



SOYBEANS

& OTHER OILSEEDS

The Kansas oilseed sector of the Kansas agricultural industry includes the production of soybeans, sunflower, canola and industrial hemp in addition to the first purchaser users of these oilseeds, like crushers, refiners and biodiesel manufacturers along with industrial hemp extractors. The oil produced from these seeds goes into a variety of products from vegetable oil to other food products and even biodiesel.

The by-products from the production of this oil are also an important part of the oilseed sector, as soybean meal is a major ingredient in the livestock feeding business. Oilseeds are a successful crop in dryland and irrigated regions of Kansas, and advancements through genetics and crop management continue to make them even more efficient. Demand is strong for oilseed products both domestically and internationally, and production would grow even more if Kansas had additional processing options in the state.

The 2021 growing season marked the third year of industrial hemp being legally grown in Kansas, and the first year as a

commercially grown crop. Growers continue to be licensed through the Kansas Department of Agriculture. A processor registry has been established with the Kansas State Fire Marshal, which was one major change with the commercial program.

Although great potential exists in the oilseed sector, a number of challenges still present barriers to growth. The lack of additional processing plants means oilseeds are shipped out of state for further processing, leading to lower prices at the farm level. Declining water in some regions of the state is a threat to growers, and advancements which aim to make soybean production more water efficient have fallen prey to negative consumer perceptions of biotechnology.

Efforts to recruit new businesses, especially first purchasers and processing plants, would benefit current and future growers. Collaboration with industry organizations and agricultural researchers could contribute to technological advancements and public outreach, which will need to work together.

STATUS

The oilseed sector of the Kansas economy is composed of soybean, sunflower, canola and industrial hemp production as well as the first purchaser uses of the oilseeds such as crushers, refiners and biodiesel manufacturers and the feed stream users. Industrial hemp is in its third year of production in the state and the industry is still looking for long-term sustainable manufacturing opportunities.

Kansas ranks 9th in soybean production with 189.6 million bushels, 5th in sunflower production with over 102,540,000 hundredweights in 2021, and 6th in canola production in with 7.8 million pounds in 2021. The state has two soybean crush facilities. The oil goes into familiar products such as vegetable oil for all manner of food products and oil for biodiesel. There were 501 acres of industrial hemp planted in 2021, with just over half of those acres harvested by 61 licensed growers.

According to estimates prepared by the Kansas Department of Agriculture and based on the IMPLAN economic data model, the soybean and other oilseed industry in Kansas has a direct output of \$2.3 billion and creates 1,833 jobs in the state. Through indirect and induced impacts, the industry supports a total of 10,229 jobs and creates a total economic contribution of approximately \$3.59 billion.

In this sector of Kansas agriculture, the by-products can be just as important as the oil. Soybean meal is a major ingredient in the livestock feeding business, and Kansas has more than 2.6 million cattle on feed, 1.7 million hogs on feed and a growing poultry industry. Canola oil for cooking and biodiesel production have been the largest consumers of Kansas-produced canola. Sunflower and canola feed streams are also marketed to specialty markets such as food and bird seed. Canola meal is a popular feedstuff for dairies.

Two key challenges for oilseed production in Kansas have been suitability of the growing conditions and adoption by Kansas farmers. Soybeans are widely grown in the United States and are a key part of the crop rotation in the eastern part of Kansas. Sunflowers and canola are grown extensively in the northern plains of the U.S. The industry in that region benefits from well-established infrastructure, such as crop consulting, input suppliers, extension services, storage facilities and processors. The infrastructure to support sunflowers and canola is more limited in Kansas. Farmers are unfamiliar with the establishing, managing and harvesting methods for sunflower and canola, which are different than practices used in wheat, corn, sorghum and soybeans. Industrial hemp production decreased since initial licenses were issued in 2019. There are currently 61 growers licensed in Kansas for 1,064 acres for the 2021 growing season.

The pro-business climate makes Kansas a prime location for oilseed processing to expand. The climate would be improved by an increase in the resources available to farmers to help support the production of alternative oilseeds such as sunflowers, canola and industrial hemp. The genetic technology to make more acres in Kansas suitable for soybean production would also benefit this sector. Increased biodiesel production and consumption with efforts similar to those employed for ethanol production would increase demand for this product as well.

OPPORTUNITIES

In order to develop a strategic growth plan for the soybeans and other oilseeds sector, it is important to understand the areas where Kansas has a comparative advantage and the best opportunities for growth or expansion.

Factor	Implications for Growth and Development Opportunities
Big Data Use	As more and more data become available related to cropping systems, there are more opportunities to use the data to improve profit margins for soybean and other oilseed farmers, thereby increasing the economic impact and the number of farmers interested in growing these crops. Kansas is home to leaders in the agricultural technology industry, further developing technology solutions to improve the efficiency of oilseed production.

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Factor	Implications for Growth and Development Opportunities
Domestic Consumption	<p>A strong consumer base for canola oil already exists in the U.S. Nearly 80 percent of all canola utilized in the U.S. is imported from Canada. Demand exists for U.S.-grown product in this sector.</p> <p>Consumer awareness and demand for industrial hemp derived products continues to increase in the U.S. The market for these products will continue to increase as guidance is provided by federal and state agencies.</p>
Double Crop	<p>Soybean and sunflower double crop acres could increase if producers are able to plant shorter season wheat varieties and harvest the crop at a higher moisture content. Many wheat millers prefer to control the drying process themselves. Canola is typically harvested earlier than winter wheat, and the residue left behind provides an optimal seedbed for double cropping soybean or sorghum into.</p>
Export Markets	<p>Kansas soybeans have a relatively higher protein content than those produced in the Corn Belt. There is a large opportunity to increase demand for Kansas-grown soybeans with our top five trade partners: Mexico, China, Taiwan, Vietnam and Malaysia.</p>
Genetic Advancements	<p>Advancements in soybean and canola genetics in recent years make oilseeds a viable crop on more acres of dryland and limited irrigation in Kansas than ever before. Breeding programs for both crops are located in Kansas to address the specific growing season climate extremes that producers face.</p>
Human Capital	<p>Kansas is home to strong leadership in the oilseed industry, creating additional investment opportunities.</p> <p>The Kansas State University agronomy department is a recognized leader in oilseed production and breeding.</p> <p>K-State's grain science department is recognized as the top program in the nation. Researchers across the K-State College of Agriculture are improving oilseed processing and finding more and efficient uses for oilseeds and products. Additionally, the International Grains Program and their work with national export organizations builds strong relationships with trading partners.</p> <p>The department of horticulture and natural resources, along with the department of agronomy, at the K-State College of Agriculture lead the efforts on industrial hemp research in the state. Researchers are part of a multi-state research project and are diligently working to identify varieties of industrial hemp which grow well across the state. The K-State College of Veterinary Medicine</p>
Land Availability	<p>Kansas has the third most farm land of any state, with roughly 87 percent devoted to agriculture.</p>
Livestock Feeding	<p>Kansas is a top 3 state in cattle production and top 10 in hogs. Kansas is also among the fastest growing dairy states. Livestock feed is the largest consumer of Kansas soybeans. Any advancement in the livestock industry will have a positive impact on the soybean industry.</p> <p>Canola by-products are a desirable feed stream for the dairy industry.</p>

Factor	Implications for Growth and Development Opportunities
Processing	Additional processing such as crush plants, soy beverage and other processing, extracting and packaging facilities will increase demand and improve local prices.
Supporting Infrastructure	<p>Kansas is home to some of the world's leading crop genetics companies and research facilities, which could lead to the production of seed suitable to the Kansas climate.</p> <p>Existing intermodal, transload, rail and shipping container facilities provide a solid export infrastructure for oilseeds and value-added products with additional improvements planned.</p>

CHALLENGES

While Kansas is poised for major expansion in the soybean and oilseed sector, the following factors represent challenges serving as barriers to achieving the objective of the strategic growth plan.

Challenge	Details of Challenge
Consumer Perception	Negative consumer perception of biotechnology and crop protection chemicals threatens future advancements that have made soybean and canola production possible in many areas of the state. Also, many crop protection products are under scrutiny because of negative perceptions founded on unscientific evidence of harm to the environment.
Critical Infrastructure	<p>Kansas has adequate grain and liquid rail infrastructure. However, a lack of rail access in the western portion of the state will require processors of specialty products to ship products across the state to be loaded onto the rail or use alternative transportation.</p> <p>As oilseed producers improve yields and efficiency, transportation becomes a larger issue. Aging infrastructure of highways, bridges, rail and barge also pose challenges. Investment in infrastructure could make the transportation system more reliable and cost-effective.</p> <p>A lack of in-state processing is further compounding the relatively high basis in northwest and northcentral Kansas. High basis is a limiting factor for canola production in Kansas. Recently, the crush facility in Goodland closed leaving the state with no in-state processing facility for canola and sunflower produced in Kansas. Industrial hemp producers also greatly need in-state processors for contracts for their crop.</p>
Industry Adapting to New Crop	As the state adapts to growing industrial hemp, several challenges face the hemp industry, including transparency, the sale of stable seed genetics, and obtaining specialized equipment especially for processing, extraction etc. Some refineries and processing plants used for other crops could be converted rather than building a new plant, but demand and expectations are still unknown.
International Trade	Kansas must work with elected officials to keep export markets open and accessible for producers.

Challenge	Details of Challenge
Policy	Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including reduced Renewable Fuel Standards mandates, Waters of the U.S., the Endangered Species Act, burdensome Occupational Safety and Health Administration regulations and more.
Water	Although not as water intensive as corn, water use in the production of soybean, sunflower and canola is greater than in crops such as sorghum, wheat and cotton, according to historical data. KSRE continues research efforts on water efficiency of industrial hemp compared to other Kansas crops.
Workforce Development	Growth in oilseed processing will require a skilled and a non-skilled workforce, which continues to be a significant challenge throughout the entire agricultural industry.

SUCCESSSES

Key recent successes in the soybean and oilseed industry:

2022:

- In July 2022, KDA coordinated an outreach event on the current status of the industrial hemp industry in Kansas. The event was held in Salina with over 70 in attendance, including industry leaders, elected officials, licensed growers and those interested in the growth of the industrial hemp industry..
- Bartlett announced plans to build a \$325 million soybean crushing facility in Montgomery County. The new operation is expected to be able to handle about 38.5 million bushels of soybeans each year, or about 110,000 bushels per day. It also creates job opportunities for the facility itself and for companies involved in its construction.
- Seaboard Energy has announced that they are opening a Renewable Diesel Plant in Hugoton in 2022.
- The EPA is proposing a new approval for canola oil that will add new pathways for fuels to participate in the Renewable Fuel Standard program to provide renewable diesel, jet fuel and other fuels. The new canola oil pathways for biofuels will give parity among vegetable oils and fats in the market, give canola farmers new channels for their crops in times of surplus production and provide renewable fuel producers diversified feedstock options.
- Kansas Farm Food Connection, a coalition of over 10 agriculture organizations, sent out 250 Farm Food Crates to help Kansas families see, taste, smell and experience Kansas agriculture in their own homes. The project reached over 70,000 people in 2021 and over 210,000 people in 2022.

2021:

- Kaleb Little was announced as the new Kansas Soybean Association CEO and administrator for the Kansas Soybean Commission in January 2021. Little took over for Kenlon Johannes who retired. Johannes served the Kansas Soybean Association and Commission for over 20 years.
- The 2021 Kansas Soybean Yield Contest drew 42 entries. The average yield of all entries was 91.3 bushels per acre with three new farmers joining the 100 Bushel Club.
- In August 2021, Reagan Hurla, a biological systems engineering student at Kansas State University, was named one of four co-chairs to lead the national Next Generation Scientists for Biodiesel program. A program of the National Biodiesel Board and United Soybean Board for college-level science students, NGSB fosters professional relationships between budding and established scientists, shares accurate information and increases collaboration with academia and the biodiesel industry.
- The U.S. market utilized more than 3 billion gallons of biodiesel and renewable diesel for the first time ever in 2020 and did so again in 2021. North American oilseeds continue to be the primary feedstock for production of these cleaner renewable fuels. Biofuels producers utilized 9 billion pounds of soybean oil alone last year.
- The K-State Industrial Hemp Program continues as a partner with the Hemp Multi-State Project. Twenty-four varieties of dual-purpose seed were planted in 2020 and 2021 along with multiple CBD varieties.

- In November 2021, KDA hosted a virtual outreach event on industrial hemp. The target audience was state and federal elected officials. There were nearly 50 participants during the event with over 70 viewing the recording after the event.
- In partnership with the Kansas Soybean Commission, the Magellan terminal in Kansas City, Kansas has the ability to blend biodiesel to customer specifications, primarily servicing retailers and large fuel customers beginning in 2021.

Earlier Successes:

- The Kansas Soybean Commission, through the Soy Transportation Coalition, has worked to improve transportation infrastructure and increase access to international markets. The Mississippi River dredging project began in 2020; by adding five feet in depth downstream in Louisiana, the STC estimated \$7.7 million in annual savings for Kansas farmers due to a narrower basis on prices with higher cargo loads per vessel.
- In August 2020, Leo Budy, a chemical engineering student at the University of Kansas, was named one of four co-chairs to lead the national Next Generation Scientists for Biodiesel program. A program of the National Biodiesel Board and United Soybean Board for college-level science students, NGSB fosters professional relationships between budding and established scientists, shares accurate information and increases collaboration with academia and the biodiesel industry.
- The production research supported by the Kansas Soybean Commission has focused on soybean genetics, pests, diseases, soil health and management practices. Most of the projects in production research are led by Kansas State University or through the farmer-led North Central Soybean Research Program, a collaboration of 13 state soybean organizations. Ongoing research seeks to improve potassium deficiencies in soil, develop new varieties, and better manage herbicide resistance in weeds. Kansas farmers, industry professionals, and researchers were involved in a soybean research Think Tank to best position the soybean for the future.
- In April 2019, Senate Bill 2167 established the Commercial Industrial Hemp Act, authorizing KDA to develop a program for commercial hemp production. KDA submitted a plan for a Commercial Industrial Hemp Program which was approved in April 2020. The program now operates as a commercial program, beginning with the 2021 growing season.
- Pittsburg State University has conducted many soybean oil-based polymer research projects supported by the Kansas Soybean Commission. A patent is pending for an antioxidant topical lotion made from soybean oil, as well as one for a one-step process for synthesis of soybean polyols for industrial applications, which improves upon the widely used three-step process.
- In partnership with private industry, state agencies continue work to develop markets for industrial hemp products in Kansas.
- The significance of including canola as a rotation crop in cereal-based cropping system has not gone unnoticed. Federally supported research in Kansas is looking at new and innovative ways to grow canola successfully in rotation with wheat and other crops. In addition, this funding has supported the release of four improved varieties over the past five years.
- Hemp seed has been shown to have nutritional value for human food and even greater potential in agricultural food systems. As hemp seed oil, hulled hemp seeds, and hemp protein powder have already received a Generally Recognized as Safe designation by the U.S. Food and Drug Administration for human consumption, hemp and hemp derivatives have not yet been approved for use in commercial animal feed or pet foods.
- Hemp industry coalitions have begun the process to gain federal approval for the use of hemp and its by-products as an animal feed ingredient and some project that seed and the grain sector of hemp will grow for the next several years.
- In 2019 Cargill opened a state-of-the-art biodiesel plant in Wichita, a \$90 million investment that produces 60 million gallons of biodiesel annually.
- Beginning in 2019, through partnership with the Kansas Soybean Commission, Victory Renewables in Garden City has the ability to blend biodiesel to customer specifications. Their primary customers are fuel retailers, as well as large fuel customers. This had not been available in southwest Kansas on a large scale until that time.
- The Kansas Soybean Commission participated in the Kansas Pet Food Forum to promote use of Kansas grains in pet food.
- KDA developed regulations to guide the new Industrial Hemp Research Program and began issuing licenses in February 2019 for the spring 2019 growing season. Over 3,700 individuals participated in face-to-face meetings across the state as educational outreach during the first year of the industrial hemp program. KDA expanded to add two full-time and a contract employee to oversee and inspect the program for 2019.
- Industrial Hemp Research Program participation was high in its first two years. A total of 197 Kansas grower licenses, 20 distributor licenses and 35 processor licenses were issued in 2019. Nearly 5,600 acres of industrial hemp were licensed to be planted, and approximately 2,400 acres were actually planted in 2019. Just over 1,800 acres of industrial hemp were harvested, over 95% for floral material.
- The Kansas Soybean Commission backed the passage of HB 2280 in 2018 which requires research of the potential costs of proposed rules and regulations to businesses before they are submitted to the Legislature and consultation with regulated businesses, their associations, local government and affected members.

Soybeans and Other Oilseeds

GROWTH OBJECTIVE:

Foster an environment that develops Kansas as a leader in production of high quality oilseeds, and support expanded research to advance the industry.

OUTCOMES & ACTION ITEMS

Leaders from throughout the Kansas soybean and oilseed industry will continue to collaborate in the development and implementation of a long-term strategic growth strategy with input and discussion among key partners. Industry-identified desired growth outcomes, initially developed in 2016 and expanded to include action items, will be implemented by industry and key partners and updated annually at the Kansas Governor's Summit on Agricultural Growth. Following are the proposed action items to continue building on the achievement of the soybean and oilseed sector desired outcomes.

High Priority Outcomes

Increased demand for Kansas soy products across the nation and the world due to the high quality of Kansas-produced soy oil and meal, which contain higher protein content than soy products from Corn Belt states. Increased demand would lead to increased export opportunities for soybean and oilseed products.

ACTION ITEMS:

- Analyze the costs/benefits of identity preserved grain handling systems.
- Meet with site consultants to ensure Kansas is on the list for additional processing and value-added facilities.
- Support bilateral and multilateral trade pacts that expand export potential for oilseed products.
- Conduct thorough review of countries that currently import oilseeds and products. Identify those that have already done business with Kansas and those that have not. Develop list of potential new customers based on that review.
- Support research and development of new products to increase demand for soybeans and canola.
- Increase end users' understanding and appreciation for modern ag practices in regard to increasing sustainability. (GMOs and chemical usage all improve sustainability. Which is important to end users like Kellogg's, Walmart, etc.)
- Work to increase market access and reduction of trade barriers in a collaborative effort between Kansas Soybean Association, Kansas Soybean Commission, Great Plains Canola Association, local economic development officials, and state and national government.
- Work to maintain relationships with past buyers for future sales.

Faster regulatory approvals for inputs imperative to oilseed production.

ACTION ITEMS:

- Provide factual information and education on new soybean products approved by EPA.
- Advocate for EPA approval of new products for weed resistance (KDA, Kansas soybean industry groups).
- Continue to support research to develop new options for weed control.

Increased research funding to Kansas State University for sunflowers and canola. Benefits of oilseeds are not well known to farmers or to consumers.

ACTION ITEMS:

- Endorse increased funding to K-State Research and Extension for sunflower and canola research and outreach.
- Promote the economics and agronomic benefits of sunflower and canola production.
- Identify and support public/private partnerships to fund research.
- Increase biodiesel research and usage.

Clear, factual information about modern agriculture easily available to consumers, particularly relating to the sustainability of modern practices.

ACTION ITEMS:

- Include production information in the Soybean Commission's education effort.
- Ensure messaging is clear in Kansas Foundation for Agriculture in the Classroom materials.
- Hit the highlights during Kansas Ag Month, harvest releases, speaking engagements, etc.
- Increase focus on younger generation consumers.
- Improve communication of benefits (environmental, economic, etc.).
- Utilize social media to communicate with consumers.

Reduced basis by promoting the expansion of in-state oilseed processing. Increased processing facilities would add value to all types of oilseeds within the state.

ACTION ITEMS:

- Develop a design to modernize existing processing plants to serve multiple purposes.
- Organize investors to construct a modern processing plant in the center of the state.
- Develop an "ag friendly communities" designation.
- Explore new markets and encourage processing with rising demand for oilseeds including hemp for food, industrial products, hygiene consumables, and dietary supplements.
- Expand marketing efforts by producers/manufacturers of value-added products to include information that the product is made from Kansas-grown crops.
- Work to ensure that Kansas is a state open for business for value-added products. Work closely with local, state and federal personnel on opening new businesses or expanding current operations.

Growth in the pork, poultry, beef and dairy sectors in Kansas through participation in each sector's growth strategy. Kansas livestock industries are the largest market outlet for oilseeds.

ACTION ITEMS:

- Partner in executing the growth strategies for animal agriculture sectors.
- Continue to encourage soybean industry involvement in livestock-focused inbound tours and discussions to promote the value of soybeans as a feedstuff.
- Utilize local chambers of commerce and technical schools to collaborate toward assisting in incubator models for small businesses. Through these partnerships, incorporate and support hemp and other oilseeds into animal health research and development within the KC Animal Health Corridor.

Interested growers fully participating in the Industrial Hemp Commercial Program in Kansas.

ACTION ITEMS:

- Collaboratively, work with state agencies and private industry to identify processing opportunities for Kansas industrial hemp growers.
- Continue executing a plan to provide science-based data from research trials to Kansas producers to increase their knowledge of the industrial hemp crop.
- Work with industry to develop additional markets for industrial hemp products, to include value-added opportunities in Kansas.

Medium Priority Outcomes

Increased double cropping of oilseeds after wheat and row crops after canola. Expansion of double crop insurance by the U.S. Department of Agriculture Risk Management Agency would benefit farmers who choose this option, as well as increased promotion by K-State Research and Extension.

ACTION ITEMS:

- Engage USDA-RMA on expanding double crop insurance after wheat to additional counties.
- Promote the economics and agronomic benefits of double cropped rotations.
- Engage with flour milling industry to communicate their desire to accept high moisture wheat to better control the drying process.