th Congress so far. The bills define industrial hemp, exclude it from the definition of "marihuana" in the Controlled Substances Act (CSA), and give states the exclusive authority to regulate the growing and processing of the crop under state law. If passed, the bills would remove federal restrictions on the domestic cultivation of industrial hemp. In addition, two amendments have been added (June, 2014) to the Commerce, Justice and Science Appropriation Bill which would limit the DEA role in the Farm Bill 7606.

While Canada enjoys a 15 year time advantage on the US with respect to hemp varietal development, production and processing it is becoming clear that they intend to catch up and surpass Canada as the leader in the industrial hemp sector. The state of Kentucky is particularly keen on re-introducing hemp to the farm economy as it represents a very viable crop alternative to the decline in acres of tobacco. In fact, Kentucky planted its first state and federally approved hemp agronomic trials this month (June 2014) opening the door for other states to follow.

4. Agronomic Advantages & Crop Value
What’s in it for the Canadian farmer? Why should they go through the hurdles of Health Canada and all the regulatory procedures involved in producing a crop that is classified as a Drug or Controlled Substance?

Another good question!

The simple answer is because it is a profitable crop to grow.

At present most hemp farmers are experiencing yields of hemp seed in the range of 700 to 1000 pounds per acre. Some farmers on irrigation have reached levels approaching 3000 pounds per acre but let’s work with reasonable average yields for comparative purposes.

In 2014 production contract values averaged $0.80/pound which means farmers can expect gross revenue from hemp seed in the range of $560 to $800 per acre. Organic values are nearly double those of conventional seed however yields may not be as high. If farmers prefer to produce hemp for fibre those markets range from $50 to $100/tonne and farmers can expect 5 to 7 tonnes per acre yield for gross margins of $250 to $700 per acre. These values are expected to increase as fibre processing plants become operational. Dual crop varieties are in testing stage but to date there are no strains which can generate both seed and fibre revenues.
From an agronomic perspective hemp offers many benefits. It is an excellent rotational crop for the Canadian prairies as the plant’s large leafy canopy aids in controlling weed growth. Hemp helps prevention of soil erosion due to the extensive root system. Hemp also has very few insect issues or plant diseases and, as a result, requires low to zero inputs of insecticides and herbicides. (Minor use regulations are being developed). It is a crop that lends itself well to organic production for these reasons. (And the demand for organic hemp seeds is very strong).

But the most obvious advantage for Canadian farmers is that it remains illegal to produce industrial hemp for commercial purposes in the United States. This may change in the near future but it will still take American farmers an estimated five years to catch up to Canadian growers. And it remains to be seen if US cropland lends itself well to hemp production. Historically hemp has flourished in the USA but that was for the rope, twine and canvas market. Canada may have a unique advantage when it comes to producing hemp for food. The important point to understand is that we have a narrow window of opportunity to stake our claim as the premier source of industrial hemp and Canadian farmers need to act in an unencumbered manner.

How big can this market get?

In 1938 hemp was described as the first “Billion Dollar Crop”. That statement was much more significant in the late 1930’s when the number “one billion” was literally unheard of as it relates to commerce and personal wealth. Today we hear the term billion used frequently – and numbers much larger when people start referring to tallies like US national debt ($17.5 trillion and counting). But, in today’s dollars, that earlier crop value estimate from over 70 years ago would be an estimated $16.6 billion.

Doing some projections…if hemp acres in Canada were to reach one million in the next decade, that would mean an estimated production value of $500 to $800 million and a total industry benefit of roughly $2.5 to 4 billion. These are not insignificant numbers and represent a rare opportunity to capitalize on a unique situation.

5. The Future of Hemp
Is industrial hemp really the next “canola”?

Could it replicate the phenomenal success and value to Canadian agriculture?

No one can answer those questions definitively. But if we look at the history of canola based on where it started, what it had to offer and the coming together of a group of passionate and visionary people to elevate it to its present status as one of the highest quality oils in the world we see exactly that same configuration of circumstances at play again with hemp. In fact the product potential for hemp in the food, fibre and medicinal markets far surpasses the potential and actual success of canola as a source of oil for human consumption and meal for animal feed.

Industrial hemp is a source of food, shelter and, potentially, a complex medical application that we have yet to understand. On the food front it is not unrealistic to imagine the high quality food components of hemp seed – protein and omegas evolving into value added products finding their way into a host of
consumables as supplemental ingredients. The world’s aging population will be the ideal market for natural, nutritious foods and supplements which can offer extended years of health and vitality.

The growing demand for plant-based omegas and proteins will recognize hemp as an optimal source of both. The fact that the omegas are perfectly balanced to the needs of humans and the protein is high in quality and easily digestible make hemp an obvious choice. Hemp is non GMO, dairy free and gluten free – all extremely important factors for selective, quality savvy consumers in today’s health conscious environment. As an agricultural product hemp is also a sustainable, non-toxic food source with an extremely small carbon footprint making it stand out in a marketplace of environmentally unfriendly food alternatives.

The all-encompassing potential for hemp fibre is very likely to exceed the nominal value of hemp food. The sheer volume of plant material produced from a field of a fibre variety of industrial hemp is quite impressive. It is estimated that a hemp field will yield four times the mass of a wood forest over the same time period. Is there a future for a return to hemp as a source of pulp and paper? Most definitely. Additionally, given the attention that fuel alternatives like biodiesel, ethanol and bio-mass are experiencing, it is entirely possible hemp fibre will find its way into that value chain as well.

But hemp fibre also has a high dollar value application in the evolving areas of composites and high strength, light weight products replacing asbestos based fibre glass and, potentially, some uses of steel. The hemp fibre industry really hasn’t had the time and budget to discover all the potential applications of the plant but there appears to be no limit to the utilization a light weight, high tensile product can bring to the creation of new products or replacement of traditional resources.

With respect to the medicinal opportunity, we can only begin to speculate on the potential for hemp. Scientists know a little bit about cannabinoids and they know humans have cannabinoid receptors that are stimulated by components that can be extracted from hemp unlike any other plant based or medicinal source. Early observations show humans experience relief for symptoms such as pain, anxiety, nausea, seizures, etc. The Canadian Consortium for the Investigation of Cannabinoids is leading the way in research but they are only one entity and their resources are limited. They describe their challenges as stigma, regulations and standardization and they describe the opportunities as innovation, unmet needs and Canadian leadership.

Much work needs to be done with regard to varietal and product development. Research into the hemp plant has a lot of catching up to do to get on par with some of the work done with plants like canola. Many stigmas also need to be addressed related to hemp’s shared genealogical pool with marijuana. The legalization process of medical marijuana is softening the message but, at the same time, leaves the door open for continued confusion and the assumption that hemp and marijuana are the same – they most definitely are not.

After fifteen years of legal production of industrial hemp in Canada what is preventing it from achieving its full potential? Why hasn’t it happened already?

In a word – regulation.
Although hemp is an oilseed like canola, flax and sunflower it rests under the watchful and restrictive eye of Health Canada and remains classified as a Schedule 2 Controlled Substance. Similarly in the United States the US Drug Enforcement Administration closely monitors and restricts imports and production of industrial hemp. There too it is considered a “drug” by legal definition. Realistically, how is a food product ever going to be considered for mainstream commercialization as long as government agencies classify it and demonize it as a drug?

Hemp trade associations in both Canada and the USA have called on their respective governments to deregulate industrial hemp and formally recognize it to be different than marijuana and not harmful in any way. This action alone would empower grain producers, wholesale and retail processors, exporters and researchers to step up investment and commitment to the sector.

It is time to de-criminalize industrial hemp. It is a safe product, proven over the past decade and a half. It is also a very profitable agricultural cropping alternative. Canadian farmers want to grow industrial hemp and consumers want to buy products enriched with the best protein and omega source in the world. Hemp fibre opportunities are tremendous and processors are prepared to invest millions of dollars in infrastructure to add value and commerce to the sector. It is time for the Ministers of Agriculture (Ritz), Health (Ambrose) and Justice (MacKay) to release their bureaucratic protectionism of their portfolios and place farmers needs before their own. It is time to address this important issue and proceed with an expedited deregulation process. It is time for the Prime Minister to intervene, if necessary, to elevate this discussion and encourage meaningful reduction in the regulation of industrial hemp.

At the risk of over dramatizing the situation, the hemp industry is at a critical crossroads which Canadian agriculture and, in fact, the whole Canadian government can either support or suppress. This is a plea to reasonable judgement and swift action. The renaissance of hemp is possible but it requires vision, effort and commitment on the part of government leaders and industry stakeholders. At present our voice is small (66,000 acres of hemp versus 20 million acres of canola) but back in the 60’s canola’s voice was also a small one – and look where they are now.

Is hemp, Cinderella 2.0? It could be.