

TO THE STARS

A Periodic Publication of Agrilead, Incorporated Russell, Kansas

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THIS ISSUE: KANSAS INDUSTRIAL HEMP

Today Kansas Governor Jeff Colyer, M.D. signed Senate Bill 263, which enacts the Alternative Crop Research Act allowing the Kansas Department of Agriculture to oversee the cultivation of industrial hemp in a state research program.

With this issue, Agrilead announces its corporate support of the developing industrial hemp initiative within our local community, the state of Kansas, and beyond.

This periodic publication is designed to hasten awareness of leading agricultural issues and opportunities that may be of unique interest to local Kansans and the Agrilead corporate network of customers, technology partners, and crop protection industry friends.



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Agrilead is committed to the discovery, innovation, and commercialization of products and services that bring value to agriculture and ultimately to the people that depend upon it to sustain their lives.

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What Happens when the Kansas Alternative Crop Research Act (SB 263) Comes into Law?

Details written within the Legislation...

- The Kansas Industrial Hemp Program will be Administered by the Kansas Department of Agriculture (KDA).
- The KDA is charged with promulgating the Industrial Hemp rules and regulations by 12-31-18.
- The KDA shall report to the Kansas Legislature by January 14, 2019 outlining the steps and timeline to implement a process that would allow individuals and business entities to grow and process industrial hemp in Kansas and to sell industrial hemp in other states.



Kansans excited for Industrial Hemp must be patient and allow time for the Kansas Department of Agriculture to organize the state program.

Questions and Answers from the KDA website...

<https://agriculture.ks.gov/>

When will industrial hemp be legal in Kansas?

When SB 263 is published in the Kansas Register, industrial hemp will no longer be categorized as a controlled substance in Kansas. However, the cultivation, growth, research, transportation, processing or distribution of industrial hemp or industrial hemp seed will only be allowed with a license as part of the research program. The rules and regulations to acquire a license and otherwise carry out the provisions of the alternative crop research act will be complete on or before December 31.

What is hemp, and what is the difference between hemp and marijuana?

What is hemp, and what is the difference between hemp and marijuana?, Industrial hemp is a variety of Cannabis sativa and is of the same plant species as marijuana. However, hemp is genetically different and distinguished by its use and chemical makeup. Industrial hemp refers to cannabis varieties that are primarily grown as an agricultural crop. Industrial hemp is defined by Kansas Senate Bill 263 as all parts and varieties of the plant cannabis sativa L that contain a delta-9 tetrahydrocannabinol (THC) concentration of no more than 0.3 percent on a dry weight.

How soon can I plant hemp?

Until the rules and regulations procedure is complete, and a system is in place to acquire a license to grow industrial hemp, it remains unlawful to grow the crop in Kansas.

How can I participate in this research program?

Those wishing to participate in the Industrial Hemp Research Program will need to apply for an annual license, demonstrating the research plan, to be approved by the advisory board. More information about the license application and the guidelines for the research plans will be determined in the rules and regulations process.

Will I need to get a permit or license?

Yes, the Kansas Department of Agriculture will oversee and annually license all those participating in the cultivation, growth, research, oversight, study, analysis, transportation, processing or distribution of certified seed or industrial hemp. More information about the license application will be determined in the rules and regulations process.

Industrial Hemp for Kansas | Why Now?

Recent enthusiasm for Industrial Hemp in the United States was kick-started with the Agricultural Act of 2014 (“2014 Farm Bill”) for which Section 7606 of it legalized the growing and cultivating of industrial hemp for research purposes in States where such growth and cultivation is legal under state law, notwithstanding existing Federal statutes that would otherwise criminalize such conduct. The statutorily sanctioned conduct, however, is limited to growth and cultivation by an institution of higher education or State department of agriculture for purposes of agricultural or other academic research or under the auspices of a State agricultural pilot program for the growth, cultivation, or marketing of Industrial Hemp. Further, Section 7606 authorized State departments of agriculture to promulgate regulations to carry out these pilot programs.

IMPORTANT INDUSTRIAL HEMP IS NOT MARIJUANA

Here is the specific distinction of industrial hemp included in the 2014 “Farm Bill” federal legislation...

The term “industrial hemp” includes the plant Cannabis sativa L. and any part or derivative of such plant, including seeds of such plant, whether growing or not, that is used exclusively for industrial purposes (fiber and seed) with a tetrahydrocannabinols concentration of not more than 0.3 percent on a dry weight basis. The term “tetrahydrocannabinols” includes all isomers, acids, salts, and salts of isomers of tetrahydrocannabinols.

Three Years of Russell County Economic Development Advocacy for Industrial Hemp

For three years the Russell County Economic Development and CVB group, funded by Russell County citizens, has proactively advocated for the passage of Kansas Industrial Hemp legislation.

As a result, Russell County (Corporate home of Agrilead), is set forth in the Alternative Crop Research Act (SB263) to be involved with an industrial hemp pilot program.



Section 2 (A)(7) of Alternative Crop Research Act (SB263)...

a pilot program in Russell county, and other counties as determined by the department, for the purpose of economic development, research, cultivation, market analysis, manufacturing and transportation of industrial hemp and industrial hemp products.

On behalf of the Russell area agricultural community, Agrilead wishes to thank all the individuals and organizations who have worked to support and contribute to the Russell County Industrial Hemp Advocacy, and extend special recognition to the following individuals for their extraordinary leadership and efforts to hasten the creation of new value for Kansas farmers and rural Kansas communities...

- **Janae Talbott**, Executive Director, and staff of the Russell County Economic Development and CVB
- **Representative Troy Waymaster** (District 109)
- **Representative Steven Johnson** (District 108)
- **Senator Elain Bowers** (District 36)

Thank You!

Industrial Hemp

Opportunity for a New “Green” Industrial Crop Economy in Kansas

Industrial Hemp features some significant benefits compared to other bio-fibers such as cotton, flax and wood.

From a structural perspective, hemp’s fiber is stronger and lighter than wood; is anti-bacterial and resistant to water, making it impermeable to rot, mold and mildew; and is super absorbent and fire resistant whereby it does not readily burn, but rather chars.

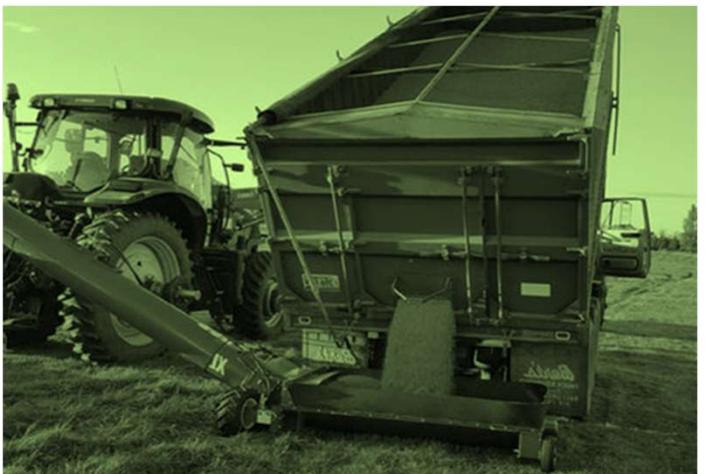
From an agronomical perspective hemp grows quickly in a variety of soils and climates. It can grow productively in regions with lower rainfall, and is naturally resistant to many crop pests and diseases minimizing the need for significant crop inputs.

It is capable of producing both seed and stalk at above average volume yields, compared to other bio-fiber crops – delivering 300% more fiber than flax, and 50% more than cotton.

The root structure naturally aerates soil while preventing erosion and scavenging nutrients, making it a good rotation option with traditional ag cropping systems.

Each ton of Industrial Hemp grown represents 1.63 tons of CO2 absorption and is scientifically proven to absorb more CO2 per acre than forest or other commercial crops.

Prior to prohibition in the 1930’s, hemp was cultivated in Kansas and has been grown throughout the world as a food and fiber source for thousands of years.





OUR VIEW AND OPINION:

Why is Industrial Hemp Important for Kansas Agriculture?

Agriculture represents 44.5% of the Kansas ag economy and farm income levels have dropped to a 14-year low, 50% of what they were in 2012; and yet, global ag productivity at 3% outpaces demand at 1.9% resulting in record global stocks of grains and low commodity prices.

In the year 2000, the United States was the world wheat leader with roughly a 25% share of global trade; today Russia leads global wheat trade with roughly a 25% share by increasing Russian wheat yields 80% in the last 5 years.

Kansas agriculture operates in a global ag economy and needs new markets and demand drivers for the state's agricultural capacity; Industrial Hemp represents an opportunity to develop alternative crop options with new rural economy potential involving a Kansas "green industrial" ag crop.

Industrial Hemp can ultimately have these real economic impacts on agriculture and rural communities as state research initiatives like the Kansas Alternative Crop Research act evolve one day to commercial business development...

- Creation of a higher value industrial crop possibilities for farmers.
- Development of regional industrial hemp processing facilities.
- Local economies impacted by investment and related job creation.
- New local and state revenues generated with value-added industrial hemp processing and related product commerce in Kansas and beyond.
- Young Kansans will have new options for returning to their local communities to work in the emerging industry.
- Manufacturers of hemp-based products will do so in Kansas to be more efficient and competitive by positioning their operations where the needed raw materials are grown.
- Kansas entrepreneurs will respond to the needs of the new industry with innovation of new technology, equipment, and ideas that will bring additional layers of value and opportunity.

Industrial Hemp is not a singular solution to the present day agricultural economic challenges, but it does represent the kind of new business and thinking needed to begin recovering lost ag economy.

During the Kansas Senate Ag Committee Hearing on Industrial Hemp held March 14, 2018, a representative of the Sierra Club, a national environmental advocacy organization, testified in favor of the proposed industrial hemp legislation. Chairman of the Committee, Senator Dan Kerschen, commented it was the first time he could recall the Sierra Club testifying in favor of any pro ag legislation before the Kansas Senate ag committee. This example speaks to the uniqueness of industrial hemp to bring goodness to a very broad range of people with greatly varied perspectives and interests.

INDUSTRIAL HEMP CROP FOCUS

FIBER Bast Fibers and Hurds	OIL SEED Hemp Seed Oil	HEALTH & WELLNESS Cannabinoid Extraction
<p>Crop grown similar to forage sorghum, can be harvested in a similar fashion being swathed and baled.</p> <p>Baled or collected harvest is processed to remove fibers from the stock (hurd). Fibers are used for a very wide range of industrial applications.</p>	<p>Crop grown similar to grain sorghum, seed can be harvested with a traditional combine and header.</p> <p>Seeds are crushed for oil in a similar way to sunflowers and canola. Substantially used for human food consumption.</p>	<p>Highly managed, high input crop typically organic.</p> <p>Harvest is processed in a lab where very high value cannabinoids like CBD are extracted for pharma health and wellness uses.</p>
<p>Cultivating Industrial Hemp for fiber and oil seed purposes will likely be the most realistic starting point for most Kansas Farmers. Industrial Hemp raised for both of these purposes can be substantially planted and harvested with existing equipment and worked into standard Kansas crop rotations.</p> <p>Industrial Hemp for these purposes will involve input investment similar to a high production grain sorghum or dryland corn crop. Return investment on this crop has potential double returns or more of traditional commodity crops at this time.</p>		<p>This is a very specialized crop and cultivation may likely require organic certification.</p> <p>Establishing this crop will be a very significant per acre investment with higher risk and reward potential.</p>

INDUSTRIAL HEMP PLANT PARTS AND COMMERCIAL USES

STALK		SEEDS		LEAVES/FLOWERS
BAST FIBER	HURD (PULP)	SEED / SEED CAKE	SEED OIL	CBD AND OTHER CANNABANOID EXTRACTION
<p>CORDAGE</p> <p>CONSUMER TEXTILES</p> <p>GEOTEXTILES</p> <p>PLASTICS COMPOSITIES</p> <p>PAPER FIBER BOARD</p>	<p>INSULATION</p> <p>HEMPCRETE</p> <p>CONSTRUCTION FILLER</p> <p>ANIMAL BEDDING</p> <p>MULCH</p> <p>INDUSTRIAL INTERMEDIATE</p>	<p>SNACK FOODS</p> <p>GRANOLA</p> <p>SALAD TOPPING</p> <p>YOUNGURT AND OTHER FOODS MIX-IN</p> <p>ANIMAL FEED</p>	<p>SALAD OIL</p> <p>FOOD SUPPLEMENT</p> <p>PERSONAL CARE SOAPS & LOTIONS</p> <p>INDUSTRIAL COMPONENT FOR "GREEN" COATINGS, INKS, SOLVENTS AND MORE</p>	<p>PRODUCTS FOR HEALTH AND WELLNESS.</p> <p>CBD</p> <p>TOPICALS</p> <p>POWDERS</p> <p>SPRAYS</p> <p>TINCTURES</p> <p>LOTIONS</p> <p>BALMS</p>

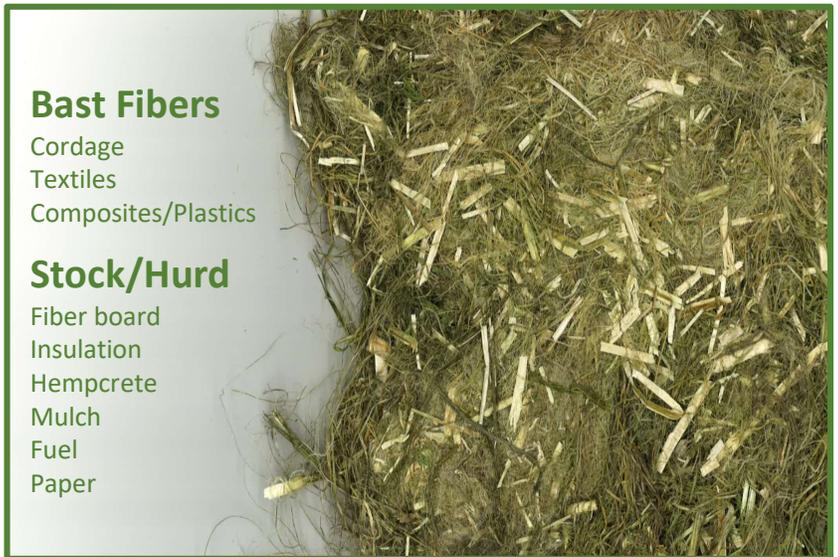
Source: Agrilead Industrial Hemp Broad Industry Research

Three Broad Industrial Hemp Crop Markets and Associated Processing

Processing Industrial Hemp for Fiber

Swathed and baled industrial hemp is delivered to a processing facility where the fibers are removed from the stock of the plant (also known as hurd) in a process called decorticating.

The fibers and the hurd can then be further processed into a wide range of industrial hemp products including textiles, papers, fibers for strengthening concrete or plastics, and many more.



Processing Harvested Seed/Grain for Hemp Seed Oil

Seeds harvested with a traditional combine and binned, are hauled to a processing facility where the seeds are crushed to extract the oil. From this process is produced raw hemp seed oil and seed cake or meal.

This oil is used for human food consumption in salad oils, snacks, and/or could be used in industrial “green” oil applications.

Processing Industrial Hemp to Extract Cannabinoids... CBD

Flowers, buds, and leaves where the concentrations of CBD are the highest are harvested and then processed in a lab where the CBD extract is then formulated into wellness products, oils, lotions, concentrated drops for daily wellness doses, etc....



Source: Agrilead Industrial Hemp Broad Industry Research

Space Reserved for Notes:



Embossed upon the Kansas Seal is a Latin phrase "Ad Astra per Aspera" translated "To the Stars through Difficulties." John James Ingalls coined the Kansas motto in 1861 stating, "The aspiration of Kansas is to reach the unattainable; its dream is the realization of the impossible." The motto most certainly reflects the pioneering spirit of the early settlers who worked so hard to form and organize Kansas as the 34th state of our great union.

As a Kansas corporate citizen, Agrilead is proud of the hard-working faithful heritage of Kansas and American agriculturalists all across this country. We named this publication "To The Stars" in recognition of our Kansas heritage and the pioneering spirit of leadership for which our company strives to contribute to our chosen endeavors within the agricultural industry.