

Growing Kansas agriculture...together

Kansas

# AGGROWTH

GROW SMARTER. GROW STRONGER. GROW KANSAS.

Documents compiled from the 2016 Kansas Ag Summit







# KANSAS ADVANTAGE

As the nation's agriculture industry positions itself for growth in order to meet the needs of a growing population with changing demands, Kansas is well-suited to be the home for **strategic agricultural growth**.

The Kansas **climate** is highly conducive to effective and efficient livestock production and provides for good growing seasons and harvesting conditions.

Kansas **transportation** systems, including high quality roads and rail systems, provide easy access to markets and make moving people and goods in the state simple and reasonable.

The foresight of agriculture leaders has resulted in environmental regulatory standards allowing production agriculture and **environmental preservation** to work hand-in-hand.

Kansas was four decades ahead of its peer states in passing legislation that **protects animal agriculture** and minimizes the threats of activist groups by not being a ballot initiative state.

Business-friendly tax exemptions, long-standing property tax policy, being a Right to Work state, and a business-friendly regulatory culture make Kansas **a great place to start and own a business**.

Kansas is the home to Kansas State University — the first land-grant university in the U.S. — and Fort Hays State University. These institutions, along with the other Regents universities, community colleges, technical schools and high school agricultural education programs, are all key partners in **growing the workforce** needed to serve Kansas agriculture.

The long-term availability of water in Kansas is dependent on local leadership, responsible use, management and policy development, all which have been greatly enhanced in recent years by the **innovative water policies** in the Governor's *Vision for the Future of Water Supply in Kansas*.

Kansas is represented by **leaders** in state and federal government who understand and respect the importance of agriculture.

Kansans embody the **pioneer spirit** that brought their forefathers to an uninhabited prairie to seek their fortunes in a new land. The values of **hard work, family, faith, community, perseverance, entrepreneurship and achievement** have stood the test of time in Kansas.

Those values and that same pioneer spirit that converted Kansas from a vast sea of grassland into a major producer of our nation's food supply live on today as we proactively **pursue new and innovative opportunities to grow agriculture**.

# GROW SMARTER...



# CHALLENGES & OPPORTUNITIES

Farmers, ranchers and agribusinesses must balance a lengthy list of challenges and variables, many of which they cannot control, as they work to grow and raise food for families across the globe. When possible, those barriers to growth should be addressed.

Kansas farmers, ranchers and agribusinesses from all sectors are all interconnected and must continue to **work together** and support each other for industrywide growth to occur.

Kansas must continue to value its largest industry, and must continually pursue a greater understanding of the **importance of agriculture to the state economy**.

Kansas agriculture must work together to provide an increasingly **open and transparent food system** that meets consumer demands and expectations, highlighting where their food comes from and the story of the people who raised it.

Continued and expanded access to **international markets** and expanded global market share is critical to nearly all agriculture sectors in Kansas.

A focus on quality roads and expanded rail access accompanied by **agriculture-friendly transportation regulatory environment** is critical to agricultural growth.

Maintaining a regulatory environment at the state level designed to help agriculture rather than hinder it and pushing back on and, when possible, dismantling **over-reaching, excessive, burdensome federal regulations** targeted against agriculture is fundamental to short- and long-term industry expansion.

Kansas needs to be poised to work collaboratively to help craft quality legislation aimed at serving our farmers and ranchers in the next **Farm Bill** and other federal policy initiatives.

Kansas must continue to build private-public partnerships to **protect and conserve the state's water supply** and be good stewards of the land, embracing environmental, economic and social sustainability.

A focus needs to be placed on **adding value** to agriculture commodities before they leave the state, enhancing support networks for **entrepreneurs** and business start-ups, and creating greater access to **venture capital**.

Kansas must maintain a **tax-friendly, open-for-business environment** that tells enterprises across the globe that Kansas is good place to do business, and local communities who want to grow agriculture should be recognized and should have the tools they need to prosper.

**Rural broadband and mobile networks** providing faster download and upload speeds are needed for businesses in rural areas to grow and do business with the rest of the world.

Public/private partnerships to address shortages in **rural housing** should be investigated.

Kansas agriculture cannot grow significantly without building the **agriculture-related skilled workforce and talent pool** through expanded high school agricultural education programs, quality higher education programs, veterans' agriculture career programs, legal immigration tools, succession planning tools, and quality of life investments.

**While challenges exist, the opportunity for growth and the willingness of the Kansas agriculture industry to work together to address these challenges is far greater. The following pages provide sector summaries and outline the desired outcomes identified by industry stakeholders for 19 agriculture and food sectors. Working together, these outcomes can be accomplished ... growing agriculture and growing Kansas.**

# GROW STRONGER...



# GROW KANSAS



# AGRICULTURAL EQUIPMENT MANUFACTURING & SALES

## EXECUTIVE SUMMARY

Kansas is home to agricultural equipment manufacturing and sales companies in a broad range of sizes and specializations. Many of these companies have an international presence along with a strong presence across the U.S. Farming and ranching are a dominant segment of the state both economically and geographically, which creates an abundance of potential customers for agricultural equipment companies. The strong customer base, along with supportive state policies which encourage agricultural development, make Kansas a prime location for growth in the equipment manufacturing and sales sector.

Challenges remain, however, and present possible barriers to continued growth. Establishing a reliable workforce is difficult in many agricultural sectors, and made particularly problematic in this field that relies on specific technical knowledge. Many new equipment companies are small operations, and it is challenging for small businesses to get a foothold in the industry and market their products. There is no state association to provide support within this sector nor to advocate for the industry.

There is great potential for growth within the agricultural equipment manufacturing and sales sector, but it will require input and discussion among key partners to develop a long-term growth strategy. Focused efforts to establish international relationships could open new markets. Existing state business resources could be directed specifically to agricultural business development. Enhanced educational and workforce development programs would expand the talent pool and support existing companies as well as attract new companies. A strategic growth plan built from collaborative efforts from public and private stakeholders is critical to the future of this sector of the agriculture industry.

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## STATUS

Kansas is home to agricultural companies of all sizes specializing in equipment for livestock and farming. Many of these companies have an international presence and impressive market penetration within the United States. The agricultural equipment manufacturing industry contributes \$3.4 billion to the Kansas economy and is the 20th largest industry in the state.

Nearly 90 percent of Kansas' land mass is devoted to farming and ranching, providing ample customers for agricultural manufacturers' product lines. Pairing the prevalence of the agricultural industry with Kansas' pro-business climate and Midwest values makes Kansas a prime location for equipment manufacturers or equipment sales companies which are looking to create or expand their businesses.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the farm machinery industry in Kansas has a total direct output of approximately \$3.6 billion and creates 6,028 jobs. The industry supports a total of 16,301.7 jobs and provides a total economic contribution of nearly \$5.2 billion. Taking into account all agricultural equipment (farm machinery, lawn and garden equipment manufacturing, food product machinery manufacturing, etc.), these sectors have a direct output of \$4.1 billion with an employment of 7,775. These sectors have a total economic impact of \$5.9 billion and support 19,309 jobs in the Kansas economy.

## OPPORTUNITIES

In order to develop a strategic growth plan for the agricultural equipment manufacturing and sales 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
<b>Existing Customer Base</b>	46.1 million acres are devoted to farming and ranching in Kansas, nearly 90 percent of the state's total land mass. Kansas has an abundance of potential customers for agricultural equipment companies.
<b>International Trade</b>	The Kansas Department of Commerce Golden Key Matching Service may provide export assistance to Kansas companies via U.S. commercial service programs.

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Policy Environment</b></p>	<p>Recent changes to the tax code have reduced state tax burdens on the agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations.</p> <p>The High Performance Incentive Program (HPIP) provides sales tax exemption on the construction, reconstruction and remodeling of facilities for projects greater than \$50,000. Sales tax exemptions are also present for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>Also at the state level, Kansas works closely with the agricultural industry to ensure its protection from overreaching federal regulation.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agricultural industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, transportation rules, natural resources and more.</p>
<p><b>Workforce Development</b></p>	<p>Kansas is home to a strong community college and technical college network that can provide training for manufacturers. There is potential to develop an apprenticeship program that could be piloted with agricultural equipment manufacturers already in Kansas. Additionally, an opportunity to consider is bridging Farmer Veteran Coalition resources (Fort Riley, Fort Leavenworth and McConnell AFB) with the U.S. Army’s exit counseling centers to place Army veterans in open workforce positions across the state.</p>

# SUCCESS STORIES

Key successes in the industry:

- Several highly successful agricultural equipment companies already manufacture in Kansas.
- A variety of national agriculture implement companies exist across the state via local dealerships.
- The current tax structure provides incentives for business development and expansion in the state.

# CHALLENGES

While Kansas is poised for potential expansion in the agricultural equipment manufacturing and sales sector, the following factors represent challenges serving as barriers to achieving the objective of the strategic growth plan.

Challenge	Details of Challenge
<p><b>Critical Infrastructure</b></p>	<p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Domestic Sales</b>	Volatility of agriculture markets can be a direct inhibitor to growth in agriculture manufacturing. Concern over brand purity exists with some Kansas independent equipment manufacturers.
<b>Industry Association</b>	There is no real connection within the industry. Kansas does not have a sector association, rather AEM (Association of Equipment Manufacturers) is a national organization that hosts an industry sector for agriculture.
<b>International Trade</b>	Access to international markets for equipment products is a positive potential revenue stream. Resistance to free trade agreements at the federal level can hinder this access.
<b>Policy</b>	Federal laws and regulations impacting the agricultural community as a whole include Waters of the U.S., the Endangered Species Act and more. These laws threaten the profitability of farmers and ranchers which decreases their ability to purchase inputs such as planters, plows and other farming equipment. State laws outlining trailer title requirements, intellectual property (precision agriculture), transport limits and even minimum wage changes can be inhibitors to business success.
<b>Small Businesses</b>	<p>It is difficult for small companies to get their products in stores to make them accessible to consumers.</p> <p>Marketing assistance is also difficult. It is difficult to find sufficient scale to make an economic impact on marketing efforts outside of Facebook and social media.</p> <p>There is a lack of programs in the state to provide “soft incentives” such as business plan writing and coaching to interface with venture capital markets.</p>
<b>Workforce Development</b>	Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of this industry.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the agricultural equipment manufacturing and sales industry.

Focus Area	Solution
<b>Economic Incentives</b>	Pursue development of agricultural business zones composed of existing state business incentive programs. State economic development incentive programs like HPIP and Promoting Employment Across Kansas come with a heavy paperwork load and have been known to be cumbersome. Consider new business development incentives focusing on all agriculture sectors.
<b>Industry Outreach</b>	KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders regarding the development of a strategic growth plan.
<b>Infrastructure Improvements</b>	Assess current access rates/program usability for Kansas Department of Commerce resources (state and federal) and determine if business development infrastructure provided meets the needs for agricultural equipment manufacturing and sales companies.
<b>International Trade</b>	Host an inbound buyer's mission. Evaluate key international trade shows and consider hosting a Kansas pavilion. Consider coordinating an in-bound buyer's mission to Kansas, specifically focusing on Kansas company visits.
<b>Research</b>	Conduct an analysis of the potential return on investment for new equipment available to help potential buyers justify the expense.
<b>Soft Incentives</b>	Pursue workforce development and educational programs to enhance the talent pool available to equipment manufacturers and sales companies. This will further enhance the available ecosystem of mentors, investors and incentives available.

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Improve existing incentive programs to become more applicable to agricultural and rural businesses.
- Partner with educational institutions such as community colleges and secondary career and technical education programs to prepare a qualified future workforce.
- Lean on postsecondary career services programs to help guide students into sector job openings.
- Engage with USDA Rural Development and local-level contacts to identify solutions to housing needs in communities that experience agricultural equipment manufacturing and sales sector growth.

# AGRICULTURAL EQUIPMENT MANUFACTURING & SALES INDUSTRY OUTCOMES



## **Growth Objective:**

*Establish Kansas as an innovative state in the agricultural equipment manufacturing and sales industry by fostering a business environment that supports new and expanding companies through increased exports, marketing and industry collaboration.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas agricultural equipment manufacturing and sales industry:**

### **Phase 1 (Begin within two years)**

- Fully functioning agricultural equipment coalition or association for manufacturers and dealers combine resources with a focus on marketing Kansas-made products.
- State-sponsored economic development incentives which meet the needs for established and new equipment manufacturers of varying sizes. Current incentives include industry classifications and employment/wage requirements which exclude most manufacturers.
- Effective array of “soft” incentives (e.g. mentorships, internships and training on interaction with financiers) which are accessible to agricultural companies to ensure they have the information, workforce and financing they need to economically grow and thrive in Kansas communities.
- Continuation of state policies which encourage business success, specifically pro-growth policies on income, property and sales tax for the agricultural equipment manufacturing and sales industry.
- Increased emphasis on technology-related agricultural education at the high school level.
- Expanded trade program promotion efforts and assistance to make international marketing more accessible for a wider variety of manufacturing businesses, including small businesses.
- Increased exports and international presence bolstered by an international trade tour for potential foreign customers to meet with Kansas equipment manufacturers.
- Increase in agricultural manufacturing and sales companies in the state of Kansas.

# AGRICULTURAL TECHNOLOGY AND ENTREPRENEURSHIP

## EXECUTIVE SUMMARY

Agricultural technology is a growing field, and Kansas is home to many agricultural technology companies that vary widely in their size and specialization. Potential exists for new, innovative ideas to take root in Kansas and develop into successful businesses. Advances in technology that reduce costs and increase productivity will be key to long-term agricultural growth in Kansas. Technological innovations are an important element of the KC Animal Health corridor, with improved potential for investment and workforce due to the concentration of animal health companies that currently exists from Manhattan to Kansas City. The state's commitment to water conservation creates a need for new water-saving technologies to increase efficiency in the region. Institutions of higher education in Kansas offer strong technology and aviation programs to grow the workforce. The strong customer base of farmers and ranchers makes Kansas a prime location for advancements in agricultural technology.

Alongside the vast potential for this industry there exist some challenges which could present barriers to growth. Establishing a reliable workforce can be challenging in an industry that requires specific technical knowledge. Engaging the agricultural industry in new technologies or new innovative ideas can be difficult, especially when data does not yet exist to prove a return on investment for the producers. Similarly, new products and technologies face uncertainty in regard to policies and regulations which might limit their acceptance. It can be difficult for small entrepreneurs to get a foothold in the industry and market their products.

The agricultural technology and entrepreneurship industry offers huge potential for growth, with unlimited possibilities. To foster this potential will require ongoing input and discussion among key partners as a long-term strategy for growth is developed to guide the industry. Many current resources that encourage business growth could be directed toward agricultural technology entrepreneurs. Programs that have been successful in other areas and other states could be developed to encourage agricultural entrepreneurship in Kansas. A strategic growth plan created out of collaborative efforts from both public and private stakeholders will be key in the growth of this industry.



# STATUS

Kansas is home to agricultural technology companies of all sizes as well as entrepreneurs who are working to discover the next big idea. Technology companies offer great potential to adapt their products and services to serve the agricultural industry. Nearly 90 percent of Kansas’s land mass is devoted to farming and ranching, providing ample customers for agricultural technology applications.

Agricultural technology is a vast industry, present in all agricultural sectors and includes any advancement — digital or concrete — that leads to increased agricultural production and/or production at the lowest cost and with the most efficient natural resource use. Technology companies may produce the next greatest application to organize data or a physical product that reduces water use.

Agricultural technology companies encompass numerous agriculture and technology sectors. A majority of these sectors have economic multipliers of 1.75-2, among the highest of all sectors in the Kansas economy. Therefore, growth in these sectors can lead to large economic ripple effects throughout the economy.

Projects such as the relocation to Kansas of both the American Royal and Dairy Farmers of America are strong signals that Kansas is on the frontier for the latest agricultural technology advancements, with strong growth potential in both urban and rural areas.

Pairing the prevalence of the agricultural industry with Kansas’ pro-business climate and Midwest values makes Kansas a prime location for entrepreneurs to create or expand their businesses. Potential exists to create an environment for growth in technology and a pro-entrepreneurial culture that can establish Kansas as the Silicon Valley of agricultural technology.

# OPPORTUNITIES

In order to develop a strategic growth plan for agricultural technology and entrepreneurship, 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
<p><b>Animal Health Corridor</b></p>	<p>Kansas is located within the KC Animal Health Corridor, the world’s largest concentration of animal health companies. The combination of private companies, research facilities, technical training programs and transportation capabilities make the Kansas City region an attractive location for animal health businesses — from initial start-ups to relocations or expansions. The discovery of new technologies in the animal health sector can include therapeutics, diagnostics, biologics, and nutrition and feed products.</p> <p>Since 2009, bioscience firms in Kansas have received \$110 million in venture capital investments, with the majority directed toward animal biotechnologies. The Kansas State University Institute for Commercialization is dedicated to the start-up and expansion of technology-based, high-growth enterprises. Other key communities and regions within the Corridor have also taken proactive steps to recruit and support animal health and high tech enterprises to the region, including Knowledge Based Economic Development partnership in Manhattan and the Bioscience &amp; Technology Business Center in Lawrence.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Existing Customer Base</b></p>	<p>46.1 million acres are devoted to farming and ranching in Kansas, nearly 90 percent of the state's total land mass. Kansas has an abundance of potential customers for agricultural technology companies.</p> <p>Kansas is also home to multiple agricultural equipment manufacturers, which serve as another potential customer for agricultural technology companies to develop strategic partnerships to enhance equipment with the latest precision technologies.</p>
<p><b>Human Capital</b></p>	<p>Kansas State Polytechnic boasts a strong aviation and technology component and now offers one of the nation's first bachelor's degree programs in unmanned aircraft systems.</p>
<p><b>Natural Resources</b></p>	<p>Kansas is recognized nationwide for its proactive practices of conserving water for future generations. Kansas is implementing proactive water conservation practices allowing farmers and ranchers to manage their own water while still preserving the aquifer for generations to come. Water-saving irrigation technologies can assist in addressing key challenges in other agriculture sectors, such as reducing water usage by increasing efficiency of water application consistent with the <i>Vision for the Future of Water Supply in Kansas</i>.</p>
<p><b>Policy Environment</b></p>	<p>Recent changes to the tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations.</p> <p>The High Performance Incentive Program (HPIP) provides sales tax exemption on the construction, reconstruction, and remodeling of facilities for projects greater than \$50,000. Sales tax exemptions are also present for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>Also at the state level, Kansas works closely with the agricultural industry to ensure its protection from overreaching federal regulation.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agricultural industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, transportation rules, natural resources and more.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Supporting Infrastructure</b></p>	<p>Kansas is home to world renowned technology companies and a host of aviation companies in Wichita. Together with their allied industries they create an atmosphere with a workforce and supporting infrastructure that promotes and supports future technology development.</p> <p>Kansas is home to an intermodal freight facility in Edgerton with full federal customs along with adjoining Smart Warehouses, providing great support for importing and exporting components of all sizes.</p>

# SUCCESS STORIES

Key successes in the industry:

- An employee-owned company in Atwood, Kansas, specializes in providing solutions for the control and application of fertilizer and seed. The company was founded in 2007 with a focus on combining technology with classic rural Kansas “know-how,” and now serves customers in 47 states and international markets.
- A family-owned irrigation company in Ulysses, Kansas, specializes in reducing water use through irrigation technology. Their mobile drip irrigation product was named top new irrigation product of 2016 by the International Irrigation Association.

# CHALLENGES

While Kansas is poised for potential expansion in the agricultural technology and entrepreneurship sector, the following factors represent challenges serving as barriers to achieving the objective of the strategic growth plan.

Challenge	Details of Challenge
<p><b>Critical Infrastructure</b></p>	<p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p>
<p><b>International Trade</b></p>	<p>Access to international markets for technology products is a great potential revenue stream. Resistance to free trade agreements at the federal level can hinder this access.</p>
<p><b>Policy</b></p>	<p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations that affect technology, including FAA regulations that largely restrict UAV use. Other federal laws and regulations impacting the agricultural community as a whole include Waters of the U.S., the Endangered Species Act and more.</p>
<p><b>Retention of Entrepreneurs</b></p>	<p>Other regions in the country have established reputations as strongholds for technology entrepreneurs; Kansas must provide an enticing alternative to keep these individuals in the state, as a great place to live, work and start a business.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Small Entrepreneurs</b>	<p>It is difficult for small food entrepreneurs to get their products in stores to make them accessible to consumers.</p> <p>Marketing assistance is also difficult, particularly when it comes to finding sufficient scale to make an economic impact on marketing efforts outside of Facebook and social media.</p>
<b>Uncertainties of Industry</b>	<p>Technology and entrepreneurial endeavors are often forging new ground, testing new products and concepts. This may mean uncertainty in the regulatory environment, as policies adapt to new ideas and new businesses. It can also mean uncertainty in the return on investment for untested products, which can be difficult for entrepreneurs seeking investors and capital.</p>
<b>Workforce Development</b>	<p>Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of the technology industry.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as first steps in developing a strategic growth plan for the agricultural technology and entrepreneurship sector.

Focus Area	Solution
<b>Business Development</b>	<p>Initial steps to begin encouraging growth in this sector could include the following:</p> <ul style="list-style-type: none"> <li>• Pursue the creation of programs that provide training to start-ups on interfacing with the investment community.</li> <li>• Create a marketing program that promotes Kansas as the place for agricultural technology businesses.</li> <li>• Utilize successful agricultural entrepreneurs for marketing and training of potential start-ups.</li> <li>• Develop a database of federal programs available to assist startup companies such as the U.S. Department of Agriculture Small Business Innovation Research fund.</li> </ul>
<b>Economic Incentives</b>	<p>Pursue development of agricultural business zones made up of existing state business incentive programs.</p>
<b>Federal Policies</b>	<p>The Kansas Department of Agriculture will continue to monitor and take appropriate action on policies that could adversely affect the agricultural technology industry, such as FAA regulations, potential restrictive state legislation, etc.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Industry Outreach</b>	KDA will identify potential partners and establish a schedule for strategic growth plan meetings, and will proactively reach out to key industry leaders regarding the development of a strategic growth plan.
<b>Labor Force</b>	Work with K-State to explore developing an entrepreneurship internship program similar to Iowa State University.
<b>Water Vision</b>	Complete vision action items related to water-saving technology research and demonstration.

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Partner with educational institutions — such as Kansas State Polytechnic, community colleges and secondary career and technical education programs — to prepare a qualified future agricultural technology workforce.
- Work with the K-State industry boot camp to help develop the next generation of up-and-coming agricultural entrepreneurs.
- Develop relationships with established programs in the KC Animal Health Corridor to seek and support new technological advances and start-ups with entrepreneurial ideas.
- Develop enhanced economic incentive programs that are more encompassing to agricultural businesses.
- Leverage existing knowledge base to serve as mentors.

# AGRICULTURAL TECHNOLOGY & ENTREPRENEURSHIP INDUSTRY OUTCOMES



## **Growth Objective:**

*Establish Kansas as a premier state for start-ups in agricultural technology and entrepreneurship by fostering a business environment that supports new and expanding enterprises.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas agricultural technology and entrepreneurship industry:**

### **Phase 1 (Begin within two years)**

- Dynamic network between small and mid-sized technology companies, agricultural entrepreneurs, investors and mentors.
- State-sponsored economic development incentives which meet the needs of agricultural technology start-ups and entrepreneurs.
- Effective array of “soft” incentives (e.g. mentorships, internships and training on interaction with financiers) which are accessible to agricultural companies to ensure they have the information, workforce and financing they need to economically grow and thrive in Kansas communities.
- Program of study in agricultural technology and data management available at Kansas institutions that meet the needs of start-up companies.
- Investment forum to encourage networking of start-ups and potential investors.
- Start-up capital available to agricultural entrepreneurs through investor-funded programs or state programs such as JumpStart Kansas Entrepreneur.
- Increase in agricultural technology companies and other entrepreneurial efforts in the state of Kansas.

### **Phase 2 (Begin within 2-4 years)**

- Agricultural entrepreneurship internships, projects and mentorships in conjunction with Kansas high schools and colleges.
- Agricultural technology incubator network to support faster company timelines.

# ANIMAL HEALTH

## EXECUTIVE SUMMARY

Kansas is home to a large concentration of public and private entities in the animal health and nutrition sectors including research and production of therapeutics, diagnostics, biologics, and nutrition and feed products. Kansas sits within the KC Animal Health Corridor, a region which houses more than 300 animal health companies that account for 56 percent of total worldwide animal health, diagnostics and pet food sales. Several established research facilities and organizations can be found in northeast Kansas, including the Biosecurity Research Institute, and the decision to construct the National Bio and Agro-Defense Facility (NBAF) in Manhattan, Kan., is a significant advantage for the region. Livestock production in Kansas is the largest contributor to the agriculture industry, representing a wide breadth of farmers, ranchers and agribusinesses across the state, and requires substantial preparation and planning for potential animal health emergencies. The presence of strong agriculture educational resources and an expansive transportation network together create a sound foundation for animal health success in Kansas.

Identifying the barriers and challenges that exist in the animal health sector will be key to future growth in Kansas. Policy issues on the state and federal level will have a significant impact at all levels of animal health, from the use of antibiotics in food-producing animals to animal disease vaccines. Developing the high tech facilities and the workforce to expand research and development in animal health will continue to be a challenge, especially as the global issues of trade, population growth and emerging diseases stretch the resources of existing organizations. Amid these challenges, the industry also faces increased pressure from consumers which is often influenced by misleading information.

Although Kansas is well established as a leader within the KC Animal Health Corridor, continuing this growth will require collaborative efforts from private and public stakeholders to develop strategies to overcome these challenges facing the industry. Expanding educational opportunities and developing partnerships between animal health companies and research facilities will enhance growth of existing businesses as well as attract new enterprises. Finally, it will be critical to maintain communication with policy makers to ensure they remain focused on protecting animal health as well as public health and the global food supply while encouraging economic development within the animal health industry.



## STATUS

Kansas is not only among the nation's top states for raising livestock, it is also home to a large concentration of public and private entities in the animal health and nutrition sectors including research and production of therapeutics, diagnostics, biologics, and nutrition and feed products to support the industry. In fact, Kansas is located within the KC Animal Health Corridor, which is home to more than 300 animal health companies that account for 56 percent of total worldwide animal health, diagnostics and pet food sales. According to the Biotechnology Industry Organization (BIO), the Kansas bioscience industry employs more than 13,000 people across approximately 810 establishments, with a heavy concentration of agricultural feedstock and chemicals, and in research, testing and medical labs.

Kansas was also selected to be home for the National Bio and Agro-Defense Facility (NBAF), a state-of-the-art, biocontainment laboratory for the study of diseases that threaten both America's animal agricultural industry and public health. NBAF, which is being constructed adjacent to K-State's campus in Manhattan, will strengthen the nation's ability to conduct research, develop vaccines, diagnose emerging diseases and train veterinarians. The decision to locate NBAF in Kansas is further confirmation that Kansas not only has a strong foundation and presence in the current animal health and bioscience sectors, but that the state's prominence in this critical sector of animal and human health will continue into the future.

Though significantly smaller than the human health care market, animal health products are required to undergo similar testing and adhere to strict regulatory protocols. According to the Animal Health Institute, on average the world spends about one-fortieth of the amount on animal medicines as it devotes to human medicines. This investment covers the world's 24 billion chickens, more than 1 billion cattle and sheep, 750 million pigs and goats, 500 million dogs and 400 million cats. The construction of NBAF in Manhattan combined with the existing concentration of animal health entities in the Corridor and the proximity to research farms and livestock at K-State present an opportunity for Kansas to be a leader in the development of animal health products necessary to raise healthy livestock and protect the food supply in the United States and around the globe.

Unlike many sectors of the U.S. economy that experienced significant struggles in the past decade, the bioscience-based economy weathered the challenging economic times better than most industries. Though the prospects for continued growth in this sector remain strong, there are specific criteria necessary to sustain a growing animal health and bioscience industry. In addition to challenges related to reduced funding resources, according to a report by Battelle and BIO, there are also threats from international competition in this sector from both first-world and developing nations. The report highlights several factors which are critical in order for the U.S., and specific states within the U.S., to remain competitive:

1. Research funding,
2. Science-based regulatory systems,
3. Strong intellectual property protections,
4. Government trade actions that sustain and improve the openness of international markets for U.S. bioscience goods and services,
5. Federal and state tax policies and incentive systems that sustain industry competitiveness, and
6. Education and workforce development programs providing a skilled workforce.

# OPPORTUNITIES

In order to develop a strategic growth plan for the animal health 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
<p><b>Business Development</b></p>	<p>The state of Kansas offers a variety of incentive programs for qualified companies involved in bioscience in addition to the many local economic development programs throughout the state. These incentives, which may be subject to approval by the Kansas Department of Commerce, range from specific tax exemptions and credits to workforce assistance and more.</p>
<p><b>Critical Infrastructure</b></p>	<p>Whether by highway, rail or air, Kansas offers excellent transportation and marketing advantages. Kansas' strategic location, at the convergence of I-35 and I-70, places it at the crossroads of America. Our central location and excellent transportation network with access to interstate rail, trucking and air corridors put businesses within next-day freight service of 70 percent of the U.S.</p> <p><b>Highways</b> Kansas ranks sixth for quality and access to transportation, and third nationally in total road mileage with approximately 140,000 total road and street miles and over 10,000 highway miles.</p> <p><b>Rail Service</b> Kansas ranks in the top 10 in the United States in railroad mileage with almost 4,800 miles of track. The Kansas City area ranks as the second leading rail center in the nation.</p> <p><b>Air Service</b> Kansas City International Airport, the Wichita Eisenhower National Airport and the Manhattan Regional Airport are the largest airports serving the state, providing businesses with immediate access to major markets nationwide. KCI and Wichita contain state-of-the-art cargo handling facilities, with main-deck loaders capable of handling the world's largest freighter aircraft.</p> <p>Garden City Regional Airport offers service to Dallas/Fort Worth and Dodge City Regional Airport offers service to Denver. Salina Regional Airport offers service to Denver.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Education Resources</b></p>	<p>The College of Veterinary Medicine at Kansas State University is ranked among the nation's top veterinary medicine schools. In addition, the College of Agriculture's Department of Animal Science and Industry is one of the largest in the country. The department maintains research facilities for beef cattle, dairy cattle, swine, poultry, horses and sheep which are located in close proximity to campus. The department manages about 6,500 acres of land for research purposes. In a typical year, departmental research and teaching facilities accommodate about 2,000 to 3,000 cattle, 3,500 swine, 1,500 laying hens, 250 sheep and 45 horses.</p> <p>The University of Kansas offers degrees in bioscience-related fields. Fort Hays State University offers majors in animal science and pre-veterinary medicine. Wichita State University and Emporia State University offer a pre-veterinary medicine degree. In addition, 39 of the state's colleges, community colleges and technical schools offer degree or certificate programs in animal science, agriculture pre-veterinary medicine or a bioscience-related field.</p>
<p><b>Established Animal Health Industry</b></p>	<p>Kansas is located within the KC Animal Health Corridor, the world's largest concentration of animal health companies. The combination of private companies, veterinary schools and other animal health related fields of study, research facilities, technical training programs, and transportation capabilities make the Kansas City region an attractive location for animal health businesses — from initial start-ups to relocations or expansions.</p> <p>Significant to a thriving animal health sector is discovery of new technologies, including therapeutics, diagnostics, biologics, and nutrition and feed products, a process which requires funding for research and development and more. Since 2009, bioscience firms in Kansas have received \$110 million in venture capital investments, with the majority directed toward animal biotechnologies. The Kansas State University Institute for Commercialization is dedicated to the start-up and expansion of technology-based, high-growth enterprises and enabling the commercialization of university and under-utilized corporate intellectual property.</p> <p>Key communities and regions within the Corridor have also taken proactive steps to recruit and support animal health and high tech enterprises to the region. Knowledge Based Economic Development is an economic development partnership between K-State, Manhattan Area Chamber of Commerce, North Central Kansas Community Network, KSU Institute for Commercialization, KSU Foundation, KSU Research Foundation and the City of Manhattan that works to recruit and support knowledge-based companies, including animal health and bioscience companies, to the Manhattan region. In addition, the Bioscience &amp; Technology Business Center, a partnership of the City of Lawrence, Douglas County, Kansas Department of Commerce, University of Kansas and the Lawrence Chamber of Commerce, provides support to grow the bioscience and technology industries in northeastern Kansas.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Established Research Capabilities</b></p>	<p>After a three-year selection process, Kansas was selected among 29 applications and 34 potential sites around the United States to be home to NBAF, a biocontainment laboratory facility that will provide state-of-the-art infrastructure for developing vaccines, performing diagnostics, and developing countermeasures against large animal foreign animal diseases and zoonotic diseases. NBAF will include biosafety level-4 laboratory and will replace the aging Plum Island Animal Disease Center in New York. NBAF is expected to be operational by 2022 or 2023.</p> <p>In addition to NBAF, the Biosecurity Research Institute (BRI) is also located on K-State's campus. The BRI is a BSL-3, ABSL-3 and BSL3-Ag facility. It is also a biocontainment research and education facility that supports "comprehensive farm-to-fork infectious disease research programs that address threats to plant, animal and human health." The facility includes 113,000 square feet of lab, education and administrative space. As of spring 2016, the BRI is operating at full utilization with research capabilities for zoonotic diseases, animal-only pathogens and microbes involved in plant diseases.</p> <p>K-State is also home to the Beef Cattle Institute, the Center for Excellence for Emerging and Zoonotic Animal Diseases, the Center of Excellence for Vector-Borne Diseases, the Center for Epithelial Research, the Arthropod-Borne Animal Diseases Research Unit, the Center for Grain and Animal Health Research, the Center for Outcomes Research and Education, Epidemiology and Population Health, the Institute for Computational Comparative Medicine, the Midwest Institute for Comparative Stem Cell Biology, the Nanotechnology Innovation Center of Kansas State, and the U.S.–China Center for Animal Health.</p> <p>With approximately half of the animal health and bioscience companies in the KC Animal Health Corridor with locations in Kansas, there is also a strong private sector research presence. In addition, private research-based enterprises are located in Kansas that partner with animal health companies to conduct research projects and trials on specific animal health products.</p>
<p><b>Leader in Livestock Production</b></p>	<p>The beef cattle sector has been and continues to be the single largest sector in the Kansas agriculture industry, with cattle and calves generating \$7.75 billion in cash receipts in 2013, which account for more than 49 percent of Kansas agricultural cash receipts that year. Kansas has the third largest number of cattle on ranches and feedyards in the U.S., numbering 6.25 million on Jan. 1, 2016. Kansas is also home to 143,000 dairy cows on 325 dairy farms, 1.8 million head of pigs, and is ranked 12th nationally in sheep and lamb production and 13th in the United States in meat goat production. Kansas is also home to innovative and high value egg laying and poultry genetic companies.</p> <p>The state is also recognized for its strength in meat processing, ranking third nationally in red meat production with production capacity of more than 5 billion pounds annually. There is also a growing presence of dairy processing facilities throughout the state.</p>

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Policy Environment</b>	<p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the animal health industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, and will be supportive of efforts to expand the animal health sector.</p> <p>There also exists a strong commitment among state leaders to support and provide an environment that encourages growth in the animal health sector.</p>
<b>Qualified Workforce</b>	<p>The animal health industry is known for creating high-wage, family-sustaining jobs with average wages 80 percent greater than the overall private sector and growing at a faster rate. In 2012, the average annual bioscience wage was \$62,823, compared to \$41,822 as the average Kansas wage. These jobs often require college-level education and, potentially, specific training.</p> <p>In Kansas there are more than 13,000 individuals employed in 810 bioscience-related firms. Additionally, the percentage of Kansans who have a high school diploma or higher exceeds the national average, and 571,000 Kansans hold a bachelor's degree or higher.</p>

## SUCCESS STORIES

Due to the combination of a strong animal health presence in private industry, universities and other educational institutions and strong support from state government, the animal health industry in Kansas has experienced growth in recent years.

- The KC Animal Health Corridor is home to more than 300 animal health companies, representing the largest concentration in the world. Since 2006 when the Corridor was officially launched, 31 animal health companies have located in the Corridor. Companies with a business location within the Corridor represent 75 percent of the worldwide sales of animal health products and diagnostics, which represents just over \$19 billion.
- After a three-year site selection process, the U.S. Department of Homeland Security selected Manhattan, Kan., to be the home for NBAF, which will strengthen the nation's ability to conduct research, develop vaccines, diagnose emerging diseases and train veterinarians.
- Kansas has been and continues to be a recognized leader in preparing for animal health emergencies. The Kansas Department of Agriculture regularly exercises emergency response plans to help KDA and all partners better understand roles and responsibilities in a response, and to identify potential gaps in the plans.
- A significant number of well-respected public and private education and research centers are already located in northeast Kansas.
- Millions of dollars have been invested in Kansas by private animal health and bioscience companies that have chosen to locate or expand operations.

# CHALLENGES

Identifying challenges, ranging from policy-related barriers to consumer perception of animal health products and their uses, and developing solutions will be key to future growth in the animal health sector in Kansas.

Challenge	Details of Challenge
<p><b>Consumer Perception</b></p>	<p>The foundation of a safe food supply is healthy animals, but some individuals and organizations provide misleading information, and oftentimes non-science-based, regarding tools and technologies used to prevent and treat animal diseases. Terms like organic, natural, antibiotic-free and hormone-free are often used to imply food safety and quality claims that are scientifically unfounded and are misleading to consumers. This presents a tremendous challenge to the ability of farmers and ranchers to safely and judiciously use animal health products in their efforts to raise healthy animals.</p>
<p><b>Critical Infrastructure</b></p>	<p>There exists significant potential to grow the animal health industry in Kansas, especially around the construction of NBAF, but there is a need for more organized communication and coordination among industry, academia and government. Similarly, increased transparency about research at NBAF as well as private companies would contribute to improved animal health as a whole.</p> <p>As communication and coordination among partners in this sector develops, there will be significant need to address concerns related to intellectual property in the research and development of animal health products.</p> <p>In the past, according to a 2014 report by the Brookings Institute, some federal laboratories have been managed in a manner that does not fully integrate with the regional economy or capitalize fully on the potential to partner with private industry, especially small- and medium-sized enterprises, on research initiatives. It will be critical to work alongside the Department of Homeland Security and the U.S. Department of Agriculture in the development of strong partnerships with state government, private industry and universities to maximize potential of the lab.</p>
<p><b>Evolving and Emerging Diseases</b></p>	<p>Agriculture is a biological production system, and thus, inherently faces challenges related to the evolution and adaptation of organisms, including pathogens and diseases. Identifying, developing vaccinations against and protocols to address new and emerging diseases will continue to be a challenge for the animal health industry.</p> <p>According to the World Health Organization, about 75 percent of emerging diseases are zoonotic. Currently, there is not a laboratory in the United States that can research and work on zoonotic diseases, and also develop vaccines and countermeasures to those zoonotic diseases, which affect livestock.</p>

# CHALLENGES

Challenge	Details of Challenge
<p><b>Growing Global Population</b></p>	<p>As the global population climbs and is expected to surpass 10 billion within the next 50 years, farmers and ranchers will be faced with the challenge of producing food for nearly 3 billion additional people without using additional land. Further, as incomes increase and the global middle class grows, the demand for animal production will also increase.</p> <p>This presents an enormous challenge to the animal health industry as it will have to develop breeding and genetic improvement technologies, enhanced nutrition and feed products, and pharmaceuticals and vaccines to enable farmers and ranchers to increase production of safe, nutritious protein products.</p>
<p><b>International Trade</b></p>	<p>While there are significant opportunities to expand the animal health and bioscience sectors in Kansas and across the United States, there remains increasing competition from around the globe in the research, development and manufacturing of animal health products. In order to remain competitive, there needs to be a strong focus on adequate funding and support for research, a science-based regulatory system and strong protections for intellectual property, according to Battelle and BIO.</p>
<p><b>Policy</b></p>	<p>Antibiotics are an important tool to prevent, treat and control disease in animals. Multiple federal agencies, including the Centers for Disease Control and Prevention, Food and Drug Administration and USDA along with veterinarians, animal health companies and livestock producers, work together to ensure antibiotics, vaccines and other animal health tools are used safely and judiciously in order to protect human health. Despite efforts to ensure that animal antibiotics do not affect public health, there are some lawmakers who continue to call for increased scrutiny and regulation on the use of antibiotics in food-producing animals.</p> <p>The federal government has in recent years increased the regulatory environment surrounding the use of antibiotics and other animal health products in food producing animals. Most recently, the FDA has updated rules related to the use of certain antibiotics in food-producing animals, including amending its Veterinary Feed Directive (VFD) regulations to bring them in line with the other rule changes, bring all medically-important antibiotics used in feed and water from an over-the-counter status to VFD status.</p> <p>Funding for animal health and bioscience-related research will continue to be a challenge. Concern regarding the availability of vaccines for FMD and avian influence (AI) were raised during the NBAF summits with industry held in 2015 and 2016.</p> <p>In addition, the research and development of vaccination strategies and protocols for foreign animal diseases, including FMD, is and will continue to be a challenge for industry, government and academic partners to address.</p>

## CHALLENGES

Challenge	Details of Challenge
<b>Policy (cont'd)</b>	Elected officials and regulators will continue to have considerable influence over the ability to use animal health products, and there will continue to be challenges when politics and personal agendas are the basis for statutory or regulatory changes rather than sound science. Further there seems to be a lack of understanding of the role NBAF will have in the safety and security of animal health, human health and the global food supply.
<b>Workforce Development</b>	<p>Growth in the animal health industry will require a skilled workforce, which continues to be a significant challenge throughout the entire agricultural industry. Not only will growth in the animal health and bioscience sectors require a highly skilled and specialized workforce to meet high-tech positions in federal, university and private laboratories, but there will also be a significant need for workforce to maintain those labs, participate in and conduct research projects and more.</p> <p>In addition, a decline in the number of graduates from the K-State College of Veterinary Medicine with a focus on large animal medicine presents a challenge throughout the livestock industry.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the animal health industry.

Focus Area	Solution
<b>Business Development</b>	Work with key partners in the public and private sectors to ensure economic development programs applicable to the animal health sector meet the needs of potential new businesses. Coordinate with the KC Animal Health Corridor as well as local and regional economic development programs to promote Kansas as the knowledge base for animal health and bioscience. Develop a database of federal programs available to assist start-up companies such as the USDA Small Business Innovation Research fund.
<b>Industry Outreach</b>	The Kansas Department of Agriculture will work with key partners to create stakeholder lists, roles for each partner and priorities for the continued growth of the animal health sector in Kansas.

# OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Develop an organized effort to recruit animal health companies and animal health research facilities to Kansas.
- Develop partnership between animal health companies, livestock industry and K-State to coordinate on-farm research needs on university farms.
- Coordinate public-private partnerships between NBAF and animal health companies to develop vaccines and share research space to help raise healthy animals.
- Develop business incentives to help recruit animal health companies to Kansas, and specifically, to close proximity to NBAF, with a focus on economic development and global competitiveness.
- Kansas has the opportunity to become the global center for animal health research, education and training. With state-of-the-art federal and university labs and world-class educational offerings at the state's universities, there is a strong foundation for animal science and bioscience education. By further leveraging community college bioscience courses and training and technical schools laboratory technician trainings, there is a premier opportunity to develop a robust workforce necessary to meet the growing demands of a vibrant animal health and bioscience industry. Taking advantage of these opportunities will help develop an environment in which animal health and bioscience companies need to look no further than Kansas to develop their workforce.
- Establish a robust educational effort to ensure policymakers at the federal level and within neighboring states have a full understanding of the importance of NBAF to animal health, human health and the global food supply.

# ANIMAL HEALTH INDUSTRY OUTCOMES



## **Growth Objective:**

*Solidify Kansas as the global center for animal health research and development, academics and extension by enabling growth in private sector enterprises, encouraging enhanced partnership and collaboration between public and private partners, and enhancing educational opportunities to prepare animal health and production professionals to serve the Kansas livestock industry.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas animal health industry:**

### **Phase 1 (Begin within two years)**

- Voluntary, market- and industry-driven traceability system to provide critical tools to manage a disease outbreak and protect food safety, enhance consumer confidence and trust in Kansas livestock, protect food safety, and provide opportunities to access export markets.
- Sufficient supply of veterinarians with long-term interest in serving rural Kansas, and expanded Veterinary Training Program for Rural Kansas to incentivize more veterinary students to pursue careers in large or mixed-animal practices in rural areas throughout Kansas.
- A livestock industry that is prepared to respond to an animal disease event. The development and adoption of robust biosecurity plans are critical factors in emergency preparedness.
- State-sponsored economic development incentives which meet the needs of lab-based enterprises.
- Continued industry-led proactive social and traditional media outreach with consumers, influencers and media about how animals are raised and the technologies utilized to treat, prevent and control animal health issues.
- A federal regulatory approval process for animal health products that encourages innovation and is not overly burdensome and unnecessarily lengthy in time.
- Strong public-private partnerships to recruit to Kansas animal health enterprises that will complement and enhance the research being conducted at NBAF.
- Outreach with animal health companies that don't currently have a presence in the United States about opportunities to relocate or expand to do business in close proximity to NBAF.
- Collaborative and coordinated economic development plan surrounding NBAF. The State will continue to provide a presence on the NBAF Economic Strategies Task Force and help lead the strategic focus on making NBAF an economic development attraction asset.

# ANIMAL HEALTH INDUSTRY OUTCOMES

## **Phase 2 (Begin within 2-4 years)**

- Expanded or enhanced educational training opportunities in the veterinary and/or animal health fields at community colleges and technical schools in Kansas.
- Expanded degree or certificate options to serve the animal health sector, including, but not limited to, different levels of degrees to provide veterinary health services (similar to human medical providers like nurse practitioners), advanced degrees in animal health economics, and more.
- Enhanced networking, educational and development events related to NBAF.
- Enhanced industry and public engagement related to NBAF as construction of the facility advances.

# BEEF

## EXECUTIVE SUMMARY

The beef cattle sector has been and continues to be the single largest sector in the Kansas agriculture industry, and is recognized nationally and globally for raising healthy cattle and producing high quality beef. Kansas has the third largest number of cattle on ranches and feedyards and has a significant role in the nation's beef processing as well. Resources to support beef cattle are plentiful in Kansas, from the strong feed supply to the abundant pastureland to the efforts to conserve the water supply. The beef industry in Kansas includes leaders at all levels of the production chain, as well as in research, health, marketing and advocacy, and agriculture-related education is a source of strength in the state. The value of the beef cattle industry is well respected on a state and national level which has led to strong support from state and federal policy makers and agriculture agencies.

In addition to concerns of weather and fluctuating prices, challenges facing the beef cattle industry threaten to prevent its continued success. A number of local, state and federal policies have the potential to directly affect the beef industry, from transportation regulations and water use to environmental regulations and international trade opportunities. Fluctuating land prices and changes in land use, caused in part by an increase in the number of absentee landlords removing land from production, and generational transfer add to the challenges the industry must continue to address. The workforce required to maintain successful beef operations involves issues of education and immigration which adds complexity to operation management, especially as the industry continues to become more competitive.

As we look to the future and as the beef industry adapts to meet ever-changing consumer demands, we must identify goals for strategic growth based on competitive advantages of raising cattle and processing beef in Kansas. Coordination between public and private leaders within the industry will direct efforts toward navigating the barriers which could prevent growth. A focus on workforce education, industry communication and policy development will assist in identifying opportunities to expand or grow the Kansas beef cattle sector in the future. Collaboration among key partners will be key to developing a long-term growth strategy for the Kansas beef cattle industry, a strategy that not only builds upon earned brand equity and the tradition of this industry, but that encourages growth and future prosperity for the Kansas beef cattle community.



## STATUS

The beef cattle sector has been and continues to be the single largest sector in the Kansas agriculture industry, with cattle and calves generating \$8.97 billion in cash receipts in 2014, which accounted for more than 54 percent of Kansas agricultural cash receipts that year. Not only does Kansas have the third largest number of cattle on ranches and feedyards (accounting for more than 19 percent of fed cattle in the United States), at 6.25 million on Jan. 1, 2016, the state also has a significant footprint in the cattle processing sector. In 2014, Kansas produced nearly 5.075 billion pounds of red meat, or 10.7 percent of the nation's total.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, beef cattle farming and ranching has a direct output of approximately \$8.2 billion and a total economic contribution of more than \$15.2 billion and supports a total of 74,117.5 jobs. In addition, animal slaughtering and meat processed from carcasses, except poultry, has a direct output of approximately \$10.2 billion, a total economic contribution of almost \$20.9 billion and supports a total of 74,437.6 jobs.

The beef industry is also recognized nationally and globally for raising healthy cattle and producing the beef which consumers demand. In 2014, Kansas exported nearly \$788 million in beef products globally. As the global middle class continues to grow, it is expected that global demand for protein will also increase, adding more value to cattle raised in Kansas. Through May 2016, the U.S. Meat Export Federation estimates that exports have added nearly \$250 per head in value.

The success of the Kansas beef cattle industry has not come without significant challenges, though. Drought and record-high feed prices in recent years, record-low herd numbers, volatile markets, an increasingly burdensome federal regulatory environment, and a growing number of anti-agriculture and anti-meat activists spreading false information regarding cattle production practices and beef nutrition have made it difficult for the entire beef cattle community.

## OPPORTUNITIES

In order to develop a strategic growth plan for the beef cattle community, 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
<b>Biosecurity</b>	The Kansas beef industry has been aggressive and progressive in advancing biosecurity and foreign animal disease preparedness. In addition to participation in state-level foreign animal disease exercises, the feedyard operators throughout the state are working with KDA to update or develop biosecurity plans. It should be noted that many feedyards have existing biosecurity plans.
<b>Education</b>	The Kansas State University Department of Animal Science and Industry is recognized throughout the cattle industry as one of the premier animal science programs in the nation and a prime spot not only for cutting-edge education and a tremendous provider of qualified employees but also as a hub for cutting-edge research. As the Kansas beef industry looks to the future, the role of K-State as the knowledge base for the industry will be critical.

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Global Consumer Demand</b></p>	<p>In 2014, exports of beef and veal products from Kansas were nearly \$788 million and exports of hides and skulls was nearly \$261 million, according to the U.S. Department of Agriculture. Beef produced from cattle raised, fed and processed in Kansas will be critical in meeting the rapidly growing demand from the growing global middle class.</p>
<p><b>Human Capital</b></p>	<p>Kansas is not only one of the top beef producing states in the United States, it is also home to world renowned leaders throughout each step in the production chain. Industry consultants, research leaders at K-State (College of Veterinary Medicine, Animal Science and Industry, the Beef Cattle Institute), Fort Hays State University and throughout private industry, including companies located within the KC Animal Health Corridor, and cattlemen and women who are serving in leadership roles in industry associations, there is a wealth of knowledge driving the continual improvement in the beef cattle industry.</p> <p>As the industry works to improve production capabilities — resource management and utilization, reproduction and genetic improvements and technologies, feed efficiency, cattle health management, animal husbandry, economics and marketing, and more — it will be critical to work alongside these well-recognized industry leaders.</p> <p>Today’s consumers are increasingly interested in knowing how and where their food is grown, raised and processed. Throughout each chain of the beef industry, private operations have opened their doors to welcome consumers and influencers for learning opportunities. In addition, established programs, like the Beef Checkoff Program’s Masters of Beef Advocacy, have provided training opportunities to equip farmers and ranchers with public speaking training and coordinated messaging to help “tell our story.” These initiatives together have helped the Kansas beef industry become a recognized and trusted source of high-integrity, wholesome producers of high-quality beef products, and they will be increasingly important as domestic and international consumers continue to seek more information about their food choices.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Policy Environment</b></p>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations; sales tax exemption on the construction, reconstruction, and remodeling of livestock facilities for projects greater than \$50,000; sales tax exemption for farm machinery and equipment and various ag-based inputs; and reinstatement of the ability to offset capital gains from the sale of breeding livestock with schedule C, E and F ordinary income losses. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>Also at the state level, KDA works closely with the beef cattle community to eliminate unnecessary and outdated regulations, and on the development of commonsense solutions to policy challenges in Kansas. Through the KDA Animal Health Board and key partnerships throughout the industry, KDA regularly meets with and seeks input on policy-related issues to ensure industry concerns are heard and included in policy decisions.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the beef cattle industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, including a national traceability system, international trade, marketing regulations, federal taxes, antibiotic use, transportation rules, human nutrition, natural resources and more.</p>
<p><b>Supporting Institutional Infrastructure</b></p>	<p>Kansas has a solid foundation throughout the entire beef production community. With cow-calf production and stocker operations, a robust feeding sector, and a strong beef processing presence, Kansas has a well-established beef production network that results in efficiency benefits to all steps in the production chain.</p> <p>Kansas feedyards are able to recruit feeder cattle from all four directions, including Canadian and Mexican feeder calves, as well as yearlings from the Rocky Mountains and calves from the southeast United States. As of Jan. 1, 2016, Kansas has 2.23 million cattle on feed.</p> <p>As one of the top grain producing states (including corn, beans, milo, wheat and barley), the Kansas beef cattle industry benefits from having a readily available supply of feed. There are also abundant supplies of roughages, including silage, alfalfa and other hays. In order to sustain and grow the cattle industry, especially the cattle feeding sector, maintaining the abundant feed supply is critical.</p> <p>Kansas is also among the top states for beef processing, with three of the four major beef processors operating in Kansas.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Supporting Institutional Infrastructure (cont'd)</b>	<p>Kansas is recognized as one of the best exercised states in foreign animal disease. The construction of the National Bio and Agro-Defense Facility and the existing Biosecurity Research Institute enhance the research capabilities for animal health and biosecurity for the state, U.S. and global beef cattle community.</p> <p>Kansas also has a large presence of agribusinesses that directly support beef cattle production, including equipment manufacturers and equipment service providers, livestock feed manufacturers, livestock trailer manufacturers and semen/genetic companies.</p>
<b>Verification/Certification Programs and Quality Assurance</b>	<p>Beef producers have shown a strong willingness to participate in voluntary certification or verification programs, including the Beef Quality Assurance program, Age and Source Verification, and multiple third-party programs. In addition to providing education and training on animal handling, management and production practices, some of these programs can result in earning a premium at the marketplace.</p> <p>In Kansas, more than 90 percent of the fed cattle in the state are handled by BQA certified handlers.</p> <p>As Kansas beef producers increase herd size as is expected in the coming years, there may be opportunities to add value to cattle raised in Kansas through increased participation in certification/verification programs to meet specific consumer demands as well as packer and retailer demand for specific traits and qualities.</p>
<b>Weather and Natural Resources</b>	<p>The semi-arid climate in Kansas is suitable for cattle production year-round.</p> <p>Not all land in Kansas is suitable for growing crops, but cattle are able to graze on grasses and plants growing on the 15.5 million acres of pastureland throughout the state and convert these resources, which would otherwise likely be unused, into high quality protein for human consumption.</p> <p>Raising cattle not only allows Kansas farmers and ranchers to maximize production on land not conducive for farming, it is a higher value product compared to farming.</p> <p>Kansas is also taking significant proactive steps to preserve and extend the usable life of water supplies in Kansas. In recent years, voluntary, flexible and producer-driven water conservation tools have been implemented to help farmers and ranchers manage their water rights while continuing to raise crops or livestock. Additionally, Kansas has developed a <i>Vision for the Future of Water Supply in Kansas</i> with goals and specific action items to help ensure a reliable water supply while continuing to grow the economy.</p>

## SUCCESS STORIES

The beef cattle community in Kansas continuously works to improve production practices and efficiencies to raise healthy cattle and meet consumer demands. In recent years, the Kansas beef cattle industry has taken the following steps to improve or enhance the industry:

- Kansas is among the top three states in the nation in the number of cattle in feedyards and on ranches and in red meat production.
- More than 90 percent of fed cattle in Kansas are handled by Beef Quality Assurance certified handlers.
- Kansas cattlemen have and continue to be elected by peers to serve in leadership roles within national organizations, including the president of the National Cattlemen's Beef Association.
- As Governor Sam Brownback has led efforts to extend and conserve the usable life of the Ogallala Aquifer, Kansas feedyards continue to step up to explore opportunities with voluntary, producer-driven conservation tools.
- Changes in the tax code (see above) in 2014, including the Livestock Facility Sales Tax Exemption, make it easier for industry to utilize.
- Exports add nearly \$250 per head in value through May 2016.
- In partnership with K-State Research and Extension, KDA jointly leads the Sunflower Supreme Heifer Program to provide southeast Kansas cattlemen with reproductive and genetic improvement tools to enhance the quality of their cattle.
- Over the past five years, KDA, in coordination with industry and academic partners, has worked to improve emergency preparedness efforts throughout the state in order to be the best prepared state in the nation when it comes to foreign animal disease preparedness.

## CHALLENGES

Just as the beef cattle industry has endured challenges from weather, economic fluctuations and consumer perception in recent years, the threat of additional barriers to growth will continue to exist. Identifying those challenges and developing proactive solutions will be key to future growth.

Challenge	Details of Challenge
<p><b>Access to Capital</b></p>	<p>Growth and expansion in the beef industry can often require large amounts of financial capital. Finding enough financial institutions with the ability to competitively lend at the levels necessary for some beef operations to grow in Kansas is a challenge and barrier to growth.</p>
<p><b>Critical Infrastructure</b></p>	<p>As beef packers and processes identify when and where to grow their presence, a key factor they will consider are utility rates. There are challenges with competitive utility rates in Kansas that have resulted in burdensome and unnecessarily high utility rates.</p> <p>One of the key comparative advantages the Kansas beef industry has benefited from for generations is access to land for grazing and feeding cattle. With high land prices in recent years and an increase of urban and suburban absentee landlords, it is becoming an increasing challenge to find land necessary for cow-calf and stocker operations to expand in the future.</p> <p>Unlike other sectors of agriculture, the beef industry relies solely on trucks and the highway system to transport live animals and beef products. With the utmost focus on safely and efficiently transporting products, it can be a challenge for larger trucks and vehicles on smaller two-lane highways, especially in western Kansas.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Critical Infrastructure (cont'd)</b>	<p>While Kansas is home to several major beef packing facilities, there has also been a decrease in the number of local processing facilities, mostly in rural communities. Without a nearby processing plant, cattlemen are forced to drive longer distances in order to process smaller groups of animals.</p>
<b>Generation Transfer</b>	<p>As the current generation of primary owners and operators approach retirement age, identifying the next generation of management can be a challenge when a son or daughter, or other family member, is not interested or able to take over an operation that may have been built for multiple generations. Beyond identifying the actual next generation of management, challenges related to capital requirements in agriculture can also be a barrier when it comes time to transition a beef cattle operation from one generation of ownership to the next.</p>
<b>Industry Capacity and Competition</b>	<p>Historically and even still today, Kansas, Nebraska and Texas have been the top three beef producing states nationwide. In recent years, there has been more growth in areas more closely located to ample feed supplies, including Nebraska, South Dakota and Iowa. Industry growth and expansion in other states may present a challenge for growth in Kansas.</p> <p>With more than 6 million cattle and calves in feedyards and ranches throughout Kansas and more than 5 billion pounds of beef coming from packing plants in the state, it will be important for each segment of the industry to determine if it is at the maximum capacity.</p>
<b>Industry Fragmentation</b>	<p>Unlike the vertically integrated pork and poultry industries, the U.S. beef industry remains composed of multiple independent segments working together to comprise the beef production chain. This independent organization of the industry can be a challenge when producers within the sectors fail to recognize the importance of working cooperatively with each segment up and down the production chain.</p>
<b>Industry Opponents</b>	<p>The growing number and power of anti-animal agriculture and anti-meat activists will continue to challenge consumer perception of beef production practices, beef nutrition and beef safety.</p>
<b>International Trade</b>	<p>A key area for growth will result from increasing global demand for beef. Kansas has the opportunity to not only increase exports of beef but also of live cattle to countries wanting to expand their own domestic herds. Delays in passage and implementation of the Trans-Pacific Partnership cost the beef industry significantly in terms of tariff reduction potential, especially with Japan, and elimination of non-tariff trade barriers included within the agreement.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Market Volatility</b>	<p>Extreme market volatility in the beef marketplace continues to be a challenge for all segments of the beef industry.</p>
<b>Policy</b>	<p>Kansas is one of fewer than ten states in the nation that has laws restricting corporations from engaging in farming and ranching. The Kansas law has been amended throughout the past to provide 18 specific exemptions from the law, but the law still restricts who can do business in Kansas. This unfair restriction has resulted in potential agricultural operations choosing to relocate, grow or expand in states other than Kansas.</p> <p>The beef industry relies solely on trucks and the highway system to transport live animals and beef products. Federal regulations can make it challenging to transport live animals or beef products in a manner that is safe for drivers and animals alike.</p> <p>Burning the Flint Hills is a critical range management tool to improve prairie grass production and prevent intrusion from weeds and woody plants. In fact, recent research by K-State suggests many land managers in the Flint Hills need to increase burning frequency to more than once every three years in order to prevent the landscape from being taken over by invasive plant species. Kansas has worked with industry stakeholders, local government and environmental partners to develop and implement the Flint Hills Smoke Management Plan to address concerns raised by downwind communities regarding air quality during the annual burning season. Despite this plan, there is concern that the federal government may propose regulations that may result in challenges to the ability of Flint Hills ranchers to burn rangeland.</p> <p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: dietary guidelines, the Trans-Pacific Partnership, the Endangered Species Act, environmental rules and regulations related to air and water quality, and more.</p> <p>Kansas is fortunate to have a federal congressional delegation that is highly supportive of agriculture and the beef industry. Beyond Kansas' two senators and four representatives, there are an increasing number of federal lawmakers who have no understanding of agriculture, and this is becoming a challenge at the state level as well.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Talent Development and Quality of Life</b>	<p>Growth in the beef cattle industry, particularly in cattle feeding or cattle processing, will require a skilled workforce, which continues to be a significant challenge through the entire agricultural industry. In addition, a decline in the number of graduates from the K-State College of Veterinary Medicine with a focus on large animal medicine presents a challenge throughout the production community.</p> <p>Beyond needs for specific job training and talent development, ensuring a long-term ability to recruit and sustain a high quality workforce will require the state to consider issues surrounding quality of life in rural communities, including topics related to having a robust economy of support businesses necessary for the agricultural industry, strong schools, access to health care services, affordable and quality housing, and more. Increasing local property tax rates also present challenges throughout the beef industry and rural communities.</p> <p>At the federal level, challenges as a result of the nation's immigration system can be difficult for the beef industry, which relies on a year-round, steady supply of migrant employees, especially in the cattle feeding and beef processing sectors.</p>
<b>Traceability</b>	<p>The lack of traceability system inhibits export growth potential and could potentially create animal health threats.</p>
<b>Water and Natural Resources</b>	<p>Critical to growing any livestock operation is access to an abundant and reliable water supply. This can prove challenging in many areas of western Kansas that are closed to new water appropriations. New or expanding beef operations in these regions will have to purchase land with sufficient water rights.</p> <p>Also related to water are challenges with consumptive use laws that can be costly and burdensome to convert from irrigation to stock water use. Further, the amount of time it can take for approval of certain Kansas Department of Health and Environment permits delays beef industry operations from expanding in a timely manner.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the Kansas beef cattle industry.

Focus Area	Solution
<b>Industry Outreach</b>	<p>KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.</p> <p>KDA plans to attend the 2017 Cattle Industry Convention and NCBA Trade Show.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Smoke Management</b>	KDA is working with KDHE, Kansas Livestock Association and Kansas Farm Bureau to address potential policy challenges related to smoke management in the Flint Hills.
<b>Water</b>	Continue implementation of the action items identified in the Kansas Water Vision, including continued outreach related to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas.
<b>Workforce</b>	Recognizing the need for a skilled workforce in Kansas, the Kansas Department of Commerce and the Kansas Board of Regents have developed Workforce AID (Aligned with Industry Demand) to help Kansas business compete in a robust economy. The feeding sector in Kansas has a need for bilingual employees, and Workforce AID may be an avenue to help feedyards provide critical job training for their employees.

## OPPORTUNITIES TO EXPAND PRESENCE

Based on the current industry and previously discussed comparative advantages, below is a list of potential opportunities to expand or grow the footprint of the Kansas beef cattle sector:

- Increase head numbers, value and processing in next 5 years.
- As beef producers increase herd numbers, as is expected over the next five years, work with industry to provide education and tools necessary to add value and improve quality of animals at the same time.
- Coordinate with K-State and the Kansas Board of Veterinary Examiners to improve communication and linkage between practitioners and producers throughout all areas of Kansas.
- Expand Sunflower Supreme statewide.
- Explore opportunities to improve byproduct utilization to add more value to cattle and beef before products leave the state (inedible and edible).
- Increase opportunities for small-scale/local beef marketing.
- Partner with industry to enhance consumer education efforts related to beef production practices, beef nutrition and beef safety in order to grow consumer trust in beef and beef production.
- Work through increased research related to feed intake and feed efficiency and coordinated efforts with grain producers and feed manufacturers to establish Kansas as the location with the lowest cost of gain for finishing cattle.
- Become home to the largest percentage of breed associations.
- Within each segment of the industry, maximize value-added opportunities by use of best management practices, marketing and more.
- Expand opportunities for niche and/or local marketing of beef from Kansas ranches.
- Explore opportunities for coordinated research with sorghum to consider livestock use, including economics of feeding and forage, palatability and more.

# BEEF INDUSTRY OUTCOMES



## **Growth Objective:**

*Execute a long-term strategy for growth in the beef cattle industry that not only builds upon its strengths but that also encourages innovation, collaboration and trust throughout the production chain and with consumers.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas beef industry:**

### **Phase 1 (Begin within two years)**

- Voluntary, market- and industry-driven traceability system to provide critical tools to manage a disease outbreak, enhance consumer confidence and trust in Kansas livestock, protect food safety, and provide opportunities to access export markets.
- Cooperation and information sharing among the different sectors in the beef production community that creates opportunity to foster trust, speak with one voice and add value throughout the production chain.
- Consumptive use regulations using simple, science-based methodology when converting from irrigation to stock watering.
- Industry-led assessment of current fed cattle marketing and risk management methods that will explore alternative and innovative tools to improve the effectiveness of the tools and maintain the ability of producers to market cattle as they see fit.
- Freedom for all business structures to do business in Kansas. Current corporate farming laws limit certain ownership structures from operating in Kansas which curtails investment and limits growth and modernization.
- Science-based environmental management and range management tools, especially for prescribed burning in the Flint Hills, which are accessible to producers.
- Kansas established as a top choice for high-quality cattle for export opportunities, especially as countries around the world work to rebuild domestic cattle herds after drought and other losses.
- Continued industry-led proactive social and traditional media outreach about the beef production chain, beef safety, quality and nutrition to encourage trust from consumers, influencers and media and a better understanding of the industry.
- A competitive and competent workforce to meet the diverse and technical needs of the beef industry in Kansas. Talent development and educational training opportunities for students preparing for careers in the beef industry.
- State-sponsored economic development incentives which meet the needs of value-added enterprises.
- Competitive utility rates in Kansas that do not create a competitive disadvantage with other states and allows Kansas to maintain existing enterprises and grow industry in the future.
- Federal immigration reform with a focus on long-term visas for agricultural workers, and a potential immigration pilot program in Kansas.

# BEEF INDUSTRY OUTCOMES

## **Phase 1 (Begin within two years)**

- Simplified permitting requirements for farm vehicles, and transportation regulations that provide flexibility to requirements for commercial driver's licenses (CDLs) to ensure that live cattle and beef products are able to move safely and efficiently throughout the production system.
- State tax policies focused on the reduction of burdens on agricultural entities.
- Partnerships to place military veterans in positions of employment on cow-calf and stocker operations.
- Rural broadband access throughout Kansas.
- Branded Kansas beef program through the From the Land of Kansas program to provide value-added, niche marketing opportunities for Kansas beef products and information to navigate the local food marketing infrastructure in Kansas.
- Farm transition planning resources for farmers and ranchers to utilize during preparations for intergenerational transfer or alternative forms of succession planning.
- Expanded Sunflower Supreme Replacement Heifer program designed to help add value to the Kansas beef industry by providing producers who want to improve their management techniques and marketability of heifers with research-based best management protocols.

## **Phase 2 (Begin within 2-4 years)**

- Expanded value-added beef processing in Kansas and concentrated recruitment in that sector of the industry.
- Educational programs related to beef nutrition for pre-health, pre-medicine, nutrition and other human health related fields of study at Regents schools.
- Housing development programs to address housing shortages in areas with concentrated beef processing and feeding sectors.
- Research and innovation at the retail level in an effort to capitalize on consumer interest in beef products.

# CORN

## EXECUTIVE SUMMARY

The Kansas corn industry fills a significant role in the agriculture economy, and corn is the largest crop grown in Kansas, both in bushels produced and in economic contribution. The corn sector supplies grain and silage to the cattle sector as well as supplying feedstock for ethanol and, thus, ethanol byproducts. Substantial resources have been invested in corn research to increase yield and efficiency of production, including in the areas of seed genetics, irrigation technology and data management. As a major livestock producer, Kansas is a major customer for corn as a feed source, especially within the beef production chain. Continued advancement in bioscience is creating more potential for corn to contribute to additional products and bring additional manufacturing options to the state.

A number of challenges face the corn industry and present potential barriers to future growth within this sector. A number of policies, both local and federal, are threatening the financial stability of corn farmers and prevent expansion. Expanding the export market will be dependent on improved transportation infrastructure. Concerns among consumers both domestic and internationally question the role of genetic technology in corn production and in fuel use, as well as nutritional issues. Ever-depleting groundwater sources for irrigation continues to be a threat to farmers, particularly in certain regions of the state.

A long-term growth strategy for the corn sector will require input and collaboration among many key partners, both public and private. Continuing development of policies and technologies to maximize water use will play a major role in future success. A strong relationship with the ethanol industry will be key in encouraging increased production of ethanol, thus increased demand for corn. Potential exists to develop new business markets within the state that would involve research, processing or manufacturing corn and corn products. A strategic growth plan for Kansas corn developed in collaboration among stakeholders could make a significant impact on the corn industry.

## STATUS

The corn sector of the Kansas agriculture economy includes the production of corn and the first purchaser uses of that corn such as livestock feeders, ethanol plants and exporters. Kansas corn production was 566 million bushels in 2014 that contributed to a total economic output for the corn sector of \$3.71 billion and 13,000 jobs. The corn sector of the Kansas agriculture economy is built on supplying grain and silage to the cattle feeding sector as well as serving as feedstock for Kansas ethanol plants, and 95.5 million bushels were exported from Kansas in 2014. Kansas ranks 9th in corn production in the nation and has been as high as 6th depending on the growing season. Corn is the leading crop in Kansas in terms of bushels produced and economic contribution. The ethanol industry, a primary supporter of the corn industry in Kansas, provides an added 1,889 in total jobs, as well as a total economic contribution of over \$1.0 billion.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the corn industry in Kansas has a total direct output of over \$2.1 billion and creates 3,876 jobs in the state. Through indirect and induced impacts, the industry supports a total of 13,000 jobs and provides a total economic contribution of nearly \$3.7 billion. The ethanol industry, a primary supporter of the corn industry in Kansas, provides an added 1,889 in total jobs, as well as a total economic contribution of over \$1.0 billion.

Not every part of Kansas is well suited to the production of corn but trait technologies are quickly increasing the number of acres that are suitable. One of the key geographic challenges is the amount of rainfall received so in many areas irrigation is used for corn production. Irrigation is a critical component to allowing the quantity of corn production the Kansas economy demands particularly in the areas of high feed demand. In regions of the state over the Ogallala Aquifer water availability for irrigation has declined or disappeared, making corn production more difficult and indicating future challenges as water supply becomes increasingly depleted.

There is increasing public concern about the use of genetic technology in corn production, and debate exists about whether that corn is suitable for use in food both in the United States and around the world. Another debate centers on whether corn should be used for fuel, ethanol in particular, as opposed to food and feed. This debate intensifies in times of high corn prices such as those seen in recent years, although close study reveals that ethanol DDGS continue to provide a viable feed source after ethanol production. Farmers, seed companies and exporters are challenged by worldwide differences in the regulatory acceptance of new corn genetics.

Continual improvements in irrigation technology will work hand-in-hand with improved genetics to allow corn to be grown in those parts of Kansas where only limited irrigation is available as well as those parts where water right holders want to stretch the usable lifetimes of their wells. Continued incremental improvements in other areas of the production system such as soil health, management to weather, incorporating big data into farm management, access to useful crop insurance, and targeted pesticide use and application technologies all will help push up production.

As production continues to increase, more demand will be needed. Traditional outlets for corn including livestock, ethanol and exports are critical and need ongoing attention and effort to sustain and increase demand. Exports can be increased through expanded trade promotion authority and access to more markets around the world. Further, increased efficiency in the regulatory approval of genetically engineered corn globally would allow new technology to come into play sooner in Kansas so that corn produced from that technology could be shipped around the world. Opportunities for corn exist in emerging technologies as well, such as renewable-based chemical production.

# OPPORTUNITIES

In order to develop a strategic growth plan for the corn 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
<b>Alternative Uses and Bioscience Business Development</b>	<p>Corn is used in the production of a wide variety of products from those that are very familiar such as livestock feed, ethanol, high fructose corn syrup and food products such as corn flakes and tortilla chips to less known products like resins, plastics and pharmaceuticals. With continued advancements in bioscience, corn has the potential to contribute to even more products and Kansas can be home to the next major efforts in manufacturing operations and cutting-edge product developments.</p> <p>The state of Kansas offers a variety of incentive programs for qualified companies involved in many local economic development programs throughout the state. These incentives, which may be subject to approval by the Kansas Department of Commerce, range from specific tax exemptions and credits, workforce assistance, and more.</p>
<b>Big Data Use</b>	<p>As more and more data becomes available related to cropping systems there are more opportunities to use the data to improve profit margins for corn, thereby increasing its economic impact and the number of farmers interested in producing corn.</p>
<b>Ethanol</b>	<p>Expansion of ethanol capacity will create additional demand for Kansas corn in addition to the economic impact in rural Kansas of more capital investment and job creation.</p> <p>Making sure corn ethanol is strongly included in the Renewable Fuel Standard and initiatives such as Prime the Pump and the U.S. Department of Agriculture's biofuel availability grant will build demand for ethanol by increasing consumer access to E15 and E85.</p>
<b>Export Infrastructure</b>	<p>Maintaining and improving export infrastructure will help ensure demand for Kansas corn around the world. Rail loading facilities for both grain and ethanol are important in addition to maintaining good roads and waterway access.</p>
<b>Genetic Advancements</b>	<p>Many seed corn companies already have drought-tolerant product offerings that can be expanded upon to offer genetic traits to make corn more suitable to the arid climate of central and western Kansas without significant yield loss. This would increase the number of acres on which corn can be produced.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Genetic Advancements (cont'd)</b>	<p>The amount of resources invested in corn research is extraordinary and has led to great advancements in corn yield. Continuing to push yields up and expanding the growing conditions in which those increased yields can be achieved is a big opportunity for the sector. Specializing corn genes and hybrids for end uses would allow greater efficiency for end users and potentially increase demand for corn. For example, certain varieties are better suited to silage production than others. Would the market support varieties suited for specific livestock such as beef, swine or poultry? Could specific varieties increase yield in ethanol plants?</p>
<b>Irrigation Technology</b>	<p>Some of the highest corn yields in Kansas are achieved under irrigation. As available groundwater for irrigation is reduced it is important to find ways of achieving the same economic return with less water. Being more efficient with irrigation system in terms of water use will help reduce water use and potentially pumping costs while maintaining good yields.</p>
<b>Land Availability</b>	<p>Kansas has the second most farm land of any state, roughly 90 percent devoted to agriculture.</p>
<b>Leadership</b>	<p>Kansas is home to strong leadership in the corn sector, creating additional investment opportunities.</p>
<b>Livestock Feeding</b>	<p>Kansas is a top 3 state in cattle production and top 10 in hogs. The livestock feeding sector is a major customer for corn producers. Expanding the number of livestock being fed in Kansas will increase demand for Kansas corn. Use of DDGS in livestock and pet feeds is a resource for value-added product.</p> <p>With the Kansas desire to continue to grow the livestock sector there will be opportunities to tailor feed to animals such that they can grow most efficiently in Kansas. This not only drives up overall demand for corn in Kansas but will lead to potential niche market opportunities with specific corn varieties for specific feed rations.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Policy Environment</b>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations and a sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>The Kansas agriculture community is active in discussions with state transportation officials about the possibility of increased truck weights allowing for more efficient movement of agriculture products.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the corn industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, transportation rules, energy policy, natural resources and more.</p> <p>Support for policies removing barriers for ethanol competition with petroleum and higher inclusion of ethanol in regular gasoline blends is a priority.</p>
<b>Supporting Institutional Infrastructure</b>	<p>Kansas has a solid foundation throughout the entire corn production community. With cow-calf production and stocker operations throughout eastern and central Kansas and a robust feeding sector throughout central and western Kansas, and a strong beef processing presence, Kansas has a well-established beef production network that results in efficiency benefits to all steps in the production chain and strong demand for corn. Hogs provide a smaller but important level of demand and the growing poultry industry will provide more demand.</p> <p>There are 12 dry mill ethanol plants currently in operation in Kansas, creating a market for approximately 183 million bushels of corn and sorghum.</p> <p>Kansas is also home to more than 1 billion bushels of commercial grain storage capacity to accommodate the Kansas corn crop.</p>

# SUCCESS STORIES

Key successes in the industry include:

- An irrigation efficiency study that looks at combining the principles of center pivot irrigation with drip irrigation to reduce the amount of irrigation water required with a typical center pivot system.
- A biofuels infrastructure grant to Kansas for \$1.3 million that is being used to improve consumer access to E15 by partnering with gas stations across the state to install pumps that can supply E15.
- The intermodal facility is taking advantage of the significantly reduced freight cost of shipping containers returning to China and other Asian markets by shipping distiller's grains from Kansas into those markets in containers.
- Innovation to produce diesel from corn oil.
- Changes in the tax code (see above) in 2014.

# CHALLENGES

Although corn has been a strong sector within the Kansas agriculture industry, the following challenges may serve as barriers to achieving growth in the corn sector.

Challenge	Details of Challenge
<b>Critical Infrastructure</b>	<p>Port access is critical and because Kansas doesn't have a port, having the transportation infrastructure necessary to move corn to the port is critical as well. Ports such as the Port of Catoosa in Oklahoma where Kansas corn is loaded on barges need to be maintained such that shipping capacity isn't delayed or reduced due to aging infrastructure. The same applies to ports on the coasts where Kansas corn would travel by rail or barge to be transloaded onto ocean-going vessels.</p> <p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p> <p>Kansas has adequate grain and liquid rail infrastructure. However, a lack of rail access in the western portion of the state requires processors to ship products across the state to be loaded onto rail at the intermodal facility or use alternative transportation.</p>
<b>Demand</b>	<p>Need to better understand the dynamics of corn demand in Kansas particularly in the cattle feeding sector. Does Kansas have the capacity to meet all the needs for grain, silage, high moisture corn, DDGS? If not and production was increased does that prevent the need for other states' product?</p>
<b>Industry Competition</b>	<p>Industry growth and expansion in other states may present a challenge for growth in Kansas. Capital investment in corn processing naturally follows high corn production. Kansas ranks in the top 10 corn producing states, but so much of the crop is destined for existing feeding operations and ethanol plants that other corn users may not consider Kansas the best location for investment.</p>
<b>Industry Opponents</b>	<p>There are increasing attacks on the use of genetic technology in corn production and a great debate on whether that corn is suitable for use in food both in the United States and around the world. Another debate centers on whether corn should be used for fuel, ethanol in particular, as opposed to food and feed. This debate intensifies in times of high corn prices such as those seen in recent years.</p> <p>There is also a negative perception of corn syrup in foods from some consumer groups and debate about whether high fructose corn syrup (sugar) affects humans differently than sugar extracted from sugar cane.</p>

# CHALLENGES

Challenge	Details of Challenge
<p><b>International Trade</b></p>	<p>Regulatory approval of new seed technology around the world is important as Kansas farmers look to take advantage of the latest advancements to improve yield and meet worldwide demand. A reliance on non-science-based standards in some trade partner nations disrupts the ability of U.S. farmers to access critical international markets. What may be approved in one country isn't approved in another country and the grain handling supply chain is not equipped to keep genetic traits separated for shipment. Therefore, some technological advancements can't be sold and farmers can't benefit from them until they receive wide approval.</p> <p>Access to international markets for corn products is key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access.</p> <p>There are big export opportunities for DDGS from ethanol production. The full potential for DDGS usage in feed rations is not fully understood. Better understanding of how to use DDGS effectively in feed should lead to increased exports.</p>
<p><b>Policy</b></p>	<p>Renewable Fuel Standard is a regular unknown when it comes to understanding the requirements for ethanol in U.S. gasoline. More transparency and predictability would bring increased stability to the ethanol market.</p> <p>Maintaining the flexibility farmers have in how they depreciate capital purchases as it relates to federal income taxes is critical for management and planning. Any changes which reduce that flexibility or threaten to reduce it compromise farmers' ability to plan for expenses.</p> <p>Farm families work their whole lives to build and maintain the family farming operation including the acquisition of land. Being forced to sell hard-earned assets to satisfy estate taxes is a devastating blow to family farmers, particularly beginning farmers.</p> <p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including Waters of the US, the Endangered Species Act, burdensome OSHA regulations and more. The current focus on atrazine by the EPA is also concerning.</p> <p>There is growing concern regarding the reliance on property taxes to finance local units of government and the impact on profitability for corn farmers in times of tight margins.</p> <p>Ethanol plants are at the center of the Kansas debate on property taxes for machinery and equipment versus permanent fixtures in manufacturing plants. A good understanding of ethanol production is important particularly how processing tanks are used and why they should be considered equipment instead of a fixture.</p> <p>There is a shortage of drivers with a commercial driver's license (CDL). If a person has a CDL they can't cross the state line until they are 21 years old. CDL drivers that can't cross the state line have limited usefulness. Most young people looking for careers out of high school have settled on something other than truck driving by the time they turn 21.</p>

## CHALLENGES

Challenge	Details of Challenge
<b>Sustainability</b>	It will be important for farmers to be able to document the proof of the sustainability of their operations going into the future as more first and second purchasers become concerned with sustainability. This is driven by consumer awareness and interest in sustainability.
<b>Water</b>	Corn production relies on ever-depleting sources of groundwater for irrigation.
<b>Workforce Development</b>	Growth in the corn sector, particularly in seed technology, ethanol processing and irrigation research and technology will require a skilled workforce, which continues to be a significant challenge through the entire agricultural industry.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the corn sector.

Focus Area	Solution
<b>Big Data Management</b>	Farmers and agribusinesses are currently picking the pieces of technology that work for them with very few taking full advantage. Better knowledge transfer is needed from early adopters to everyday users.
<b>Business Development</b>	Steps to encourage business development in this sector could include the following: <ul style="list-style-type: none"> <li>• Pursue the creation of economic development programs applicable to the corn support, production and processing industries.</li> <li>• Pursue the creation of programs that provide training to start-ups on interfacing with the investment community.</li> <li>• Create a marketing program that promotes Kansas as the place for corn research, input and processing companies.</li> </ul>
<b>Federal Policies</b>	Continue to monitor and take appropriate action on policies that could adversely affect the corn industry such as Waters of the U.S., Endangered Species Act, OSHA regulations, etc.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Industry Outreach</b>	<p>KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.</p> <p>KDA will dedicate staff time to encourage processing and logistical facilities to add value to corn within the state.</p>
<b>Irrigation Research</b>	<p>Continue to push the envelope on what's possible in the realm of irrigation technology to increase efficient delivery of water to corn plants. Use the momentum and action items of the <i>Vision for the Future of Water Supply in Kansas</i> to ensure effective prioritization of irrigation research. Work with K-State to establish a degree program in irrigation engineering.</p>
<b>Water</b>	<p>Continue implementation of the action items identified in the Kansas Water Vision, including continued outreach related to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas. Work with K-State to implement area groundwater specialists in the Cooperative Extension Service.</p>

## OPPORTUNITIES TO EXPAND PRESENCE

An initial list of potential opportunities includes:

- Increase livestock feeding.
- Increase ethanol production.
- Increase ethanol exports particularly to Mexico where Kansas has a logistics advantage versus other ethanol producing states.
- Go after emerging technology companies utilizing corn such things as corn-based chemicals.
- Increase corn production.
- Partnership between ethanol processors and feed companies to enhance the feed value of DDGS.
- Increase ethanol percentage in gasoline, i.e. E15 and up.
- Increased fuel efficiency standards will lead to smaller engines with turbo chargers for increased power which require higher octane. Ethanol is a great source of octane.
- Kansas should consider tax credits for blender pump installation at gas stations to help increase ethanol usage.
- Expand the value add at ethanol plants — renewable diesel, feed value enhanced DDGS, etc. Much more likely way of bringing increased value to Kansas from ethanol than expanding ethanol production.

# CORN INDUSTRY OUTCOMES



## **Growth Objective:**

*Increase demand for ethanol, renewable diesel, DDGS and livestock feeding, with a focus on proactive water policy and efficient transportation infrastructure.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas corn industry:**

### **Phase 1 (Begin within two years)**

- 50% of Kansas fuel stations with readily available E15 by 2020. Utilizing the USDA Biofuels Infrastructure grant reduces the financial burden for stations to offer E15.
- Distiller's dried grains with solubles (DDGS) as a widely used feed ration both domestically and internationally. Education on the international level is important for continued adoption of DDGS as a feed ingredient.
- Nationwide reputation as the home of renewable diesel. Kansas is home to the only renewable diesel plant attached to an ethanol plant in the country.
- Growth in the beef, dairy, pork and poultry sectors in Kansas through participation in each sector's growth strategy. Kansas livestock industries are the largest market outlet for corn and DDGS.
- Increased amount of Kansas corn processed with value added in Kansas.
- State-sponsored economic development incentives which meet the needs of value-added corn enterprises.
- Implementation of action items in the *Vision for the Future of Water Supply in Kansas* related to the corn industry, leading to a longer usable life for Kansas groundwater and surface water sources. Effective adoption of conservation practices and management efforts which support more flexible water policies, better opportunities for voluntary conservation and increased research on management practices.
- Improved corn yields in Kansas from better crop technology, better irrigation technology and evolving management practices.
- Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of corn and reduce environmental impact.
- Simplified permitting requirements for farm vehicles, and transportation regulations that provide flexibility to requirements for commercial driver's licenses (CDLs) to ensure that corn is able to move safely and efficiently throughout the state.
- Clear, factual information about GMOs easily available to consumers. The industry needs to focus on the need for GMOs to meet demand as well as increase yields while using less water and pesticides and maintaining the positive impact corn has on the Kansas economy.

# CORN INDUSTRY OUTCOMES

## **Phase 1 (Begin within two years)**

- Regulations based on sound science and supportive of business success, particularly in regard to EPA regulations and issues important to the Kansas corn sector such as WOTUS, atrazine levels of concern and the renewable fuel standard.

## **Items for further consideration**

- Harvest time weight exemption for trucks hauling corn. It is difficult to monitor weights on trucks going directly from the field to the delivery point. This flow needs to be as efficient as possible and an exemption from weight limits for period of time around harvest would help with efficiency.

# COTTON

## EXECUTIVE SUMMARY

The cotton sector is smaller in production than other Kansas crops, ranking 17th nationwide, but production and ginning in the state has increased significantly since 1996. There are over 400 active cotton growers, who together have exceeded 1.1 million bales since 1996. Several infrastructure investments, including four gins and a warehouse, have extended the potential for the crop in the future. Cotton offers farmers a highly water-efficient crop which works well in part of a rotation management system.

Despite the success cotton has seen in recent years, several barriers still pose challenges for farmers who are interested in pursuing expansion into the cotton market. Cotton is a very susceptible crop to 2,4-D and is subject to possible crop loss due to herbicide drift. Increasing the availability of dicamba formulations and tolerant cotton is key to reducing future crop loss. One of the few pesticides that is effective on cotton pests has recently been under consideration to be revoked. In addition to policies relating to these herbicides and pesticides, the possible designation of cottonseed as an oilseed could help cotton farmers by giving them access to Farm Bill support mechanisms. This lack of protection makes cotton seem a risky option, especially when considering the high capital cost of custom harvesting equipment for this specialized crop.

As we face a future with an ever-depleting water supply, a crop like cotton could be a profitable alternative. A long-term growth strategy to overcome the challenges will require input and discussion among key partners both public and private. Research will play a key role in this plan, examining issues of fertility, weed control and profitability, among others. Collaborative efforts from industry leaders and public organizations will be critical to development of a strategic growth plan.



## STATUS

Kansas ranks 17th nationwide in production of cotton, producing less than 1 percent of the nation's cash receipt value of the crop. Although a relatively small percentage of the national total production and ginning in the state has significantly increased since 1996. As of 2013 there were 410 active cotton growers and 838 participating landlords and partners invested in the state.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the cotton industry in Kansas has a direct output of over \$20.4 million. Through indirect and induced impacts, the industry creates a total economic contribution of approximately \$32.9 million.

Cotton production and ginning in Kansas has exceeded 1.1 million bales since 1996. Significant infrastructure investments, exceeding \$44 million, have been made in Kansas cotton including the establishment of four gins located in Moscow, Pratt, Anthony and Wellington, a 100,000-bale warehouse in Liberal, and more than 80 strippers and other harvest-related equipment. More than \$4.2 million in cash investments have been made in the Plains Cotton Cooperative Association.

## OPPORTUNITIES

In order to develop a strategic growth plan for cotton, 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
<b>Climate</b>	The climate in the southern third of Kansas is well suited for cotton production. Cotton is a perennial plant that is heat-unit sensitive. It requires approximately 1,800 to 2,100 growing degree units for a set boll to open. Once the plant reaches bloom stage, however, the response to heat units is less pronounced and night temperatures and light intensity become critical factors in the plant reaching maturity.
<b>Crop Rotation</b>	Cotton growers in southwest Kansas often include cotton as part of a rotation management system. Including cotton in a rotation with corn or other crops improves the accumulation of crop residue, soil moisture, soil fertility and pest management and provides an opportunity to diversify market opportunities.
<b>Genetics &amp; Herbicide Development</b>	<p>Pending regulatory approval, a weed control system and cotton seed variety has been developed that will reduce crop loss to 2,4-D drift and will improve yields.</p> <p>Kansas participates in DriftWatch, a voluntary communication tool that enables crop producers and pesticide applicators to work together to protect specialty crops. Registering cotton fields and posting information about 2,4-D application may reduce the incidents of loss due to drift.</p>

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Water</b>	<p>Cotton produces more farm-level economic value per inch of water than any other crop in southwest Kansas. Compared to corn, alfalfa and soybeans, profitable cotton yields can be reached under irrigation with roughly one-half to one-third of the water of these crops. As a result, farmers are largely interested in growing cotton on land that has limited well capacity.</p> <p>Kansas is recognized nationwide for its proactive practices of conserving water for future generations.</p> <p>Kansas has existing water rights available and is implementing proactive water conservation practices allowing farmers and ranchers to manage their own water while still preserving the aquifer for generations to come. Kansas has developed a <i>Vision for the Future of Water Supply in Kansas</i>, which aligns the priority of growing the economy with the strategies and actions necessary to ensure a reliable water supply is available to support that growth. Several action items within the Vision call for opportunities to address the policy and research challenges associated with increasing cotton acres in Kansas.</p>

## SUCCESS STORIES

The cotton growers' community in Kansas has made significant strides in increasing acreage, advocating for policy and research and increasing the education and awareness of cotton's potential in Kansas. Some specific successes include:

- Several action items supporting cotton were included in the Kansas Water Vision.
- The state currently maintains four cotton gins and a cotton warehouse facility.
- Kansas cotton growers are represented in leadership roles on national and regional advocacy organizations.
- Kansas has established partnerships with leaders in Texas and other high-acreage cotton states.
- An economic study between Kansas Cotton and K-State estimating profitability of growing irrigated cotton in Kansas is nearing completion.

## CHALLENGES

While Kansas is poised for expansion of production and processing of cotton, the following factors represent challenges serving as barriers to achieving the objective of the cotton growth plan.

Challenge	Details of Challenge
<b>2,4-D Loss</b>	<p>Cotton is considered one of the most susceptible agricultural crops to 2,4-D. In 2013, an estimated \$6.1 million of cotton crop loss in Kansas could be attributed to the drift of 2,4-D. Damage was observed in every cotton field in Seward, Stevens, Grant, Haskell, Meade and Gray counties.</p> <p>While Kansas participates in Driftwatch, there is no regulatory requirement to register fields or pesticide and herbicide applications. Kansas has no pesticide or herbicide drift laws.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Chlorpyrifos</b>	<p>In fall 2015, the Environmental Protection Agency issued a proposal to revoke all tolerances for chlorpyrifos. Chlorpyrifos is used on cotton to control aphids and similar pests. It is one of the few remaining crop protection products that provides a broad spectrum of control for multiple insect pests. Without control of these pests, farmers can sustain yield loss and quality loss. Cotton industry groups have requested that the EPA consider all submitted studies and reverse its final decisions.</p>
<b>Critical Infrastructure</b>	<p>Cotton harvesting equipment including cotton pickers and cotton strippers present the challenge of high capital costs. With limited acres in Kansas compared to other crops, cotton growers are faced with the high investment in equipment or reliance on custom harvesting.</p> <p>Time to market is a premium consideration for cotton so any opportunity to reduce transport time adds value to the product. Reducing time to market could be achieved through the development of rail spurs in southwest Kansas and by increasing the width of Highway 54 — one of the primary routes between acres, gins and the bale warehouse.</p>
<b>International Trade</b>	<p>According to the 2015 edition of <i>Cotton Counts Its Trade</i>, the top five export customers of raw cotton fiber are China, Turkey, Vietnam, Mexico and Indonesia. Of those, Indonesia and Vietnam have seen an increase in imported cotton while cotton imports to China have decreased. Export potential exists for any country experiencing growth in its GDP.</p>
<b>Policy</b>	<p>The 2004 World Trade Organization settlement case regarding the Brazil–United States cotton dispute on the issue of unfair subsidies on cotton found that the U.S. support for its cotton industry was inconsistent with its obligations under the Subsidies and Countervailing Measures (SCM) Agreement. The settlement continues to impact cotton’s status in the Agricultural Act of 2014 (Farm Bill). Cotton is not a covered commodity under the Farm Bill so it lacks the Price Loss Protection or Agricultural Risk Coverage afforded to other commodities such as corn, soybeans and wheat. Cotton growers have to rely on insurance products (Stacked Income Protection [STAX] Program) in the absence of other Farm Bill support mechanisms. While restoring cotton as a Title I commodity under the next Farm Bill is a more long-term resolution to this issue, designating cotton in the “other oilseed” category offers an alternative for improved coverage under existing commodity programs.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Water</b>	Even with focused implementation of the Kansas Water Vision, declines in the Ogallala aquifer will continue to be a challenge for all production agriculture in Kansas.
<b>Workforce Development</b>	Workforce development issues impacting the cotton industry in Kansas relate to affordable and qualified custom harvesting.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the cotton industry.

Focus Area	Solution
<b>Education</b>	Through a website, videos and field days, the Plains Cotton Cooperative Council and other cotton industry leaders are developing opportunities to increase consumer awareness and education of the cotton industry in Kansas.
<b>Industry Outreach</b>	KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.
<b>Oilseed Designation</b>	The Farm Bill gives the secretary of agriculture the authority to designate “other oilseeds” that can be included in commodity programs. The cotton industry has asked that the same designation be placed on cottonseed.
<b>Research</b>	<p>Establish a research working group similar to the effort employed for sorghum to identify research needs and develop a collaborative strategic plan to address research shortfalls. Research opportunities include, but are not limited to, fertility and weed control, improving cotton as a feed product, and profitability. Siting a K-State Research and Extension specialist focused on cotton in southwest Kansas could better connect research to in-field management strategies.</p> <p>Complete an economic evaluation estimating the profitability of growing irrigated corn in Kansas, including expanded producer surveys, yield response curves, and additional cost data.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Water</b>	Continue to implement the action items identified in the Kansas Water Vision related to cotton and herbicides.

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Encourage expansion of land-grant university knowledge and research regarding cotton.
- Ensure 2,4-D alternatives are available to reduce impacts on cotton acres.
- Identify opportunities to increase availability of harvesting equipment.
- Coordinate with Cotton Council International to create synergies with existing Kansas trade missions as an opportunity to increase cotton markets.

# COTTON INDUSTRY OUTCOMES



## **Growth Objective:**

*Expand cotton's role as an integral part of meeting the vision for the future of the state's water supply, and grow to be one of the top 10 cotton-producing states within the next 10 years.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas cotton industry:**

### **Phase 1 (Begin within two years)**

- Implementation of action items in the *Vision for the Future of Water Supply in Kansas* related to cotton and herbicide, establishing cotton as a water management crop alternative and leading to a longer usable life for Kansas groundwater and surface water sources.
- Availability of direct enrollment in Driftwatch program for local gins or co-ops.
- Adequate access to supplies of shorter season EnlistDuo Phytogen cottonseed for Kansas growers.
- Predominant use of 2,4-D tolerant cotton varieties by Kansas growers. Misunderstandings currently exist related to the distinction between 2,4-D tolerance and dicamba tolerance.
- General understanding of the role of 2,4-D tolerant cotton varieties by both cotton growers and non-cotton growers. Increased information and education for both cotton growers and non-cotton growers can reduce neighbor-to-neighbor concerns about cotton acreage near other commodities.
- Inclusion of cotton as a Title I Commodity in the Farm Bill allowing for improved insurance coverage. The outcome of a 2004 World Trade Organization settlement case impacted cotton's status under the Farm Bill; as a result, cotton is not a covered commodity and lacks coverage afforded to other commodities.
- Broad knowledge of the economic impact of growing irrigated cotton in Kansas, including expanded producer surveys, yield response curves and additional cost data.

### **Phase 2 (Begin within 2-4 years)**

- Widening of Highway 54, one of the primary routes between acres, gins and the bale warehouse, reducing the time to market and adding value to the product.
- Participation of cotton growers in Kansas agricultural trade missions to provide opportunities for increased cotton markets, in coordination with the Cotton Council International.
- Increase in Kansas farmers who include cotton in their crop rotation system as part of an overall water management strategy.
- Affordable access to cotton harvesting equipment in areas of the state with increasing cotton production through cooperatives or other organized approaches.

### **Items for further consideration**

- Increased consumer desire for cotton over polyester and other non-cotton fibers.
- Collaborative research working group to develop a strategic plan that addresses cotton research pitfalls.



# DAIRY

## EXECUTIVE SUMMARY

Kansas is one of the fastest growing dairy regions in the U.S. in terms of milk production, due to a variety of factors that make the state a prime location for dairy operations. Land availability, a ready supply of feed and an ideal climate provide a good foundation for dairy growth, and the efforts being made toward proactive water policies enhance the viability of future dairy farm expansion. Recent additions to processing operations within the state have significantly increased the ability for dairy farmers to process their product within the state, rather than exporting milk for processing. Several facilities within Kansas have actively worked to develop innovative strategies to add value to their product and to maximize their water use in order to increase efficiency and long-term viability.

Despite the growth seen in recent years, several challenges remain which serve as barriers to future dairy expansion. Water rights continue to be in demand in many areas of the state, and obtaining land with sufficient water rights can be difficult. Attracting a qualified workforce is a continual concern, as well as managing the challenges of an immigrant workforce, and issues of wastewater disposal and transportation impact the dairy industry on a regular basis. Opportunities to grow as a result of exports are impeded by fluctuating prices and international policies that affect milk products.

To build on the factors that have led to success in the dairy industry and to overcome these barriers to future growth will require collaboration among the public and private stakeholders in the industry. Identifying new technologies and strategies to conserve water in regions of Kansas that would be conducive to new dairies would positively impact the dairy industry, and adjustments to transportation policy could have a similar impact. Increased focus on education and workforce issue specific to the dairy industry could also enhance possibilities for growth of the dairy sector in Kansas.

## STATUS

Kansas is the 16th-ranked dairy state for milk production and is home to 143,000 dairy cows on 300 dairy farms. Approximately 80-85 percent of the milk produced in the state is produced in western Kansas on 29 large farms that originated since 1994. Milk processing capacity has grown in the state since 2012 with the addition of processing facilities in Rexford, Garden City and Hugoton. There are also milk plants of recognizable size in Hutchinson and Wichita. Currently, 75 percent of milk in Kansas is exported for processing; however, with the addition of a milk powder plant in Garden City to be completed in 2017, an estimated 75 percent of milk produced in Kansas will be processed within the state's borders.

The Kansas dairy industry is one of the fastest growing dairy states in terms of rate of milk production growth. Kansas has established itself as a prime location in the U.S. for dairies with its abundant land, feed supply, ideal climate, proactive water policies and positive business environment. Kansas has consistently ranked as one of the fastest growing dairy states. Milk production in Kansas has doubled since 1994 and is now a one billion dollar industry. According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the Kansas dairy industry had a direct output of almost \$742.8 million and a total economic contribution of approximately \$1.27 billion. The industry creates 1330.8 jobs directly, and with indirect and induced impacts the total number of jobs grows to 4204.2.

## OPPORTUNITIES

Kansas is considered to be a major dairy expansion state and likely will continue to expand. The following factors outline our comparative advantage and the opportunities that exist to influence the dairy industry's growth in Kansas.

Factor	Implications for Growth and Development Opportunities
<b>Feed Supply and Land Availability</b>	<p>Kansas is the seventh-ranked corn producing state and produces over four million tons of corn silage annually. Distiller's grains are available from local ethanol plants. Kansas is also known for raising high-quality alfalfa hay, growing more than 650,000 acres. Kansas is home to many excellent custom forage growers with experience in producing top-notch forage for dairies and feedlots.</p> <p>Obtaining land for dairy farms is comparatively much cheaper than in other dairy states, reducing start-up costs for new operations. Despite a cheaper price, this land still produces high yields of feed and forages and has a good supply of water.</p>
<b>Heifer Development</b>	<p>The existing livestock industry and growing number of heifer raising operations provide local and regional replacement heifer options. Kansas also has a large number of empty feedyards for sale that can easily and profitably be converted to heifer development facilities for raising heifers for out-of-state dairies.</p>

Factor	Implications for Growth and Development Opportunities
<p><b>Kansas State Univ. Educational Resources</b></p>	<p>Kansas State University offers a dairy teaching program to both undergraduate and graduate students. Courses offered range from fundamental to advanced genetics, nutrition, management, reproduction, animal health and milk processing. These classes, along with student programs, develop the next generation of leaders needed to maintain the state's dairies on a long-term basis. Nationally recognized faculty research programs at K-State directly support the dairy industry in the state along with K-State Research and Extension outreach programs in nutrition and management, physiology and dairy foods.</p>
<p><b>Milk Processing Expansion</b></p>	<p>The number of milk processing and production support businesses in Kansas continues to grow. This has created new market outlets for milk producers locally, which reduces the expense of transporting milk over long distances. Kansas dairy processing facilities are increasingly becoming vertically integrated as farmers capture more of the value of the supply chain.</p>
<p><b>Policies and Guides</b></p>	<p>Counties are not allowed to impose additional health and environmental regulations in excess of those mandated by the Kansas Department of Health and Environment Livestock Waste Management Section. This provides clarity and consistency for livestock producers in their ability to successfully manage their operations.</p> <p>A Relocation and Expansion Guide assisting in site selection and regulatory guidance is available for dairy producers, which expedites the process of opening a new facility within the state.</p>
<p><b>Water</b></p>	<p>Kansas is recognized nationwide for its proactive practices of conserving water for future generations. Kansas has existing water rights available and is implementing proactive water conservation practices allowing farmers and ranchers to manage their own water while still preserving the aquifer for generations to come. Kansas has developed a <i>Vision for the Future of Water Supply in Kansas</i>, which aligns the priority of growing the economy with the strategies and actions necessary to ensure a reliable water supply is available to support that growth.</p> <p>Dairies have access to available water rights which can be obtained easily as they are bought and sold as a personal property right. Many water rights have sufficient capacity to support large dairy farms. Resources are also available to farmers to determine where the best wells may be located and state water staff can assist in determining life expectancy of water in certain locations to ensure future farm viability.</p>

## SUCCESS STORIES

Several recent activities in Kansas have placed the state on a path toward success in expanding, attracting and retaining dairies and their associated industries in the state. Examples of these success stories include the following:

- Addition of three milk processing facilities since 2011
- Consistent annual increase in milk production since 1994
- Recent tax structure enhancements, including:
  - Income tax exemption on pass-through business income
  - Reinstatement of producers' ability to offset capital gains from the sale of breeding livestock, including cull cows, with schedule C, E, and F ordinary income losses
  - Sales tax exemption on the construction, reconstruction and remodeling of livestock facilities for projects greater than \$50,000
- In 2012, a dairy in northwest Kansas constructed a new milk condensing facility to add value to their milk for a direct marketing partnership with an international company. The farm now condenses the milk from their four farms to approximately 30% of original volume and ships it to processing facilities in Texas in a cost-plus model. This improves economic viability of the farm through more stable milk prices. Additionally, it enhances environmental sustainability through the recapture of water in a dry climate and reducing the number of trucks on the road.
- Dairies continue to utilize water numerous times resulting in great water conservation and long-term industry viability.
  - In 2015, a dairy in southwest Kansas became the first dairy in the state to implement a Water Conservation Area (WCA) management plan — a voluntary tool used to reduce water use in exchange for flexible water right management — at one of their three locations. Following the adoption of the consent agreement for this WCA, the dairy plans to implement WCAs at their other facilities.
  - Development of additional milk processing in western Kansas includes removing water from the milk for other use in the immediate area versus export of water in milk.

## CHALLENGES

While Kansas is poised for major dairy expansion, the following factors represent challenges serving as barriers to achieving the objective of the dairy growth plan.

Challenge	Details of Challenge
<b>Corporate Farming</b>	Kansas corporate farming regulations inhibit the ability of Kansas dairy owners to find partners in financing and operating new dairy operations. They also prevent out-of-state dairy owners from expanding into Kansas in many of the 105 Kansas counties.
<b>International Trade</b>	The U.S. dairy industry is becoming increasingly affected by international dairy markets. A current surplus of milk supply worldwide has greatly suppressed domestic milk prices. While the U.S. must become more competitive on the world market, risk management strategies are needed to help protect from major price swings. The U.S. must also counter protectionist milk policies, such as a potential U.S. milk protein concentrate ban from Canada, poor dairy-specific Trans-Pacific Partnership negotiations, or Russian bans on dairy and ag products.

# CHALLENGES

Challenge	Details of Challenge
<b>Processing Facility Wastewater Disposal</b>	<p>A significant amount of wastewater is generated by dairy processing facilities, particularly those which condense or dry milk. Identifying suitable quantities of land for waste application and securing adequate storage when land application is not feasible is challenging and the cost of treatment for onsite reuse can be costly. However, if the challenges associated with storage and treatment can be addressed, the wastewater can represent an opportunity to address declines in the aquifer and drought conditions.</p>
<b>Threatened and Endangered Species</b>	<p>Threatened and endangered species reduce the pace or viability of new projects and expansions. An example of this includes the lesser prairie chicken, which until late 2015 was listed as a threatened species under the Endangered Species Act. While a court order vacated the listing of the chicken, future listings of this or other species may delay or stop construction of new and expanding dairy operations.</p>
<b>Transportation</b>	<p>Kansas maintains the minimum federal gross vehicle weight for trucks of 80,000 pounds. Excess milk supply beyond local processing capacity will have to be exported great distances less efficiently.</p>
<b>Water</b>	<p>Many areas of western Kansas are closed to new appropriations for water rights. Therefore, incoming or expanding operations needing water must purchase existing water rights. Obtaining tracts of land with sufficient water rights can prove challenging for large dairies because areas with excellent water rights do not experience land ownership turnover at high rates. When water rights are purchased from an irrigation or municipal use for animal agriculture, such as dairies, a consumptive use calculation is applied that reduces the available quantity of water available.</p>
<b>Workforce Development</b>	<p>Access to a sufficient workforce has been identified as a barrier to growth for many agricultural-related and rurally situated industries. Most immigrant visa programs for agriculture are for temporary workers which aren't effective in a dairy setting where cows must be cared for daily. (Some visas will allow for workers to feed cows, but will not allow for them to milk cows, which is the most common labor need on the farm.) Related workforce issues include the lack of available housing for all income levels and incredibly low unemployment rates. Attracting highly qualified dairy owners and upper management also proves challenging due to quality of life adjustments compared with California and the Colorado front range where access to amenities and entertainment is more readily available.</p>

# NEXT STEPS IN STRATEGIC DEVELOPMENT

Enhancing what has made Kansas dairies successful and overcoming barriers to future growth of the industry will require a cooperative approach. The following strategies have been identified as next steps in developing a strategic growth plan for dairy in Kansas.

Focus Area	Solution
<b>Education &amp; Research</b>	<p>Promote the expansion of the dairy teaching facilities at K-State and increase the number of dairy extension agents, especially in western Kansas.</p> <p>Help the university secure a new state-of-the-art dairy teaching and research facility to replace the current dilapidated and outdated facility.</p> <p>Prioritize research of sorghum varieties and other water-efficient forage crops to improve adoption of sorghum as a forage source for dairy cows.</p>
<b>Industry Outreach</b>	<p>Identify potential partners and establish a schedule for strategic growth plan meetings.</p> <p>Proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.</p>
<b>Transportation</b>	<p>Encourage policy change to allow fluid milk to be treated as a non-divisible load under federal transportation law, through coordination with Kansas congressional leaders, Governor Sam Brownback and state government agencies.</p> <p>Increase the gross truck weight for hauling agricultural commodities in Kansas.</p> <p>Ensure Garden City transload facility is completed correctly and in a timely manner to maximize transport from the processing facility.</p> <p>Expand access to shipping containers and the ability to access rail without trucking empty cross-state containers.</p>

# NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<p><b>Water</b></p>	<p>Continue the implementation of the action items identified in the Kansas Water Vision and encourage the adoption of locally developed conservation strategies aimed at extending the economic life of the Ogallala Aquifer such as Local Enhanced Management Areas and Water Conservation Areas.</p> <p>Create administrative or regulatory authority for a water right owner to add a beneficial use to an existing water right to allow dual uses. For example, a dairy operator may add stockwatering as a beneficial use to an existing irrigation water right without applying consumptive use on the full right. By adding the beneficial use, the water right will be permitted an authorized quantity assigned to that beneficial use which may be different than the authorized quantity on the original beneficial use.</p> <p>Develop a Flexible Management Plan (FMP) that allows water right holders to divert any quantity of water, from any point of diversion, to any of the listed places of use and types of use limited to the overall annual quantity of the FMP. Showcase, on a field scale, the latest technologies in stockwatering infrastructure, water management, automation, reuse and other conservation practices aimed at reducing stockwatering water use.</p> <p>Implement a pilot demonstration project to evaluate the feasibility of an on-site wastewater treatment system capable of treating lagoon water to potable animal drinking water conditions.</p>
<p><b>Workforce Development</b></p>	<p>KDA has developed a survey that is being widely distributed to receive input on specific workforce issues and challenges and is committed to identifying and implementing strategies to overcome the concerns.</p>

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Explore paid membership in the U.S. Dairy Export Council.
- Explore membership in the International Dairy Foods Association.
- Have a presence at international dairy events, such as World Dairy Expo.
- Have a presence at international dairy foods events, such as Dairy Forum.
- Leverage Food Export Midwest membership for exportable dairy products.

# DAIRY INDUSTRY OUTCOMES



## **Growth Objective:**

*Enable consistent annual growth in milk production by expanding access to milk markets, maintaining low feed costs and preserving a valued labor force, while also upholding a trustworthy perception of an industry that provides wholesome dairy products.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas dairy industry:**

### **Phase 1 (Begin within two years)**

- Growth in milk production through the addition of new dairies or expansion of existing dairies.
- New university dairy teaching and research facilities that adequately meet research and educational needs and spur economic growth.
- Federal immigration reform with a focus on long-term visas for agricultural workers, and a potential immigration pilot program in Kansas.
- Comprehensive employee training programs to complement the needs of dairy processing facilities.
- Consumptive use regulations using simple, science-based methodology when converting from irrigation to stock watering or any other beneficial use.
- Freedom for all business structures to do business in Kansas. Current corporate farming laws limit certain ownership structures from operating in Kansas which curtails investment and limits growth and modernization.
- Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of fluid milk and reduce environmental impact.
- New facilities for export of shipping containers via railway directly from western Kansas to prevent wasteful backhauls across the state.
- A fully staffed Kansas Department of Health and Environment livestock waste management section resulting in expedient permitting while effectively protecting the natural resources of the state.
- New dairy heifer development operations in Kansas, either by repurposing existing empty feedlots or by creation of new facilities.
- Expanded influence, presence and professional standing of the Kansas dairy industry with consumers and policy makers.
- Farm transition planning resources for farmers to utilize during preparations for intergenerational transfer or alternative forms of succession planning.
- Expanded partnerships between From the Land of Kansas trademark program and on-farm dairy processors.
- Membership in the United States Dairy Export Council.

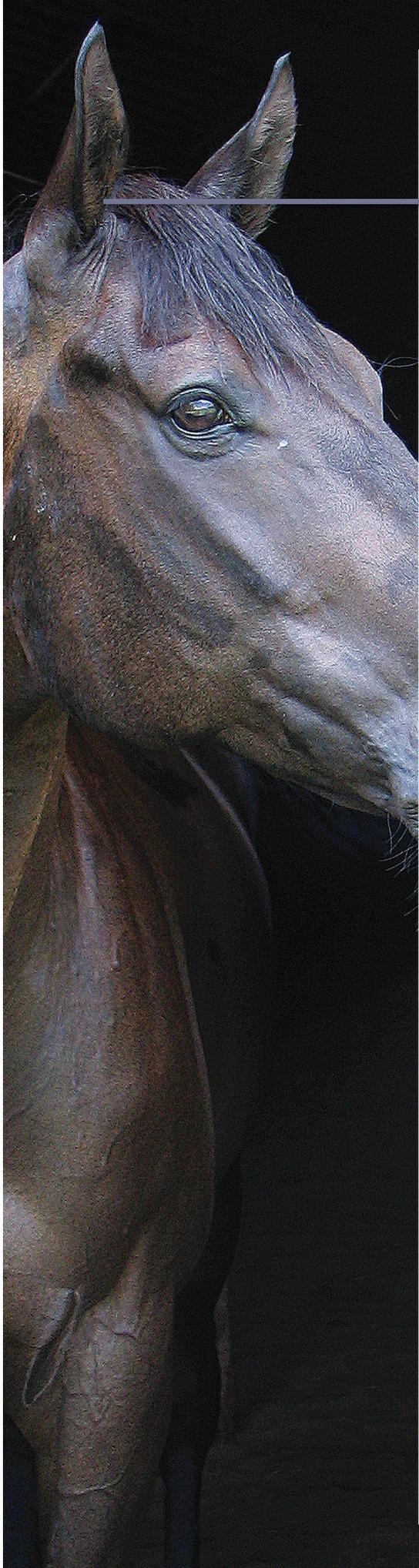
# DAIRY INDUSTRY OUTCOMES

## **Phase 2 (Begin within 2-4 years)**

- Continued development of new milk processing facilities in Kansas through capital investments.
- Additional K-State Research and Extension dairy personnel, including dairy extension specialists and more active engagement in extension services by dairy farmers.

## **Items for further consideration**

- Addition of dairy equipment and other industry-related services that may be needed to fill service gaps.



# EQUINE

## EXECUTIVE SUMMARY

The Kansas equine industry is made up of many different types and uses of horses. Historically, horses were a significant part of the original cattle ranching infrastructure in Kansas. Although no data exists to identify the number of horses that exist in the state today, horses remain an important part of the animal industry in Kansas. Opportunity exists to significantly expand support for the horse industry in Kansas. Horses serve many purposes across the state, from pleasure and competition to work uses. Increased visibility of the horse industry will be a natural by-product of the American Royal's move to Kansas as it will attract major horse exhibitions to the state, and may inspire additional facility improvements across the state.

To fully realize the potential of the horse industry, however, will require increased focus on the challenges that currently prevent growth. A lack of sufficient research and data regarding the current and potential economic impact of the equine industry makes strategic growth difficult. Technical concerns about the legal definition of horses within the livestock world and how that affects regulations and taxation within the industry can be a challenge for large-scale horse operations. The horse industry has been adversely affected by the lack of horse slaughter facilities as end-of-life solutions for horses are limited. Factors that prevent pari-mutuel betting have led to reduced economic activity from horse breeding and racing. Increased investment in event or exhibition facilities would open up new possibilities, but would require significant capital.

Many of these challenges can be overcome with input and discussion among key partners who are committed to long-term strategic growth. A strategic growth plan created through collaborative efforts from both public entities and private stakeholders is critical to the future success of the equine industry in Kansas.

## STATUS

The Kansas horse industry is a vast industry representing many different types and uses of horses. Kansas has a long-standing history with horses, as they were a major component of the original cattle ranching infrastructure in the state. Since then, horses have been a natural part of the rural landscape. While there is no information that confidently reports the number of horses within the state, it is safe to say that Kansas is a strong horse state based upon concentration of horses and equine events in neighboring states.

In a limited economic analysis, Kansas equine sales have a total direct output of approximately \$16.4 million and support 100 jobs in the state. Clearly, with the addition of horse stables and training, horse breeding, horse shows, horse feeding, farriers, veterinarians and pharmaceutical use, and other industry sectors, the economic contribution to the Kansas economy greatly shadows that of equine sales alone.

## OPPORTUNITIES

In order to develop a strategic growth plan for horses, 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
<b>Consumer Demand</b>	Horses and other equids have broad appeal for both pleasure and work uses. There are horses located throughout the state to serve many interests.
<b>Feed Supply and Land Availability</b>	<p>Kansas is home to abundant feedstock supplies, including high quality hay demanded by many horse owners.</p> <p>Kansas has the second most farm land of any state, with roughly 90 percent of the state devoted to agriculture. Horse operations demand relatively less land than other animal facilities. These two factors together equate to a relatively available and affordable base for expanding operations.</p>
<b>Human Capital</b>	The Kansas State University department of animal sciences and industry houses respected faculty with expertise in equine nutrition and reproduction.
<b>Policy Environment</b>	Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations. These state tax code provisions make Kansas a more attractive state for growth and expansion.
<b>Supporting Infrastructure</b>	Kansas boasts many stables, arenas, horse breeders, farriers, veterinarians, trainers and other professionals available to offer services to horse owners.

## SUCCESS STORIES

The equine community in Kansas has made significant strides in increasing acreage, advocating for policy and research and increasing the education and awareness of the equine industry's potential in Kansas. Some specific successes include:

- On Oct. 25, 2016, the American Royal announced it will be moving to Kansas by constructing new state-of-the-art facilities for livestock shows and expositions in Kansas. This will enhance Kansas' ability to attract major horse exhibitions for exhibitors across the country.

## CHALLENGES

While Kansas is poised for expansion of the equine industry, the following factors represent challenges serving as barriers to achieving the objective of the horse growth plan.

Challenge	Details of Challenge
<b>Capital</b>	Equine facilities such as arenas and stables can become expensive, making it difficult for undercapitalized entrepreneurs to start up.
<b>Checkoff Funds</b>	Currently, no checkoff programs exist to promote, educate and conduct research on the equine industry despite past efforts to achieve a statewide feed checkoff program. Other states have horse checkoffs, and the Kansas horse industry joins only the goat industry as a major livestock species lacking a checkoff program.
<b>Differing Definitions</b>	Differing definitions of horses and the equine industry under state statute create confusion and inconsistency in regard to taxes and liability. Horses are not consistently defined as livestock.
<b>Economic Impact Information</b>	Currently, no reputable information is available regarding the number, location and types of horses found in Kansas. This prevents economic analysis from being conducted to estimate the true value the Kansas horse industry provides to local communities and the state. The American Horse Council is considering a 2017 economic impact study that Kansas can partner on for information about the state.
<b>Equine Market</b>	Since the last horse slaughter facility was closed in the United States, the market for horses has crashed along with an explosion of unwanted horses that cannot be disposed of in any other manner. This also creates animal welfare issues for those unwanted, old and neglected animals.
<b>Extension Personnel</b>	Currently, no university staff hold extension appointments in the equine industry, limiting the dissemination of information related to horse nutrition, reproduction and health.

## CHALLENGES

Challenge	Details of Challenge
<b>Horse Racing</b>	Kansas' pari-mutuel licenses for horse racing lapsed and have been revoked since 2008. The percentage paid by horse track slot machines to the state is 22%, which is higher than standalone casinos. As such, race tracks are not a viable business in their current state. This has led to horse breeders exiting the state, and reduced economic activity from horse breeding and racing.
<b>Major Equine Facilities</b>	Kansas lacks major equine facilities that can host world-class horse shows and events. Oklahoma and Texas have nice facilities that draw a lot of events, but with Kansas in the center of the country and with a respectable horse population, a large show facility would be beneficial for attracting future top-notch events.
<b>Sales Tax Exemption</b>	Despite some supplies truly being utilized for farm and ranch work, some retailers do not offer the farm sales tax exemption on equine products because the majority of their sales are for hobbyist purposes.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as first steps in developing a strategic growth plan for the equine industry.

Focus Area	Solution
<b>Differing Definitions</b>	Research the actual definitions and applications written in statute regarding the equine industry and work to streamline regulations to ensure horses are defined as livestock.
<b>Economic Impact Information</b>	Work to secure economic impact information about the horse industry in Kansas by partnering on the American Horse Council study.
<b>Equine Market</b>	Encourage federal appropriations for horse slaughter facilities by working with federal legislators to include funding.
<b>Horse Racing</b>	Work to make pari-mutuel gambling and horse racing more viable to encourage greater involvement in the Kansas horse racing industry. Lowering the percentage paid to the state from slot machines would align horse track slots with that of stand-alone casinos and make horse tracks a viable business option.

# NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Major Equine Facilities</b>	Work to secure a major equine or livestock facility in the state of Kansas to host world-class events and draw exhibitors and tourists from across the nation.

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Increase equine tourism in Kansas by establishing scenic trails throughout the state, including through the Flint Hills.
- Leverage existing equine facilities to enhance agritourism opportunities.

# EQUINE INDUSTRY OUTCOMES



## **Growth Objective:**

*Enable an environment that encourages growth in the equine industry, and eliminate barriers that prevent investment in equine facilities and enterprises.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas equine industry:**

### **Phase 1 (Begin within two years)**

- Restoration of federal appropriation funding for inspection of horse slaughter facilities.
- Equine exposition destinations throughout the state capable of hosting significant, world-class horse events, ranging from large events to smaller events with more specific needs.
- Detailed understanding of economic impact of Kansas horse industry and potential impact through completion of an economic impact study of the Kansas horse industry. Currently, no information exists on the impact of horses on Kansas' economy, which makes it difficult to convey the importance of the industry to the state.
- Horses classified as livestock under all state definitions in state statute. Current discrepancies between definitions result in inconsistency and confusion for the industry.

### **Phase 2 (Begin within 2-4 years)**

- Kansas pari-mutuel betting laws that align horse tracks and standalone casinos with an equal percentage from slot machines paid to the state. Current laws have forced race horses out of the state.
- Statewide equine extension specialist position for enhanced education and outreach.
- An equine industry checkoff program to promote education and research.

# FEED AND FORAGE

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## EXECUTIVE SUMMARY

Feed and forage production is an important sector of the Kansas agricultural economy. Livestock producers depend heavily upon the hay, silage, forage and feed grains that are produced in the state. Advancements in the feed industry have increased yields and efficiency of production, especially in areas of irrigation technology and plant genetics. The strength of the Kansas livestock industry provides a solid foundation of demand for the entire feed and forage industry, which is supplemented by advances being made in export opportunities. Expansion of the ethanol industry and development of ethanol by-products increase demand for Kansas grain. Kansas also offers support in terms of supportive public policy including weed free forage certification, and in the field of research and education.

Although the feed and forage sector has long been a strength of Kansas agriculture, challenges exist which have the potential to prevent future growth within the industry. Continued advancements in technology will require an increasingly skilled workforce as well as the ability to navigate concerns about technological developments. Much of the potential growth could come from export markets, which is complicated by issues of transportation, regulations and free trade agreements.

The development of a strategic growth plan for the feed and forage sector will require collaboration between the key partners in the industry. Initial steps could include enhanced educational opportunities and research developments in the areas of water, crops and rangeland management. Both public and private stakeholders must contribute to the planning to identify specific actions and policies that can open up the feed and forage industry to new growth.

## STATUS

Kansas feed and forage production is an important sector of the state's agricultural economy. Kansas livestock producers are a major outlet for hay, silage and feed grains that are produced within the state's borders. Specifically, Kansas ranks 3rd in total cattle and 16th in dairy production. Both sectors of the cattle industry require high-quality forage to maintain healthy cattle. Additionally, Kansas is 10th in hog production and has a growing poultry industry which requires a more highly developed feed industry to mill products for the millions of head of livestock produced in the state on top of cattle production. A variety of forages are available to livestock, including silage of corn, sorghum, wheat, triticale and hays including native grass, alfalfa, sorghum-sudan and brome, among others.

Key Kansas forage production statistics include:

- 1st in Sorghum Silage Production: 35.2% of U.S. total
- 7th in All Hay Production: 5.89 million tons — 4.4% of U.S. total
- 7th in Feeds & Fodder Export: \$432.9 million
- 2015 corn silage production: 3.15 million tons — 2.5% of U.S. total
- 2015 sorghum silage production: 1.58 million tons — 35.2% of U.S. total

The top 5 import countries for U.S. hay account for 98% of total U.S. export volume. Japan is the major importer of U.S. hay, followed by China, Korea, UAE and Taiwan. China leads imports in terms of U.S. alfalfa hay.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the forage industry in Kansas has a direct output of approximately \$866.3 million and creates 8,923.1 jobs in the state. Through indirect and induced impacts, the industry supports a total of 12,390.2 jobs and creates a total economic contribution of nearly \$1.4 billion.

## OPPORTUNITIES

In order to develop a strategic growth plan for the feed and forage industry, 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
<b>Ethanol</b>	<p>Expansion of ethanol capacity will create additional demand for Kansas grain in addition to the economic impact in rural Kansas of more capital investment and job creation. Ethanol by-products are a key livestock feed source.</p> <p>Kansas ethanol plants continue to add additional value to their distiller's grains with solubles (DGS) by-products creating pellets, tubs and bagged supplements in addition to traditional DGS and DDGS.</p>
<b>Export Infrastructure</b>	<p>Maintaining and improving export infrastructure will help ensure demand for Kansas feed and forage around the world. Rail loading facilities for both grain and hay are important in addition to maintaining good roads and waterway access. China has been competitive for buying alfalfa hay on the west coast, which in turn supports Kansas hay producers.</p> <p>Before hay is exported, it is generally sliced and recompressed or pelleted. This offers freight advantages as it maximizes space on railcars and trucks.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Irrigation Technology</b>	Some of the best crop yields in Kansas are achieved under irrigation. As available ground-water for irrigation is reduced it is important to find ways of achieving the same production and economic returns with less water. Being more efficient with irrigation systems in terms of water use will help reduce water use and potentially pumping costs while maintaining good yields.
<b>Land Availability</b>	Kansas has the second most farm land of any state, with roughly 90 percent of the state devoted to agriculture.
<b>Livestock Feeding</b>	Kansas is a top 3 state in cattle production and top 10 in hogs. The livestock feeding sector is a major customer for feed and forage producers. Expanding the number of livestock being fed in Kansas will increase demand for Kansas feed and forage.
<b>Plant Genetics</b>	<p>Many seed corn companies already have drought-tolerant product offerings that can be expanded upon to offer genetic traits that make corn more suitable to the arid climate of central and western Kansas without significant yield loss. This would increase the number of acres on which corn can be produced.</p> <p>Advancements in forage sorghum silage have greatly increased yields while maintaining water use efficiencies.</p> <p>The production of Roundup resistant alfalfa provides a new tool for alfalfa growers to more efficiently produce feed for livestock. Also, new technologies will be required to enhance corn and sorghum varieties even better suited for silage production. These varieties may have enhanced benefits in yield, reduction in lodging, and increased digestibility in rations (especially important for lactating dairy cattle).</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Policy Environment</b></p>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations and a sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agricultural industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, transportation rules, energy policy, natural resources and more.</p> <p>KDA signed a memorandum of understanding with the North American Weed Management Association to follow the standards set forth in the North American Weed Free Forage Program. KDA staff is also qualified to certify forage and mulch products to meet any additional requirements set forth by any receiving entity, and it is the only recognized certifying authority in Kansas.</p> <p>The noxious weed policy in Kansas is reasonable and less restrictive than surrounding states.</p>
<p><b>Research and Education</b></p>	<p>Kansas State University departments of agronomy and animal science hold significant expertise in forage production and livestock utilization of feeds and forages in both traditional and alternative feed and forage crops. In fact, the departments are jointly investigating the development of alternative forages, such as teff, that can be commercialized for dry climates in areas like western Kansas. The K-State grain science department is the only of its kind in the world, and has a world renowned feed science and management degree program, along with associated expertise and research areas.</p> <p>Kansas Range Schools offered by the Kansas Grazing Lands Coalition offer education opportunities to increase grazing productivity as rotational grazing and alternative forages become more widely accepted.</p>

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Supporting Institutional Infrastructure</b>	<p>Kansas has a solid foundation throughout the entire feed and forage production community. With cow-calf production and stocker operations through eastern and central Kansas and a robust feeding sector throughout central and western Kansas, and a strong beef processing presence, Kansas has a well-established beef production network that results in efficiency benefits to all steps in the production chain and strong demand for corn. The swine industry provides a smaller but important level of demand and the growing poultry industry will provide more demand.</p> <p>There are 12 dry mill ethanol plants currently in operation in Kansas, creating a market for approximately 183 million bushels of corn and sorghum.</p> <p>Kansas is also home to more than 1 billion bushels of commercial grain storage capacity to accommodate the Kansas grain crops.</p> <p>Major hay conditioning and silage harvesting equipment manufacturers are located in Kansas.</p>

## SUCCESS STORIES

Key successes in the industry:

- An irrigation efficiency study that looked at combining the principles of center pivot irrigation with drip irrigation showed that new technology can reduce the amount of irrigation water required with a typical center pivot system.
- The intermodal facility in Edgerton is taking advantage of the significantly reduced freight cost of shipping containers returning to China and other Asian markets by shipping distiller's grains from Kansas into those markets in containers.
- Changes in the tax code in 2012 and 2014 make Kansas more attractive for new business growth or expansion of existing businesses.

## CHALLENGES

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

Challenge	Details of Challenge
<b>Critical Infrastructure</b>	<p>Port access is critical because Kansas doesn't have a port. Having the transportation infrastructure necessary to move feed and forage to the port is critical as well. Ports such as the Port of Catoosa in Oklahoma where Kansas feed and forages are loaded on barges need to be maintained such that shipping capacity isn't delayed or reduced due to aging infrastructure. The same applies to ports on the coasts where Kansas feed and forages would travel by rail or barge to be transloaded onto ocean-going vessels.</p> <p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Critical Infrastructure (cont'd)</b>	<p>Kansas has adequate grain and liquid rail infrastructure. However, a lack of rail access in the western portion of the state requires processors to ship products across the state to be loaded onto rail at the intermodal facility or use alternative transportation. Acquiring shipping containers to load hay at farms is a challenge for those not near the intermodal facility.</p> <p>Kansas lacks toll mills which are needed to attract hog producers to build or expand their operations. Once an operation becomes large enough, they generally build their own feed mill and will no longer rely on the toll mills.</p> <p>Forage and feed testing facilities in Kansas are antiquated. Producers heavily rely on this information when selling their feed and forage.</p>
<b>Industry Opponents</b>	<p>There are increasing attacks on the use of genetic technology in feed and forage production and a great debate on whether the products are suitable for use in food both in the United States and around the world. Another debate centers on whether corn should be used for fuel, ethanol in particular, as opposed to food and feed. This debate intensifies in times of high corn prices such as those seen in recent years. Recently, a major dairy company has announced that all of its milk products will be produced without GMO feed for the cows, which does affect the method and manner in which feed is produced for approximately 8,000 Kansas dairy cows.</p> <p>There is a need to develop the next generation of industry spokespersons.</p>
<b>International Trade</b>	<p>Regulatory approval of new seed technology around the world is important as Kansas farmers look to take advantage of the latest advancements to improve yield and meet worldwide demand. A reliance on non-science-based standards in some trade partner nations disrupts the ability of U.S. farmers to access critical international markets.</p> <p>Hay exports have never been a large component of U.S. hay markets, but exports have slowed over the past couple of years. Roundup ready alfalfa is widely grown across Kansas, but not accepted into several Asian/European markets.</p> <p>Access to international markets for feed and forage products are key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access.</p>

# CHALLENGES

Challenge	Details of Challenge
<p><b>Policy</b></p>	<p>Renewable Fuel Standard is a regular unknown when it comes to understanding the requirements for ethanol in U.S. gasoline. More transparency and predictability would bring increased stability to the ethanol market and in turn to feed prices offered to livestock producers feeding distiller's grains.</p> <p>Maintaining the flexibility farmers have in how they depreciate capital purchases as it relates to federal income taxes is critical for management and planning. Any changes that reduce that flexibility or threaten to reduce it compromise farmers' ability to plan for expenses.</p> <p>Farm families work their whole lives to build and maintain the family farming operation including the acquisition of land. Being forced to sell hard-earned assets to satisfy estate taxes is a devastating blow to family farmers.</p> <p>Kansas Department of Transportation regulations restrict the amount of hay that can be legally hauled. Currently, over width loads are allowed with a permit, but over height loads are not. In addition, custom cutters are able to haul over length loads while hay haulers are not allowed to.</p> <p>Smoke management will continue to be a challenge for producers who need to burn on an annual or semi-annual basis in order to maintain the quality of their feed or forage.</p> <p>Kansas Department of Health and Environment policy limits the amount of manure that can be applied because of phosphorus levels. In areas of the state where there isn't any surface water to be contaminated with phosphorus, this can be limiting to growth of the livestock industry, which is a market outlet for feed and forages.</p> <p>The Farm Service Agency Conservation Reserve Program doesn't allow farmers to sell hay that comes off their CRP fields. If this were allowed, custom haying would increase.</p> <p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: Waters of the U.S., the Endangered Species Act, burdensome Occupational Safety and Health Administration regulations and more.</p>
<p><b>Research, Education, Extension</b></p>	<p>Research funds allocated to forage research are only a fraction of that of corn, soybeans and wheat. This results in significantly less forage research being conducted at universities across the country. Furthermore, forage professor appointments typically are not reappointed upon turnover. There are very few forage extension specialists available to work with the industry.</p>

## CHALLENGES

Challenge	Details of Challenge
<b>Water</b>	Farmers rely on ever-depleting sources of groundwater for irrigation, especially in some regions of the state.
<b>Workforce Development</b>	Growth in the feed and forage sector, particularly in seed technology, irrigation research and technology, ethanol processing, feed mill management, animal nutritionists and forage processing equipment, will require a skilled workforce, which continues to be a significant challenge throughout the entire agricultural industry.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the feed and forage sector.

Focus Area	Solution
<b>Federal Policies</b>	Continue to monitor and take appropriate action on federal policies that could adversely affect the feed and forage industry.
<b>Industry Outreach</b>	<p>Identify potential partners and establish a schedule for strategic growth plan meetings.</p> <p>Proactively reach out to key industry leaders and major processors in Kansas regarding the strategic growth plan.</p> <p>Encourage the education and outreach regarding cover crops and native rangeland management in the state of Kansas.</p> <p>Dedicate staff time to encourage feed mill infrastructure and efficient technologies for the production of feed and forage for a growing livestock sector.</p>
<b>Irrigation research</b>	Continue to push the envelope on what's possible in the realm of irrigation technology to increase efficient delivery of water to crops. Use the momentum and action items of the <i>Vision for the Future of Water Supply in Kansas</i> to ensure effective prioritization of irrigation research. Work with K-State to establish a degree program in irrigation engineering.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Water</b>	<p>Continue implementation of the action items identified in the Kansas Water Vision, including continued outreach related to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas. Work with K-State to implement area groundwater specialists in the Cooperative Extension Service.</p> <p>Research crops or varieties that may be a better fit for farmers in the areas of sandy soil and/or areas of the state with declining water levels.</p>

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Increase livestock sector which consumes feed and forage.
- Increase exports of hay products.
- Develop alternative uses for forages, such as cellulosic ethanol.
- Secure final implementation of the alfalfa checkoff for greater research dollars to be generated.
- Capitalize on irrigation efficiencies for prolonged production in declining aquifer areas (i.e. dragline, subsurface irrigation).

# FEED AND FORAGE INDUSTRY OUTCOMES



## **Growth Objective:**

*Enable a robust feed and forage sector by increasing profitability and strengthening the most important market outlet — the existing Kansas livestock industry.*

## **The following outcomes will be the result of industry collaboration and effort to grow the Kansas feed and forage industry:**

### **Phase 1 (Begin within two years)**

- Growth of the beef, dairy, pork, poultry and equine sectors in Kansas through industry participation in each sector's growth strategy. Kansas livestock industries are the largest market outlet for feed and forage products.
- Over-height exemptions for forage haulers to maximize efficiency and reduce environmental impact, with specific routes evaluated if statewide coverage cannot be achieved.
- Forage sorghum representation on the national sorghum board.
- Simplified permitting requirements for farm vehicles, and transportation regulations that provide flexibility to requirements for commercial driver's licenses (CDLs) to ensure that feed and forage are able to move safely and efficiently throughout the state.
- Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of feed products and reduce environmental impact.
- Inclusion of forages in the crop insurance program in the next Farm Bill. Forages currently lack coverage afforded to other commodities.
- Increased funding for research in Kansas related to issues pertinent to alfalfa growers as well as other feed and forage research. This could include an alfalfa checkoff program and/or funding from additional sources; in the U.S., dollars allocated to alfalfa and forage research are only a fraction of those which are currently allocated to staple grain crops.
- Reduced restrictions on haying, grazing and fertilizing Conservation Reserve Program fields.
- Implementation of action items in the *Vision for the Future of Water Supply in Kansas* related to the feed and forage industry, leading to a longer usable life for Kansas groundwater and surface water sources. Effective adoption of conservation practices and management efforts which support more flexible water policies, better opportunities for voluntary conservation and increased research on management practices.
- Effective and easily accessible education programs designed for feed mills to comply with the Veterinary Feed Directive regulations.

# FEED AND FORAGE INDUSTRY OUTCOMES

## **Phase 1 (Begin within two years)**

- Coordination between feed and forage related organizations to host and participate in Kansas trade missions as an opportunity to increase export markets. Kansas is currently positioned as a top choice for high-quality feed and forage products with room to grow.

## **Phase 2 (Begin within 2-4 years)**

- Additional K-State Research and Extension forage personnel and forage/alfalfa research at Kansas State University or other agricultural institutions in Kansas.

# FOOD PROCESSING

## EXECUTIVE SUMMARY

Food processing in Kansas is a broad sector encompassing milling, slaughtering, processing and manufacturing, and consists of large-scale processors as well as small, locally owned operations. Kansas offers efficiency to food processing companies, both in its central location and in its strong transportation infrastructure. These logistic advantages, combined with a growing demand for food sourced locally, create a positive environment for new business growth within the state.

Future success in the food processing sector may be impeded by challenges that exist in the current market. One of the most difficult is the ever-increasing food safety expectations from the consumers and, as a result, from government regulations. This can impact facilities, equipment and workforce as existing companies must make changes to accommodate additional regulatory burdens. Although transportation is a strength for Kansas, improvements to some freight and storage options would expand opportunities for many businesses. Some specific segments of the industry (e.g. meat processing) are subject to some federal regulations that serve as barriers to some businesses.

There is significant potential for growth in the food processing sector, and a coordinated strategy for long-term economic growth could make a major impact. Strategies can work to enhance existing businesses as well as attract new companies to Kansas. Opportunities exist in the field of mobile processing as well as fixed-location processing. Research and education, particularly compliance education, can play a role in the future of food processing. It will require collaboration between private and public entities in the development of this strategic growth plan.

## STATUS

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the food processing industry (milling, slaughtering, processing and manufacturing) in Kansas has a direct output of over \$18.4 billion and creates 31,374.3 jobs in the state. Through indirect and induced impacts, the industry supports a total of 113,725.4 jobs and creates a total economic contribution of approximately \$33.8 billion.

Central location and freight options create a logistics advantage for Kansas to not only add value to those commodities produced in the state, but for products that are shipped in from other states for further processing before moving on to their next destination.

Kansas is home to large-scale food processors as well as small, locally owned processors. The opportunities to expand food processing in Kansas are evident in the quantity of commodities leaving the state without any processing and in the quantity of products coming into Kansas already processed.

## OPPORTUNITIES

In order to develop a strategic growth plan for the food processing 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
<b>Demand</b>	Tremendous demand exists for meat, eggs, fruits and vegetables sourced directly from the farmer particularly in major urban areas. Major grocery chains want to offer three lines of product: national brand, regional brand and a local option.
<b>Entrepreneurship</b>	Having an attractive environment for value-added facilities — including raw ingredients, processing expertise at the university and being business-friendly — make it more likely that innovation will happen in Kansas.
<b>Export Infrastructure</b>	Maintaining and improving export infrastructure will help ensure demand for Kansas food products around the world. Good roads for trucks and plenty of rail access across the state along with a state-of-the-art intermodal facility are key to a strong export infrastructure along with a central location in the United States.
<b>From the Land of Kansas</b>	The state trademark program offers a wide variety of services to Kansas companies with a range of membership levels that vary in cost and benefit options. With 300 member companies, an online marketplace and a great brand, being part of From the Land of Kansas could be an asset for any food processor.

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Policy Environment</b>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations and a sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agriculture industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, including a national traceability system, international trade, federal taxes, transportation rules, natural resources, and more.</p>
<b>Supporting Institutional Infrastructure</b>	<p>Kansas State University and KDA house expertise to guide food processors looking to get started or expand in Kansas. They can help businesses be successful in the regulatory environment as well as offer some unique start-up and marketing assistance. The Kansas value-added lab offers expertise on preparation and storage for processed foods.</p> <p>This attracts owners and managers of food processing businesses to Kansas for training and exposure to the great business environment the state offers and plants the possibility for expansion or relocation to Kansas.</p>

## SUCCESS STORIES

Develop bulleted list of key successes in the industry:

- A processing company in Lyon County brings partially processed meat in from other locations and does further processing at the Kansas location before shipping it out.
- A national company has a bratwurst and sausage patty plant in Holton that makes and distributes product for the whole western half of the United States based on the strategic location.
- There were 45,000 meat animals processed in local meat processing facilities in 2014.
- A national confectionery company chose Topeka as the best location for a new manufacturing facility.
- A regional meat processing company is expanding in Emporia.
- A food processing company in Scott City is on the cutting edge of sorghum processing for food.
- There are 144 processor/manufacturer members in From the Land of Kansas.

## CHALLENGES

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

Challenge	Details of Challenge
<b>Consumer Demand</b>	<p>A growing demand for fresh products as opposed to dried or frozen is a challenge for processors in an interior state such as Kansas. Consumers are also increasing their demand for a wider variety of products that suit their preferences for the story behind the food.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Critical Infrastructure</b>	<p>Transportation infrastructure is critical for food processing. Access to processing facilities with roads that can handle tractor trailers and access to rail for receiving raw commodities is important. Processors rely heavily on the freight network to move their products to those areas of higher population primarily in states around the exterior of the country. Refrigerated shipping capabilities are also a key component in which Kansas has room to grow.</p> <p>Refrigerated storage capacity at the Edgerton intermodal facility will open another door of opportunity to move Kansas products around the world in a refrigerated condition.</p> <p>For smaller operations, taking advantage of back haul opportunities and other freight sharing options can dramatically reduce the cost of moving goods. There is a need for a way to easily connect those businesses that could work together on freight.</p>
<b>HRI Scale Requirements</b>	<p>It is challenging for local, farmer-direct suppliers — whether it be individuals or organized efforts such as coops — to meet the demands of hotel, restaurant and institution requirements for quantity and consistency.</p>
<b>International Trade</b>	<p>There is a need to continue to build an international awareness of all that Kansas has to offer and create an appreciation for those products grown and processed in Kansas. From the Land of Kansas has a role to play in building the international brand recognition for Kansas.</p>
<b>Meat Inspector Access</b>	<p>It can be challenging to get U.S. Department of Agriculture meat inspectors to rural meat processing operations on a schedule that matches the needs of all parties.</p> <p>There are also some regulatory limits on trading particularly in the area of meat. Only those facilities inspected by USDA are allowed to sell meat outside of the Kansas borders even though state inspected facilities must meet the same requirements for food safety.</p>
<b>Policy</b>	<p>Ever-increasing food safety expectations from the public and the government result in a growing regulatory burden on food processing businesses to implement processes, upgrade equipment, sample product, document activities and hire additional employees to complete all of this work.</p> <p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: food labeling, dietary requirements, Waters of the U.S., the Endangered Species Act, burdensome Occupational Safety and Health Administration regulations and more.</p>

## CHALLENGES

Challenge	Details of Challenge
<b>Policy (cont'd)</b>	Government assistance to the unemployed makes it too easy not to work. It's easy to compare unemployment income and other assistance to jobs paying minimum wage or even jobs paying \$10-\$13 per hour and choose to stay unemployed.
<b>Water</b>	Water efficiency and conservation is important in all business sectors
<b>Workforce Development</b>	<p>The level of education for employees in food processing is typically not as challenging as finding employees who have the desire to do the work and appreciate the work environment in which the work is done. Hiring and maintaining a workforce particularly in the rural communities is a challenge. Basic life skills are required, such as showing up to work on time and calling if you aren't going to make it in. Employers in this sector are comfortable training for the job specific skills.</p> <p>Schools need to provide options for students to work in the fields where local businesses need them through partnerships with local employers. A processing sector that connects with high school agriculture education programs and hires graduates with an agriculture certificate would have access to a larger workforce.</p> <p>There is a shortage of housing options in rural communities.</p> <p>For locally owned processing businesses, such as meat lockers, succession planning and attracting the next generation of ownership into the business is an area of concern.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the food processing sector.

Focus Area	Solution
<b>Add Value in Kansas</b>	Determine why commodities are leaving Kansas and look for ways to complete that processing step in Kansas.
<b>Assess Capacity</b>	Determine what the value-added food processing capacity of Kansas is and where it's located. Do we have existing capability to do more? Do we have existing facilities that aren't being operated?

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Cross Border Meat Sales</b>	Work with the federal delegation on possible options for state-inspected meat processors to sell their products out of state.
<b>Freight Connection</b>	Explore options for connecting processors shipping product to or receiving product from the same regions such that freight can be shared.
<b>Industry Advisory Group</b>	Build a list of industry leaders and top processors to gain better insight into the needs of the sector.
<b>Mobile Processing</b>	A processing sector that is more nimble and that can better meet the demand for local food is important to future growth — for example, having the ability to be local in different locations with something such as a mobile poultry processing unit that provides locally grown and processed chicken to farmers' markets and local restaurants. Develop plans for processing units that have all the critical capability of a fixed processing plant and meet all the necessary regulatory requirements which can be moved from one location to another.
<b>Proactive Outreach</b>	Engage in proactive outreach to established processors to work on challenges and help in areas of possible growth.
<b>Succession Planning</b>	Work with local processors to create a plan for staying in business. Many local food processors are family-owned businesses with little or no succession plan in place for when the current owners stop working in the business. Those processors who wish to stay in operation and don't have the next generation of owners/operators lined up need help. Consider a partnership with K-State and other schools to identify those students interested in specific fields of work in specific locations and connect them with the local businesses looking to establish a succession plan.

# OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Mobile processing: Rather than fixed-location processing facilities, there is a need for mobile specialty processing units that could be used for poultry and game species such as rabbits and quail as well as larger animals such as sheep and goats.
- Compliance education center of excellence: Establish programming making Kansas the recognized leader in compliance education training and certification. Good opportunities for local, farmer-direct suppliers who can also boast strong food safety protocol and results.
- Move processing to Kansas: Entice the processing entities that Kansas commodities are destined for when they leave the state to relocate to Kansas or expand into Kansas such that Kansas commodities can be processed in Kansas.
- Increase extension resources in food science particularly in value-added food resulting from activities such as dehydration, sterilization, thermal processing and high-pressure processing.
- Increase the food research done at K-State.
- Refrigerated storage at the Gardner intermodal facility and future intermodals in Kansas would add capacity to what is already a freight advantage for Kansas.

# FOOD PROCESSING INDUSTRY OUTCOMES



## **Growth Objective:**

*Increase the number of facilities accessible for small, medium and large food processing companies, and expand opportunities for existing companies to increase sales and profitability.*

## **The following outcomes will be the result of industry collaboration and effort to grow the Kansas food processing industry:**

### **Phase 1 (Begin within two years)**

- Strong reputation among the national industry as a state with great potential for food processing companies to expand or move their business.
- Increased amount of food processing in Kansas facilities, from small to large scale operations. Co-packers capability available to small processors to produce or package items.
- State-sponsored economic development incentives which meet the needs of food processing enterprises.
- Kansas communities identified that express acceptance to and interest in understanding the economic benefits of food processing facilities and are open to welcoming businesses into their region.
- The benefits of living in Kansas are widely known and understood by food processing corporations and can be used in the employee recruitment process.
- Housing is a recruitment aid rather than a concern, and food processing employers don't struggle with adequate employee housing in the communities in which they do business. State-sponsored incentives for processors which assist in securing employee housing.
- Increased number of commercial kitchen locations available for use across the state for local food processing.
- Mobile processing capabilities available to small processors with necessary food safety guidelines.
- Training for small to medium-sized companies through webinars or workshops on various topics (e.g. food safety, workforce management and marketing). Delivery through K-State Research and Extension or industry associations would be well-received.
- Expanded benefits and marketing potential for food processors through the From the Land of Kansas trademark program.
- Increased export opportunities for Kansas food processors, including increased participation in export programs and other sales experiences (e.g. Food Export Midwest programs).
- Regulations that allow products from state-inspected meat facilities to be sold across state borders. Current law prevents meat from being sold across state lines unless it is from a federally-inspected plant but does not recognize state inspections as equal to the federal inspections.

# FOOD PROCESSING INDUSTRY OUTCOMES

## **Phase 1 (Begin within two years)**

- Competitive utility rates in Kansas that do not create a competitive disadvantage with other states and allows Kansas to maintain existing enterprises and grow industry in the future.
- Food processors have an industry-influenced pipeline of college graduates from Kansas State University to hire into management, engineering, research and quality areas of their businesses.

## **Phase 2 (Begin within 2-4 years)**

- Research to develop methods for phosphorus elimination in waste water.
- Evaluation of cold storage needs for processors to identify potential for building a new facility.

# PET FOOD

## EXECUTIVE SUMMARY

The pet food industry in Kansas has been a source of growth and is poised for additional growth in coming years. Kansas sits in the KC Animal Health Corridor, which includes several of the world's largest pet food manufacturers, along with more than 300 companies and organizations involved in animal health and nutrition. Pet food sales from the businesses within the Corridor accounts for over half of the total U.S. pet food sales, and a significant portion of the total Kansas exports were animal and pet food exports. Proximity to pet food ingredients which are grown or produced in Kansas are a significant advantage for this region. Pet owners are a growing segment of the population, and the purchasing power in this demographic opens up great potential for this industry.

Although great opportunity exists, the industry also faces some challenges which could serve as a barrier to the kind of growth that is possible. Food safety regulations are increasing within the pet food industry and impact facilities, equipment, workforce and labeling. Several other federal policies impede efficiency in business as well. Distribution of product is a challenge, needing improved transportation infrastructure as well as storage options. Hiring and maintaining a workforce is difficult particularly in rural communities with a lack of housing.

Converting these opportunities into productive economic growth will require the development of a long-term growth strategy based on input from both public and private stakeholders in the pet food industry. Public outreach, both locally and internationally, could set Kansas up as the leader in pet food manufacturing. Education and government organizations can play a key role in promoting opportunities for innovation and expansion within new and existing businesses. Proactive efforts from key players in this sector can result in growth for the pet food industry in Kansas.

## STATUS

With the growing trend of pet ownership, the pet food industry, which includes dog and cat food along with food for birds, fish, reptiles, hamsters and other pets, is poised for additional growth. This business growth can develop into a larger market of value-added products from the resources available in Kansas. Two of the top five pet food companies own manufacturing operations in the state. According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the animal food industry in Kansas has a total direct output of approximately \$4.9 billion and creates 3,533.7 jobs. The industry supports a total of 18,412.1 jobs and provides a total economic contribution of over \$8.0 billion. The dog and cat food manufacturing industry alone employs 2,129.5 with a direct output of over \$2.8 billion. The dog and cat food manufacturing industry supports 10,587.4 employees through indirect and induced impacts and creates a total economic contribution of approximately \$4.6 billion.

Pet food manufacturers located within the KC Animal Health Corridor represent 61 percent of the total pet food sold in the United States. Founded in 2006 and anchored by Manhattan, Kan., and Columbia, Mo., the Corridor comprises more than 300 companies and organizations involved in animal health and nutrition, including leading universities and research institutions. Also located in this region are several facilities of some of the United States' and the world's largest pet food manufacturers. These Corridor pet food manufacturing companies also account for 49 percent of global pet food sales.

According to the Euromonitor International data available at the end of 2014, global dog and cat food sales alone amounted to about \$79 billion. In Kansas, animal and pet food exports were at 9.7 percent of total pet food production which equates to \$403 million and ranks this category 4th in state exports.

The 61 percent of U.S. pet food sales cited by the Corridor amounts to just over \$14 billion of the U.S. total of \$23 billion, which corresponds to data from the American Pet Products Association (APPA). Companies with a business location within the Corridor represent 56 percent of the total animal health, diagnostics and pet food sales, which totals almost \$50 billion in sales (total global sales = \$88.2 billion). Companies located within the Corridor represent 67 percent of the total animal health, diagnostics and pet food sold in the United States, totaling \$21.5 billion in sales (total U.S. sales = \$32 billion).

Data from research firm GfK shows 51.6 percent of all U.S. households own a dog or cat. Among millennial households, the percentage rises to 57 percent with another 20 percent reporting they intend to get a dog or cat. Also, 10 percent of U.S. pet owners are new to ownership, equating to nearly 8 million new pet owners within the last year, the majority of which are millennials.

In addition, many other players in pet food fall outside the “animal health and nutrition” mission of the Corridor but are important pieces of our vibrant industry. These include equipment manufacturers, processing support organizations, testing and lab services. The Corridor website lists hundreds of similar organizations by category, its “service provider” members. This industry employs nearly 20,000 people with approximately 3,000 of these jobs in Kansas.

# OPPORTUNITIES

In order to develop a strategic growth plan for the pet food industry, 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
<b>Capital of the Pet Food Industry</b>	No state or region has proclaimed itself as the pet food capital. Kansas could present itself in recruitment efforts as the key player in the pet food industry.
<b>Export Infrastructure</b>	Maintaining and improving export infrastructure will help ensure demand for Kansas pet food products around the world. Good roads for trucks and plenty of rail access across the state along with a state-of-the-art intermodal facility are key to a strong export infrastructure along with a central location in the United States.
<b>Ingredient Sources</b>	Pet food uses sorghum, animal renderings, other grains or grain by-products grown or produced in Kansas. Meat is the number one ingredient in premium dog and cat food. Manufacturers note the importance of processing facilities located near the ingredient supply.
<b>KC Animal Health Corridor</b>	There is room for growth as other animal health companies locate to the KC Animal Health Corridor that stretches from Manhattan, Kan., to Columbia, Mo.
<b>Policy Environment</b>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations and a sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion. Kansas tax policy is a benefit to the innovator and entrepreneur because removing state income tax from the cost equation reduces the risk of proceeding with a project.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agriculture industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, including a national traceability system, international trade, federal taxes, transportation rules, natural resources and more.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Regulatory Compliance</b></p>	<p>With the innovations at Kansas State University in pet food safety, Kansas is a leader in regulatory compliance and providing a safe, wholesome product.</p> <p>Many existing pet food manufacturing facilities will be unable to comply with the Food Safety Modernization Act’s changes to manufacturing regulations in the next 3-5 years. There is a huge opportunity to attract replacement capacity to Kansas. Some estimates suggest the opportunity of 15 additional plants in Kansas in the next 5-8 years.</p>
<p><b>Supporting Institutional Infrastructure</b></p>	<p>K-State University and KDA house expertise to guide processors looking to get started or expand in Kansas. They can help businesses be successful in the regulatory environment as well as offer some unique start-up and marketing assistance. Having both grain processing and large animal expertise at K-State is an important part of being the pet food capital.</p>

# SUCCESS STORIES

- K-State Pet Food Program Strategy Planning group gathered representatives from the industry, K-State, KDA and economic development and decided to host the Pet Food Experience workshop in Manhattan again since the first one was well attended.
- The Petfood Forum relocated to Kansas City from Chicago; the relocation was received with enthusiasm and the event will be held in Kansas City for the next four years.
- The KDA ag marketing division secured a STEP grant to include a trade mission trip to Pet Food Forum–Asia. The department took two Kansas pet food industry companies to the forum and the VICTAM trade show in late March.
- The pet food curriculum has become a separate area of focus within the K-State grain science program allowing students to learn to work specifically in the pet food business.

# CHALLENGES

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

Challenge	Details of Challenge
<p><b>Consultants</b></p>	<p>Much of the work done in economic development around where companies choose to locate or expand is managed by consultants. Kansas needs to have more proactive interaction with the major consulting firms across the country so that Kansas is always on their minds for possible locations.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Consumers</b>	The fastest growing segment of pet food is “grain-free” which is not so good for a major grain-producing state like Kansas. This trend is linked to misperceptions about inflammation and dermatitis issues in pets being caused by grain.
<b>Critical Infrastructure</b>	<p>Transportation infrastructure is critical for pet food processing. Access to processing facilities with roads that can handle tractor trailers and access to rail for receiving raw commodities is important.</p> <p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers. Communities need to clean up houses and/or neighborhoods which are in poor condition and explore some spec home construction to offer to prospective employees. The state and federal government don’t help the issue by subsidizing low-income housing in rural communities.</p>
<b>Distribution</b>	<p>Pets are where the people are — the largest consumer base is on the coasts and around other major urban centers which also means most of the product has to be shipped long distances if it’s made in Kansas.</p> <p>Many small manufacturers of pet food need a warehouse and distribution facility but aren’t big enough make it work. A facility that could do this work for several small companies is needed particularly in serving the Kansas City market or housing for shipment from the Kansas City area.</p>
<b>Education of the Scope of the Industry</b>	There is a lack of awareness that the pet food industry focuses on all companion animal type pets (birds, fish, reptiles, hamsters, etc.) and not just on cats and dogs.
<b>International Trade</b>	More work is needed to gain market access for Kansas pet food products around the world in terms of awareness, trade policy and shipping. Companies do not think of Kansas as a place to move their business. We need to market the state as the pet food hub for national and international companies. International buyers need to think of Kansas first when they are looking to source product. Passage of the Trans-Pacific Partnership could affect trade with some regions.

# CHALLENGES

Challenge	Details of Challenge
<p><b>Microbiological Testing</b></p>	<p>There is no private lab in Kansas where pet food manufacturers can have their products tested for micro concerns such as salmonella. This is important for smaller operations that may not have the production to justify their own laboratory as well as for outside confirmation of internal testing.</p>
<p><b>Policy</b></p>	<p>The increasing food safety regulatory environment has placed an additional burden on pet food manufacturers to implement processes, including upgrading equipment, sampling product, documenting activities and hiring additional employees to complete all of this work.</p> <p>The U.S. has an antiquated view of poultry meal and poultry by-products as the only country in the world with split definitions. Other species don't have split definitions.</p> <p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: Waters of the U.S., the Endangered Species Act, burdensome Occupational Safety and Health Administration regulations and more.</p> <p>Inconsistent labeling requirements, licensing requirements, etc. exist from state to state. Pet food is a national and international business making consistent requirements very important to streamlined operations.</p> <p>Corporate farming laws in Kansas make it difficult for poultry production and poultry is a major meat ingredient in pet food.</p>
<p><b>Supply Chain</b></p>	<p>From an ingredient-sourcing perspective it is difficult to get ingredients such as rabbit, venison, duck, potatoes, sweet potatoes and field peas all of which are popular in formulations today. This could potentially drive production to the west coast to be closer to these ingredients and the large population base.</p>
<p><b>Workforce Development</b></p>	<p>Pet food manufacturers, similar to other agricultural companies, face challenges finding and hiring qualified candidates.</p> <p>In the pet food industry, it is often more challenging to find employees who are willing to work in manufacturing rather than finding employees with a specific level of education. Hiring and maintaining a work force particularly in the rural communities is a challenge.</p> <p>The educational system and current culture focuses heavily on preparing high school students for college, and undervalues the opportunities available in technical careers for students with a strong work ethic.</p>

# NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the pet food industry.

Focus Area	Solution
<b>Incubation</b>	As more and more small companies start up, Kansas would benefit from development of an incubator with equipment, expertise and venture capital at K-State to support these start-ups.
<b>Industry Organization</b>	Work with industry and K-State to facilitate a discussion regarding the development of an industry organization. Regular participation in industry activities by several pet food manufacturers suggests that the critical mass necessary to form an organization may exist.
<b>Industry Outreach</b>	<p>KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders and major manufacturers in Kansas regarding the development of a strategic growth plan. Specifically, make connections with the Pet Food Institute.</p> <p>KDA will dedicate staff time to encourage growth in pet food manufacturing within the state. Staff will work with industry consultants to gather more information on the needs of companies or to see how KDA can work with companies to better serve those needs.</p>
<b>Pre-Selected Sites</b>	Proactively determine specific locations that have all the features important to pet food processors, to attract additional processors to Kansas.
<b>Public Outreach and Education</b>	Work with industry to develop and implement a public education campaign focused on promoting Kansas as the pet food capital of the world. Have a booth at Pet Food Forum or sponsor a breakout session.
<b>Quality Certification</b>	Develop an HACCP and pet food safety training or a joint certification program between K-State and KDA. This would provide a needed service to Kansas pet food companies as well as draw industry employees to Kansas from across the country and potentially around the world.
<b>State Requirements</b>	Kansas could take the lead in working with other states to make labeling and licensing for pet food more consistent using AAFCO and NASDA connections as a spring board.

# OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Establish more companies in the animal health corridor on the Kansas side; target 2-4 new companies.
- Expand existing companies in Kansas.
- Assist companies in identifying and servicing export markets.
- Grow the pet food program at K-State and help with placement for internships and full-time jobs for those graduates.
- Establish an industry certificate for compliance education from K-State or KDA.
- Attract a co-packing facility to Kansas. There is huge demand for non-brand production to accommodate small recipe developers that can't afford a processing plant.
- Figure out how to be a good supplier of ancient grains such as quinoa, spelt, kamut, etc. The supply chain is not set up for it currently.
- Companies that supply bolt-on resources like marketing, quality control and food safety operations are needed so that small manufacturers don't have to develop all this expertise in-house.

# PET FOOD INDUSTRY OUTCOMES



## **Growth Objective:**

*Establish Kansas as the pet food capital of the world by increasing support of the pet food industry, attracting new businesses to the state and expanding opportunities for existing companies to increase sales and profitability.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas pet food industry:**

### **Phase 1 (Begin within two years)**

- National reputation as the destination for expansion in the pet food industry through trade show displays, marketing initiatives, advertisements, recruitment trips, and proven success.
- Expanded laboratory testing to provide Kansas companies with quality services and fast turnaround. For example, salmonella testing for pet food and ingredients would be a benefit in northeast Kansas since most samples are currently sent out of state.
- Private and public collaboration to develop and construct manufacturing facilities or distribution centers as spec plants to attract and accommodate new companies to Kansas.
- A competitive and competent workforce to meet the needs of pet food companies in Kansas. Connections between the pet food industry and high school agriculture education programs would encourage more interest in careers in pet food that would lead students to pursue specialized training in technical schools, community colleges and universities.
- Continued support of the pet food minor in the grain science and industry department in the K-State College of Agriculture.
- Effective and accessible pet food manufacturer training programs on the Food Safety Modernization Act.
- A marketing program to promote the importance of the pet food industry in Kansas, similar to the dairy initiative.
- Ongoing professional dialogue to analyze and prioritize ideas within the pet food industry. Potential topics would include value-added products, specialty ingredients, marketing, consumer trends, investors, research, etc., and would build upon the Pet Food Forum held in Kansas City.
- Fully functioning pet food industry association at the state and national level to advocate for the pet food industry.
- Effective array of “soft” incentives (e.g. mentorships, internships and training on interaction with financiers) to ensure that companies have access to the best information, workforce and financing to economically grow and thrive in Kansas communities and bring pet food products to market. The need for physical space for small-scale product development also exists.

### **Phase 2 (Begin within 2-4 years)**

- Facilities to meet the needs identified by the industry, to possibly include incubators, manufacturing facilities or distribution centers.



# PORK

## EXECUTIVE SUMMARY

The pork industry is an important component of the Kansas economy, providing pork products locally, nationally and internationally. As swine production has become more specialized, and environmental impacts have played an increasingly larger role in operational decisions, the pork industry in Kansas has seen adjustments in size and location of hog operations. Growth in the pork industry can result from an increasingly concentrated supply chain, and the readily available supply of feed in Kansas assists that effort. Leaders in the pork industry in Kansas are dedicated to support of swine farmers and to advancement of the industry. Swine producers strive to minimize production costs while optimizing productivity and product quality all while reducing environmental impact and avoiding social impacts on their communities. Modern swine production has become very specialized and farm sizes have grown as economies of scale are sought.

Several challenges face the pork industry, which pose potential barriers to success in Kansas in the future. A variety of policies at the local, state and federal level can slow the growth of individual operations, and public support for hog operations is lacking in some communities. Attracting a skilled workforce is a continual concern, as well as managing the challenges of an immigrant workforce. The lack of a large-scale processing facility raises transportation costs, and acquiring sufficient water supply is difficult in some areas of the state. Environmental regulations have put pressure on some producers to relocate.

Growth in the pork industry will require the collaborative effort of public and private stakeholders across the state. Investigation into expansion of the processing options would open up new opportunities for growth of existing and new operations. Additional efforts to maximize efficient water use will benefit hog operations in the short term and protect the industry's long-term future as well. Continued communication with policy makers and the public to improve understanding of the pork industry is critical. A great deal of potential exists for growth in this sector, as key leaders work together to identify strategies for future development.

## STATUS

Kansas ranks 10th nationwide in hog inventory, producing about 2.8 percent of the nation's total. There are about 1,000 hog farms in Kansas. Of these operations, 150 produce over 99 percent of the state's pork. In 2015, Kansas producers sold 3,298,673 market hogs, feeder pigs and seedstock with a gross market value of \$494.3 million. These hogs produced more than 600 million pounds of pork which helps feed millions of people in the United States and abroad through exports (KPA Kansas Pork Industry Facts, 2016).

The pork industry is important to the Kansas economy. Kansas pork farms consume more than 30 million bushels of grain. Primarily, these operations utilize Kansas-grown grain sorghum and corn. At January 2016 prices, the pork industry will spend over \$90 million on grain sorghum and corn this year. Kansas pork farms also consume the equivalent of more than eight million bushels of soybeans through soybean products. At January 2016 prices, the pork industry will spend over \$64 million on soybean meal this year (KPA Kansas Pork Industry Facts, 2016).

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the pork industry in Kansas has a direct output of over \$467.3 million and creates 2,860 jobs in the state. Through indirect and induced impacts, the industry supports a total of 4,583.6 jobs and creates a total economic contribution of over \$716.6 million.

In general, the swine industry is moving to the north central part of the United States and to the central and western half of Kansas. It is important to remember that industry shifts can occur suddenly. Oklahoma increased its breeding herd by almost 500 percent in a little over five years. The relative mobility of the pork industry means that regulations could result in significant changes in the location of hog production facilities, with ripple effects in local economies. Modern swine production has become very specialized and farm sizes have grown as economies of scale are sought. The trend toward fewer, larger and more productive hog operations will likely continue into the foreseeable future.

## OPPORTUNITIES

In order to develop a strategic growth plan for the pork industry, 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
<b>Biosecurity and Foreign Animal Disease Traceability</b>	<p>KDA Division of Animal Health is working with veterinarians and swine industry partners to best develop protocols to address disease concerns.</p> <p>The U.S. Department of Agriculture issued a federal order requiring producers to report any new detections of PEDv and other swine enteric coronavirus diseases to state or federal animal health officials.</p>
<b>Contract Production and Nutrient Utilization</b>	<p>Contract production is believed to have aided the expansion of hog operations by facilitating the accumulation of capital necessary for operations to adopt new technologies and achieve economies of size.</p> <p>Some farmers have opted to contract grow hogs which allows them to not only diversify their operation, but it also allows them access to manure to use on their crops. Manure management and the nutrient utilization capacity of crops grown on large Kansas farms fit well into the business model for Kansas farmers.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Environment</b>	<p>Although most hog production is indoors, and hogs can adapt to some degree to different thermal environments, there is a cost to production associated with keeping them outside their comfort zones. The semi-arid climate and mild ambient temperatures make Kansas well-suited for hog production.</p> <p>Kansas is taking significant proactive steps to preserve and extend the usable life of water supplies in Kansas. In recent years, voluntary, flexible and producer-driven water conservation tools have been implemented to help farmers and livestock producers manage their water rights while continuing to raise crops and livestock. Kansas has developed a <i>Vision for the Future of Water Supply in Kansas</i> with goals and specific action items to help ensure a reliable water supply while continuing to grow the economy.</p> <p>The Kansas Pork Association has its own environmental firm, Kansas GOLD™. The Kansas GOLD™ program is designed to help pork farmers ensure they are prepared for an inspection by the state's regulatory agencies. Kansas GOLD™ also offers nutrient management planning as well as soil and manure sampling.</p>
<b>Human Capital</b>	<p>Kansas is home to world-renowned leaders in animal agriculture. Industry consultants, veterinarians and research leaders at Kansas State University are continually working to improve the swine industry and are looked at as leaders in their field.</p>
<b>Industry Value</b>	<p>Kansas currently has value-added processing for pork brought in from processing plants in other states.</p>
<b>Policy Environment</b>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter -S Corporations; a sales tax exemption on the construction, reconstruction, and remodeling of livestock facilities for projects greater than \$50,000; a sales tax exemption for farm machinery and equipment and various ag-based inputs; and reinstatement of the ability to offset capital gains from the sale of breeding livestock with schedule C, E and F ordinary income losses. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p>
<b>Public Outreach</b>	<p>Kansas Pork Association staff work on marketing and outreach both online via social media platforms and at events around the state.</p>

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Supply Chain</b>	Rapid growth and concentration of the swine industry has been attributed to the development of supply chains more closely linking producers, packers and consumers. Kansas benefits from a readily available supply of grain and readily available transportation to get hogs to processing facilities located across state lines.
<b>Supporting Institutional Infrastructure</b>	Kansas is recognized as one of the best exercised states in foreign animal disease. The construction of the National Bio and Agro-Defense Facility and the existing Biosecurity Research Institute enhance the research capabilities for animal health and biosecurity for the state, U.S. and global swine industry.

## SUCCESS STORIES

- Expansion of a large pork operation in north central Kansas is expanding economic growth of that region.
- Changes in the tax code in 2012 and 2014 make Kansas more attractive for new business growth or expansion of existing businesses.
- Several national meat processing companies are importing meat to Kansas for value-added processing.
- A large hog operation in southwest Kansas expanded its business.

## CHALLENGES

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

Challenge	Details of Challenge
<b>Biosecurity and Foreign Animal Disease Traceability</b>	<p>Premises ID systems are not required in Kansas. Some states are transitioning or have already transitioned to a premises ID system. A system with proper trace back and trace forward capabilities provides timely response to minimize the economic impact in the event of an animal disease outbreak.</p> <p>Indiana is a state model to evaluate if/when premises ID consideration is evaluated in Kansas.</p>
<b>Critical Infrastructure</b>	<p>Swine production is often located in rural communities, many of which have an inadequate supply of affordable housing for the workforce needed to expand or grow businesses.</p> <p>Marketing hogs in parts of Kansas can be challenging. There are no large-scale processors in Kansas which means hogs must be hauled out of state. Two-lane roads can make transporting hogs challenging at times.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Industry Support</b>	At permit hearings, there is a greater voice in opposition of hog farms than in support.
<b>International Trade</b>	A key area for growth will result from increasing global demand for pork. With Kansas' partnerships in U.S. Meat Export Federation and commodity groups, the state can increase global demand for red meat. In 2015, exports added more than \$48.61 to the value of each hog marketed. Kansas must work with elected officials to keep export markets open and accessible for producers.
<b>Policy</b>	<p>County regulations vary across the state. In some counties, the board of county commissioners may submit a vote to allow corporate-owned hog facilities to relocate to their counties.</p> <p>Environmental regulations (minimum setbacks, maximum farm sizes as defined by animal unit capacity, Kansas Statute 65-171d), corporate ownership, and processor ownership of hogs could be perceived as inhibitors to industry growth.</p> <p>Due to lack of staff, the Kansas Department of Health and Environment permit process can take a long time. Many producers acknowledge the lack of agricultural engineers contributes to the problem.</p>
<b>Public Outreach</b>	Many Kansans may have misperceptions about how hogs are grown and raised. In order for a swine operation to be welcome in the community, the public must be educated on modern hog production.
<b>Supply Chain</b>	Kansas currently lacks a large-scale processing facility in the state. Although transportation is readily available, transportation costs to processing facilities out of state can become cost prohibitive for producers. Pork is currently imported and processed into value-added products in Kansas.
<b>Water</b>	Critical to growing any livestock operation is access to an abundant and reliable water supply. This can prove challenging in many areas of western Kansas that are closed to new water appropriations. New or expanding swine operations in these regions will have to purchase land with sufficient water rights. Consumptive use laws can be costly and burdensome to convert from irrigation to stock water use.

## CHALLENGES

Challenge	Details of Challenge
<b>Workforce Development</b>	<p>Growth in the swine industry will require a skilled workforce, which continues to be a significant challenge through the entire agricultural industry. Local communities need to have an interest in the type of jobs that will become available at a hog facility. The education and skill sets needed to operate technically advanced facilities now require individuals who have different education levels and work experiences than employees working on the ground inside sow facilities and finishing barns.</p> <p>Immigration and visa challenges will continue to be a problem. A better system would help eliminate the professional migrators, or employees that move from farm to farm once their paperwork catches up with them. When recruiting and processing non-citizens to relocate and work in the Kansas pork industry, producers would have less of a problem going through the process of hiring foreign workers if they knew the visa programs had stability.</p> <p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p> <p>The demand for agricultural engineers and consultants is strong in Kansas, especially in the swine industry.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as the next steps in developing a strategic growth plan for the pork industry.

Focus Area	Solution
<b>Expanding Industry</b>	<p>Work with renowned K-State swine group to identify ways to enhance and expand the Kansas pork industry. Targeted recruitment of swine producers and processors, including genetic companies, is a desired outcome.</p> <p>Attend K-State Swine Profitability conference and Swine Day to fully understand the state of the industry in Kansas.</p> <p>Attend World Pork Expo and begin conversations with attendees regarding interest in growing Kansas pork business.</p> <p>Consider U.S. Livestock Genetic Export trade mission for swine genetics by focusing on developing new relationships and opening global distribution outlets for Kansas swine genetics.</p>
<b>Infrastructure Improvements</b>	<p>Establish proactive outreach with major pork processors to evaluate future plans for expansion including value-added processing and live hog production.</p> <p>Understand how feed mill capacity/proximity blends with industry growth needs.</p> <p>Housing for workforce is a critical piece for industry growth.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>International Trade</b>	Kansas has the opportunity to increase live hog exports to countries wanting to expand their own herds. Kansas has seen an increase in export certificates for hogs going to both Mexico and Canada over the past year.
<b>Public Outreach</b>	<p>Work with Pork Checkoff to improve public information and outreach (see National Pork Board 2015-2020 Strategic Plan).</p> <p>Put together a tour of modern hog production for county commissioners to improve their knowledge and understanding of the hog industry and its economic impact.</p>
<b>Water</b>	<p>Continue to implement the action items identified in the Kansas Water Vision related to livestock production including continued outreach to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas.</p> <p>Communicate facts about water use. For example, water can be used twice: once to water hogs, once to apply on crops. The amount of water used in hog production is much less in comparison to a center pivot irrigating crops. The gal/min needed for a hog farm is much less than needed for an irrigation pump (50 gal/min versus 2000 gal/min), which may allow hog farms to relocate in areas where irrigating crops is no longer a viable option.</p>

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Explore opportunities to increase value-added processing in the state.
- Partner with industry to enhance consumer education efforts related to swine production practices.
- Expand opportunities for niche/local marketing of pork from Kansas farms.

# PORK INDUSTRY OUTCOMES



## **Growth Objective:**

*Through partnerships and collaboration, and eliminating barriers to growth, foster an environment that supports growth and expansion of the Kansas pork industry.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas pork industry:**

### **Phase 1 (Begin within two years)**

- Freedom for all business structures to do business in Kansas. Current corporate farming laws limit certain ownership structures from operating in Kansas which curtails investment and limits growth and modernization.
- A fully staffed Kansas Department of Health and Environment livestock waste management section resulting in expedient permitting while effectively protecting the natural resources of the state.
- Voluntary, market- and industry-driven traceability system to provide critical tools to manage a disease outbreak, enhance consumer confidence and trust in Kansas livestock, protect food safety, and provide opportunities to access export markets.
- Alternative workforce programs to fill the talent and workforce needs of the industry — e.g. temporary workforce, H-2A, H-2B, family-based immigrant visas, NAFTA Professional (TN) visa, etc.
- Federal immigration reform with a focus on long-term visas for agricultural workers, and a potential immigration pilot program in Kansas.
- Expansion of talent development and educational training opportunities for students preparing for careers in the pork industry. Currently, awareness of careers does not often include those in the support roles — for example, extension and USDA FSIS.
- Dedicated business development resources for the exploration and evaluation of value-added pork and sow processing opportunities within the state.
- Continued proactive social and traditional media outreach about the pork production chain, pork safety, quality and nutrition to encourage trust from consumers, influencers and media and a better understanding of the industry.
- Kansas State University research focused on high-technology, innovative and scalable nutrition, health and management solutions for the state's pork industry.
- Identify Kansas communities that express acceptance to and interest in understanding the economic benefits of swine facilities and are open to welcoming businesses into their region.
- Pre-identified swine facility building sites with available natural resources (i.e. water, waste disposal).

### **Phase 2 (Begin within 2-4 years)**

- Intra-industry partnerships aimed at developing and expanding niche market opportunities for pork producers.
- Competitive utility rates in Kansas that do not create a competitive disadvantage with other states and allows Kansas to maintain existing enterprises and grow industry <sup>113</sup>the future.

# POULTRY

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## EXECUTIVE SUMMARY

Compared to more traditional livestock production in Kansas, the poultry industry is relatively small. Kansas is home to some innovative and high value egg laying and poultry genetic companies, however, opening the door for expansion in the poultry sector. Poultry operations require relatively less land than other livestock, and Kansas is home to abundant poultry feedstock supplies. Other factors contribute to Kansas' appeal to the poultry industry, including effective freight and warehouse infrastructure and strong leadership in education and policy relating to the poultry sector. Kansas has shown leadership in proactive preparation for possible disease outbreak events.

Along with the numerous advantages Kansas offers the poultry industry, several challenges exist as well which pose potential barriers to growth. The lack of in-state processing facilities means poultry farms have to ship out of state for processing, which adds expense to the bottom line. Several issues could improve the outlook for poultry production, including some relating to water use, shipping efficiencies and international trade. Because poultry is still a growing sector in Kansas, and Kansas is not a member of an industry organization, potential producers may be hesitant to invest in what they may see as an uncertain sector in the state.

To realize the potential growth in the poultry industry, key Kansas partners must provide input and discussion to develop a long-term growth strategy. Efforts would need to be made in industry outreach, involving collaboration between public and private stakeholders. Additional research and examination of economic benefits of poultry operations would be helpful in pursuing expansion of current business or recruitment of new business. This cooperative effort into a strategic growth plan could result in long-term success for the poultry industry in Kansas.

## STATUS

The poultry industry in Kansas is ranked 34th in the nation in terms of egg and poultry meat sales according to the latest Census of Agriculture. According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the poultry industry in Kansas has a direct output of over \$72.7 million and creates 78.7 jobs in the state. Through indirect and induced impacts, the industry supports a total of 277.3 jobs and creates a total economic contribution of almost \$119.5 million.

Compared to more traditional livestock production in Kansas the poultry industry is relatively small. However, Kansas is home to innovative and high value egg laying and poultry genetic companies. Southeast Kansas is home to broiler and turkey production while a majority of the state's egg production arises from one company in central Kansas.

Readily available feedstock (corn, soybeans, and sorghum) and land resources paired with relatively small land requirements and short-term return on investment of poultry facilities and a pro-business climate make Kansas a prime location for the poultry industry to expand.

## OPPORTUNITIES

In order to develop a strategic growth plan for the poultry industry 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
<p><b>Biosecurity</b></p>	<p>Kansas is recognized as one of the best exercised states in foreign animal disease. The construction of the National Bio and Agro-Defense Facility and the existing Biosecurity Research Institute enhance the research capabilities for animal health and biosecurity for the state, U.S. and global poultry community.</p> <p>KDA, in conjunction with county government and law enforcement, led the highly pathogenic avian influenza (HPAI) response in the spring of 2015. This response dealt with a confirmed positive case in a backyard flock in the state as well as response from being within the quarantine area of a Missouri location.</p>
<p><b>Feed Supply and Land Availability</b></p>	<p>Kansas is home to abundant poultry feedstock supplies including:</p> <ul style="list-style-type: none"> <li>• Corn and corn derived dried distiller's grain</li> <li>• Sorghum and sorghum derived dried distiller's grain</li> <li>• Soybeans and soybean meal</li> </ul> <p>Kansas has the second most farm land of any state, with roughly 90 percent devoted to agriculture. Poultry operations demand relatively less land than other animal facilities. These two factors together equate to a relatively available and affordable base for expanding operations compared to southeast states.</p>
<p><b>Human Capital</b></p>	<p>Kansas is home to strong leadership in the poultry and poultry processing industries. The existing poultry industry in Kansas is seeking to expand, creating additional investment opportunities.</p> <p>Kansas State University's Department of Animal Science and Industry houses respected research and extension faculty in poultry and egg production, feed science, animal processing and food safety.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Policy Environment</b></p>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations; sales tax exemption on the construction, reconstruction and remodeling of poultry and egg facilities for projects greater than \$50,000; and sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>Also at the state level, Kansas works closely with the poultry community to ensure that the Kansas poultry industry is protected from overreaching federal regulation. Governor Sam Brownback recently drafted a letter to U.S. Department of Agriculture Secretary Tom Vilsack speaking out against proposed changes to the National Organic Egg Standards that would negatively impact the state's organic egg producers.</p> <p>Through the KDA Animal Health Board and key partnerships throughout the industry, KDA regularly meets with and seeks input on policy-related issues to ensure industry concerns are heard and included in policy decisions.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agricultural industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, antibiotic use, poultry facility requirements, transportation rules, natural resources and more.</p> <p>In partnership with K-State, KDA can provide plan writing and training to poultry processors to meet Hazard Analysis and Critical Control Points (HACCP) standards.</p>
<p><b>Supporting Infrastructure</b></p>	<p>The presence of a world-leading poultry genetic company makes for readily available access to the finest egg laying stock in the world.</p> <p>Kansas is home to an intermodal freight facility in Edgerton with supporting cold storage warehouse infrastructure to handle more than 1 billion pounds of frozen meat products on an annual basis.</p>
<p><b>Water</b></p>	<p>Kansas is also taking significant proactive steps to preserve and extend the usable life of the water supply in Kansas. In recent years, voluntary, flexible and producer-driven water conservation tools have been implemented to help farmers and ranchers manage their water rights while continuing to raise crops or livestock. Additionally, Kansas has developed a <i>Vision for the Future of Water Supply in Kansas</i> with goals and specific action items to help ensure a reliable water supply while continuing to grow the economy.</p>

## SUCCESS STORIES

The poultry and egg production community in Kansas works to improve practices and efficiencies. In recent years, state and industry partners have taken some of the following steps to improve and protect the industry.

- During the high path avian influenza (HPAI) outbreak in spring 2015, Kansas confirmed itself as one of the leaders in foreign animal disease response through succinct testing and monitoring of affected areas.
- KDA Division of Animal Health staff worked proactively with poultry companies to assist in the development of disease outbreak plans.
- A facility in central Kansas has invested in expanded organic and conventional egg production facilities.
- A genetics company opened their first Kansas farm in 2016. This breeder farm, located in southeast Kansas, houses two pullet rearing and two breeder lay houses.

## CHALLENGES

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

Challenge	Details of Challenge
<p><b>Critical Infrastructure</b></p>	<p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p> <p>A lack of rail access in the western portion of the state will require producers to ship products across the state to be loaded onto the rail or use alternative transportation.</p> <p>As poultry and egg producers and processors identify when and where to grow their presence, a key factor they will consider are utility rates. There are challenges with competitive utility rates in Kansas that have resulted in burdensome and unnecessarily high utility rates.</p> <p>Shipping efficiencies for poultry products such as extra-large eggs could be improved with increased weight limits. Allowing trucks to carry 90,000 pounds on six axles could be beneficial to the industry.</p>
<p><b>Industry Perception</b></p>	<p>Compared to southeast states, Kansas does not have a strong history in the poultry industry. Therefore potential Kansas producers and investors may be hesitant to investing in poultry and egg production.</p>
<p><b>International Trade</b></p>	<p>Access to international markets for poultry products is key to growing the industry as is basing trade agreements on internationally recognized, science-based standards with regard to sanitary and phyto-sanitary measures. Resistance to free trade agreements at the federal level can hinder this access.</p>

## CHALLENGES

Challenge	Details of Challenge
<b>Lack of Facilities</b>	Kansas lacks in-state poultry processing and value-added facilities. Kansas poultry farms ship broilers and spent hens out of state for processing (Arkansas, Missouri & Mississippi).
<b>Nutrient Management</b>	Improperly stored and/or applied poultry litter may create water quality problems downstream. This problem is compounded in areas with relatively high rainfall such as southeast Kansas.
<b>Policy</b>	Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: Waters of the U.S., National Organic Egg Standards, the Endangered Species Act, international trade (including the Trans-Pacific Partnership) and more.
<b>Supporting Organizations</b>	Kansas is not a member of a Poultry Federation that could potentially provide lobbying, marketing, and legal support for the industry.
<b>Water</b>	Critical to starting a poultry operation is access to an abundant and reliable water supply. This can prove challenging in many areas of western Kansas that are closed to new water appropriations. New or expanding poultry operations in these regions will have to purchase land with sufficient water rights. Also related to water are challenges with consumptive use laws that can be costly and burdensome to convert from irrigation to stock water use.
<b>Workforce Development</b>	Growth in the poultry industry will require a skilled and non-skilled workforce, which continues to be a significant challenge throughout the entire agricultural industry

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the poultry industry.

Focus Area	Solution
<b>Business Development</b>	<p>Several steps can be taken to encourage new business growth.</p> <ul style="list-style-type: none"> <li>• Pursue the creation of economic development programs applicable to the poultry production and processing industries.</li> <li>• Create a marketing program that promotes Kansas as the place for poultry businesses throughout the production and processing chain.</li> <li>• Develop a database of federal programs available to assist start-up companies such as the U.S. Department of Agriculture Small Business Innovation Research fund.</li> </ul>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Federal Policies</b>	Continue to monitor and take appropriate action on federal policies that could adversely affect the poultry industry.
<b>Industry Outreach</b>	<p>KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.</p> <p>Kansas will explore joining a Poultry Federation. Absent joining an official federation, the Division of Animal Health will convene industry roundtables for partners across the industry to share information and strategize for the future while addressing challenges.</p> <p>KDA will dedicate staff time to encourage processing and logistical facilities to add value to poultry and egg products.</p>
<b>Water</b>	Continue implementation of the action items identified in the Kansas Water Vision, including continued outreach related to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas.

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Kansas could reach the top 25 in poultry meat and egg production, a roughly five-fold increase from current numbers.
- Become a member of a Poultry Federation to provide additional resources to producers and processors.
- Increase opportunities for small-scale poultry and egg producers and processors.
- Partner with K-State to provide objective research and outreach on the benefits of investing in the poultry industry.
- Provide training and plan development to processors to become HACCP compliant.

# POULTRY INDUSTRY OUTCOMES



## **Growth Objective:**

*Establish a solid foundation and develop partnerships that will support growth and advance the poultry industry in the state.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas poultry industry:**

### **Phase 1 (Begin within two years)**

- Clear understanding of opportunity for poultry industry growth in Kansas through completion of a feasibility study.
- Expansion of The Poultry Federation to include Kansas. Joining a federation would provide opportunities to establish industry contacts, expand business to business networking and increase overall state representation in the poultry industry.
- Identify Kansas communities that express acceptance to and interest in understanding the economic benefits of the poultry industry and are open to welcoming businesses into their region.
- Regulations based on sound science and supportive of business success, particularly in regard to organic standards and other laws which directly affect the poultry industry.
- Alternative workforce programs to fill talent and workforce needs of the industry. A successful example is the current Kansas Department of Corrections work release program's support of existing poultry business workforce gaps.

### **Phase 2 (Begin within 2-4 years)**

- Land-grant university research focused on poultry industry development, including increased extension education, outreach and support for Kansans engaged in or interested in the poultry industry.

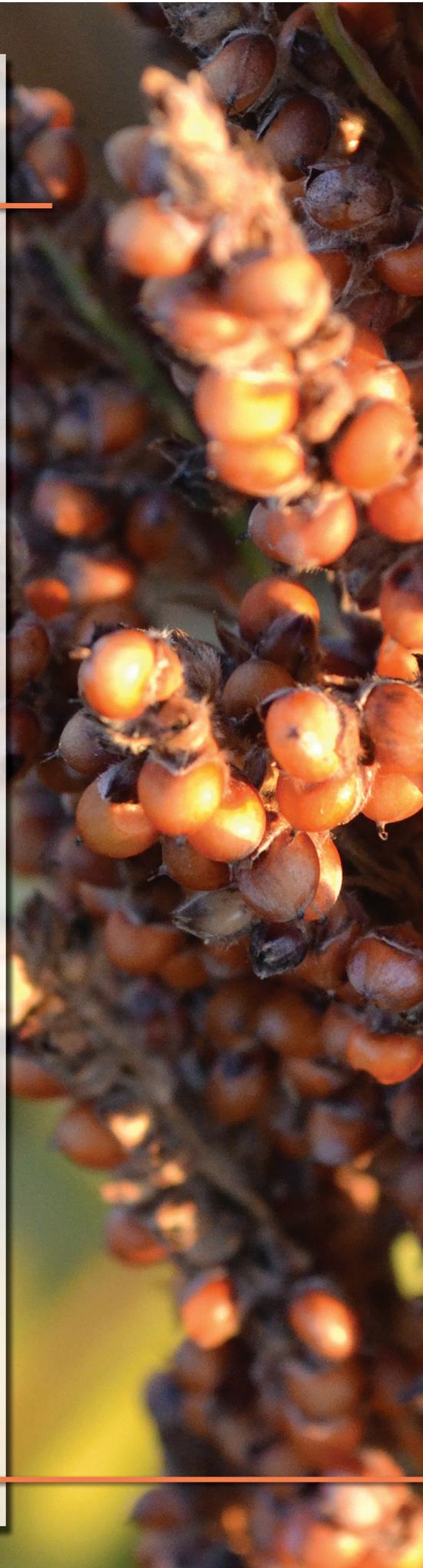
# SORGHUM

## EXECUTIVE SUMMARY

Kansas leads the nation in sorghum production, which is a versatile, efficient, multiuse crop well suited for Kansas agriculture for many reasons. Sorghum is among the most efficient crops in conversion of solar energy and use of water, and is very drought tolerant. Grain sorghum has traditionally been used for livestock feed and in the production of ethanol, both in the U.S. and in international markets. Sorghum is also gaining popularity in food products as a gluten-free substitute for other grains, and in the production of beverages and syrup as well as in pet food products. State and national sorghum advocacy organizations provide strong leadership in the promotion of sorghum domestically and worldwide. Ongoing research is creating even more possibilities for the sorghum industry.

Although sorghum's advantages are numerous, some challenges still exist as barriers to realizing sorghum's full potential. The export market is a significant part of the sorghum industry, with the majority going to China; the stability of the China market for grain sorghum is unknown. Costs associated with transportation, particularly internationally, can be burdensome to producers. Human food-grade sorghum remains a very small percent of Kansas sorghum production, which means it receives less focus within the market, although potential is high in that area.

A long-term growth strategy to expand the impact of sorghum in Kansas will rely on input and discussion among key partners in the industry. A centralized large-scale research center would promote innovations for all segments of the sorghum industry, and additional research partnerships would be key. Statewide support for producers within the sorghum sector would be welcome. Overall, collaboration between public and private stakeholders within the sorghum industry is important in the development of a strategic growth plan.



## STATUS

Sorghum — a grain, forage or sugar crop — is among the most efficient crops in conversion of solar energy and use of water. Sorghum is known as a high-energy, drought-tolerant crop. According to the National Sorghum Producers, grain sorghum has traditionally been used for livestock feed and in a growing number of ethanol plants. Sorghum produces the same amount of ethanol per bushel as comparable feedstocks and uses one third less water. In the livestock market, sorghum is used in the poultry, beef and pork industries. Stems and foliage are used for green chop, hay, silage and pasture. A significant amount of U.S. sorghum is also exported to international markets where it is used for animal feed, ethanol and other uses.

In the United States, 7.1 million acres of sorghum were planted in 2014. Of the 21 sorghum-producing states, Kansas ranks first followed by Texas, Oklahoma, Colorado and Nebraska. These states are included in the Sorghum Belt, an area from South Dakota to South Texas that offers a quality dryland growth opportunity.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the sorghum industry in Kansas has a direct output of approximately \$842.3 million and creates 1,531.5 jobs in the state. Through indirect and induced impacts, the industry supports a total of 5,135.7 jobs and creates a total economic contribution of nearly \$1.45 billion.

Sorghum is also gaining popularity in food products in the U.S. because of its gluten-free food and non-GMO properties. Sorghum is a suitable substitute for wheat, rye and barley for those who cannot tolerate gluten. Sorghum is used to make both leavened and unleavened breads. In Sahelian Africa, it is primarily used in couscous. Various fermented and unfermented beverages are made from sorghum. It can be steamed or popped and is consumed as a fresh vegetable in some areas of the world. Syrup can also be made from sweet sorghum.

## OPPORTUNITIES

In order to develop a strategic growth plan for the sorghum 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
<b>Acreage</b>	Nationally, the total number of sorghum acres harvested annually is still low in comparison to other commodities (wheat, corn, soybeans). Increasing market share will draw more attention to sorghum and sorghum by-products.
<b>Industry Leadership</b>	Kansas has strong leadership on the state (Kansas Grain Sorghum Commission and Kansas Grain Sorghum Producers Association) and national (National Sorghum Producers and United Sorghum Checkoff Board) levels. One can deduce that Kansas is in a positive situation when considering votes needed to allocate funds for market development, renewable research proposals and crop improvement projects.

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Industry Research</b></p>	<p>Kansas State University scientists are currently working to understand how to most efficiently use nitrogen in sorghum. K-State also researches best management practices for over-top herbicides that can be put on fields. A research hub with K-State and industry — similar to the Wheat Genetics Research Center — would effectively centralize and enhance this research.</p> <p>In April 2016, the Sorghum Checkoff, Kansas Grain Sorghum Commission, and K-State announced a cooperative agreement to increase grain sorghum productivity and expand markets by 2025. This partnership creating the Center for Sorghum Improvement will provide funding for long-term research and the development of marketplaces, attributes, qualities and other factors capable of increasing demand for sorghum bushels.</p>
<p><b>Industry Value</b></p>	<p>Value is virtually equal to corn for ethanol and livestock feeding, both of which are big markets in Kansas.</p>
<p><b>Marketing</b></p>	<p>Developing new markets for sorghum as livestock and ethanol feedstock is key to strengthening demand. In the livestock industry, dairies and cattle feedlots — two animal sectors plentiful to the state — are major consumers of domestic sorghum. Globally, China imports Kansas sorghum to fulfill poultry and pork feed needs.</p> <p>The domestic ethanol industry is volatile as supply/demand/pricing and distribution challenges arise. The U.S. Grains Council recently adopted ethanol as a new focus commodity, and the council has identified — in partnership with the U.S. Department of Agriculture’s Foreign Agriculture Service and Renewable Fuels Association — an ethanol export promotion strategy for Southeast Asia, Peru, Panama, Japan and Korea.</p> <p>Branded products for both animal and human consumption are being embraced by the everyday consumer. Not to be overlooked, the pet food industry is utilizing sorghum in their products, too. Sorghum provides a cost competitive and nutritious ingredient for pet food companies who are using grain for carbohydrate blends. Sorghum is on the cusp of creating a permanent home in the niche-food sector.</p>
<p><b>Value-Added Product</b></p>	<p>While sorghum has historically been used for livestock feed, ethanol production and exports, it is gaining popularity as a food and pet food product because of its nutritional, gluten-free and non-GMO properties. Marketing efforts like <a href="http://simplysorghum.com">simplysorghum.com</a> are educating consumers on ways to incorporate food-grade, value-added sorghum into everyday living.</p>

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Water</b>	Research findings indicate sorghum is a less water intensive crop with dryland success.

## SUCCESS STORIES

The following are a few notable success stories in the sorghum sector:

- Governor Sam Brownback has supported a funding partnership with K-State and industry to establish a sorghum research hub.
- An industry task force gave KDA two very specific objectives to help work toward: breeding research and limited water situation extension expertise.
- Sorghum has established a vibrant export market into China, mostly for poultry and pork feed.

## CHALLENGES

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

Challenge	Details of Challenge
<b>Critical Infrastructure</b>	The costs associated with transportation and logistics is a burden for producers. In-state freight rates add expenses when distributing sorghum domestically and internationally.
<b>Industry Market</b>	Sorghum is naturally a non-GMO grain. It is not known whether the supply chain pricing can support dedicated market outlets for GMO and non-GMO products.
<b>International Trade</b>	China continues to be the number one importer of sorghum grown in the United States. The Chinese government maintains interest in domestic grain supplies by controlling pricing and access to markets. The long-term stability of the Chinese market as an outlet for Kansas sorghum is largely unknown at this time.
<b>Policy</b>	The National Resources Conservation Service programs do not always fit the needs of sorghum producers.
<b>Value-Added Products</b>	Human food grade sorghum projects make up a very small percent of overall Kansas sorghum acreage harvested. As a result, little attention and few research dollars are allocated for human-grade product development.

## CHALLENGES

Challenge	Details of Challenge
<b>Workforce</b>	Lack of skilled agriculture workforce is a top inhibitor of growth and expansion for many Kansas agriculture entities.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the sorghum industry.

Focus Area	Solution
<b>Development</b>	Consider development of a sorghum or multi-commodity innovation center, modeled after the Kansas Wheat Innovation Center, to implement research strategy and allow researchers access to lab space.
<b>Industry Leadership</b>	Some Kansas sorghum industry leaders have expressed interest in state-organized professional development for commodity commissions. These sessions could cover everything from board management to current state policy and regulation implementation.
<b>Policy</b>	Have KDA lead the efforts to appropriate research partnership funding during the 2016 Legislative session.
<b>Water</b>	Follow identified water resource priorities and objectives for sorghum as outlined in the <i>Vision for the Future of Water Supply in Kansas</i> .

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Achieve 10 percent growth in acres.
- K-State can become a known leader in sorghum research.
- Increase sorghum earning potential to be a viable alternative to corn.
- Open new domestic and international markets for sorghum (human and pet food grade) and sorghum renewables.

# SORGHUM INDUSTRY OUTCOMES



## **Growth Objective:**

*Expand research partnerships and strengthen Kansas' position as the top sorghum-producing state in the nation.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas sorghum industry:**

### **Phase 1 (Begin within two years)**

- Checkoff dollar funding directed toward supporting value-added education, marketing and research. These value-added sectors would include biofuels, pet food, plastics and/or human-food grade sorghum.
- Livestock feed research partnerships with Kansas State University that support the use of sorghum across Kansas agriculture sectors. These research application sectors would focus on beef cattle, dairy cattle, distiller's grains, pet food, poultry and swine.
- Implementation of action items in the *Vision for the Future of Water Supply in Kansas* related to sorghum, and expanded awareness of sorghum's water use efficiency, leading to a longer usable life for Kansas groundwater and surface water sources.
- Expanded education and outreach opportunities that support the industry's strategic growth plan.
- Expansion of in-bound and out-bound trade missions showcasing feed and value-added market opportunities.
- Transportation network — including transload facilities and container load/ship — that maximizes logistical efficiencies and minimizes costs per producer to ship sorghum domestically and internationally.
- Identity preserved sorghum for customers around the world. This can be achieved by capitalizing on the availability of shipping containers to ship identity preserved sorghum from the point of filling the container to the point of delivery.
- Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of sorghum and reduce environmental impact.

### **Phase 2 (Begin within 2-4 years)**

- Long-term strategic plan to support the newly established Collaborative Sorghum Investment Program to include key private partners and public investment that benefit the sorghum industry and state.

### **Items for further consideration**

- Harvest time weight exemption for trucks hauling sorghum. It is difficult to monitor weights on trucks going directly from the field to the delivery point. This flow needs to be as efficient as possible and an exemption from weight limits for period of time around harvest would help with efficiency.

# SOYBEANS AND OTHER OILSEEDS

## EXECUTIVE SUMMARY

The oilseed sector of the Kansas agricultural industry includes the production of soybeans, sunflower and canola along with the first purchaser users of these oilseeds, like crushers, refiners and biodiesel manufacturers. 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 regions of Kansas, and advancements continue to make them even more efficient through genetics and crop management systems. 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.

Although great potential exists in the oilseed sector, a number of challenges still present barriers to growth. The lack of additional processing plants means growers must ship their product out of state, which decreases profitability. This adds to transportation concerns if growers need to transport product long distances. 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.

Realizing the growth that is possible within this sector will require input and discussion among key partners in the oilseed industry. Efforts to recruit new businesses, especially 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. Significant opportunities exist to expand the success of current farmers and businesses as well as to attract new players to the industry. The strategic growth plan for this sector will be critical to its future.

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## STATUS

The oilseed sector of the Kansas economy is composed of primarily soybean, sunflower and canola production as well as the first purchaser uses of the oilseeds such as crushers, refiners and biodiesel manufacturers and the feed stream users. Kansas ranks 11th in soybean production with 148.6 million bushels, 4th in sunflower production with 1.35 million hundredweights in 2015. The state has six soybean crush facilities. The oil goes into familiar products such as vegetable oil for all manner of food products and oil for biodiesel.

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 over \$1.28 billion and creates 1,079 jobs in the state. Through indirect and induced impacts, the industry supports a total of 4,467 jobs and creates a total economic contribution of approximately \$1.8 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 2.2 million cattle on feed, 1.8 million hogs on feed and a growing poultry industry. Canola oil for cooking is by far the largest consumer of Kansas produced canola. Sunflower and canola feed streams are also marketed to specialty markets such as bird seed and food.

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. Soybeans are also highly sensitive to drought and high temperature/low humidity growing conditions that make them less suitable for the central and western parts 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, with only one sunflower processor in the state and no canola processors. Many farmers are unfamiliar with the production and harvesting methods for sunflower and canola, which do not match exactly with harvest practices used in wheat, corn, sorghum and soybeans.

The pro-business climate makes Kansas a prime location for oilseed processing to expand in Kansas. The climate would be improved by an increase in the resources available to farmers to help support the production of unfamiliar oilseeds such as sunflowers and canola. 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
<b>Big Data Use</b>	As more and more data becomes 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 its 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.

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Domestic Consumption</b>	A strong consumer base for canola oil already exists in the U.S. Nearly 80% of all canola utilized in the U.S. is imported from Canada. Great demand exists for U.S.-grown product in this sector.
<b>Double Crop</b>	Soybean and sunflower double crop acres could increase if producers plant shorter season wheat varieties and harvest the crop at a higher moisture content. Many wheat millers prefer to control the drying process themselves.
<b>Export Markets</b>	Kansas soybeans have a relatively higher protein content than those produced in the corn belt. Building relationships with trade partners such as Mexico will increase the demand for Kansas-grown soybeans.
<b>Genetic Advancements</b>	Advancements in soybean and canola genetics in recent years make oilseeds a viable crop on more acres of dryland in Kansas than ever before.
<b>Human Capital</b>	<p>Kansas is home to strong leadership in the oilseed industry, creating additional investment opportunities.</p> <p>The Kansas State University Department of Agronomy 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.</p>
<b>Land Availability</b>	Kansas has the second most farm land of any state, roughly 90 percent devoted to agriculture.
<b>Livestock Feeding</b>	<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>

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Processing</b>	<p>Additional processing such as crush plants, soy milk and other processing/packaging facilities will increase demand and improve local prices.</p> <p>A facility in Goodland crushes virtually all canola produced in Kansas.</p>
<b>Supporting Infrastructure</b>	<p>Kansas is home to some of the world's leading crop genetic 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>

## SUCCESS STORIES

Key successes in the industry:

- In 2012 a new oilseed processing operation opened in eastern Kansas. Currently, 104.9 and 419.8 million pounds of oil and meal are processed, respectively, directly employing 268. The \$152 million capital investment contributes an estimated \$231 million to the Kansas economy annually.

## CHALLENGES

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

Challenge	Details of Challenge
<b>Consumer Perception</b>	<p>Negative consumer perception of biotechnology threatens future advancements that have made soybean production possible in many areas of the state.</p>
<b>Critical Infrastructure</b>	<p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p> <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>A lack of processing plants in western Kansas adversely impacts soybean and sunflower local prices, increasing the relative profitability of corn.</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 and increased truck weights on additional axles can make the transportation system more reliable and cost-effective.</p>

## CHALLENGES

Challenge	Details of Challenge
<b>International Trade</b>	Access to international markets for oilseed products is key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access
<b>Policy</b>	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.
<b>Water</b>	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.
<b>Workforce Development</b>	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.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the oilseed industry.

Focus Area	Solution
<b>Business Development</b>	Initial steps to begin encouraging growth in this sector could include the following: <ul style="list-style-type: none"> <li>• Pursue the creation of economic development programs applicable to the oilseed support, production and processing industries.</li> <li>• Pursue the creation of programs that provide training to start-ups on interfacing with the investment community.</li> <li>• Create a marketing program that promotes Kansas as the place for oilseed research, input and processing companies.</li> <li>• Utilize successful agricultural entrepreneurs for marketing and training of potential start-ups.</li> </ul>
<b>Federal Policies</b>	Continue to monitor and take appropriate action on federal policies that could adversely affect the oilseed industry.

# NEXT STEPS IN STRATEGIC DEVELOPMENT

Factor	Implications for Growth and Development Opportunities
<b>Industry Outreach</b>	<p>KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.</p> <p>Continue efforts to attract more processing plants.</p> <p>Continue consumer education to ensure that biotechnology is retained.</p> <p>Partner with K-State canola researchers and the Great Plains Canola Association to evaluate the feasibility of increased canola production in Kansas focusing on production practices and marketing.</p> <p>KDA will dedicate staff time to encourage processing and logistical facilities to add value to oilseeds within the state.</p>
<b>Research and Extension</b>	<p>KDA will partner with K-State where applicable to obtain funding for research and extension focusing on canola.</p>
<b>Water</b>	<p>Continue implementation of the action items identified in the <i>Vision for the Future of Water Supply in Kansas</i>, including continued outreach related to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas.</p>

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Increase livestock feeding through more livestock and increased oilseed use in current feed rations.
- Increase exports to developing portions of Asia and Africa.
- Recruit to Kansas emerging technology companies utilizing oilseeds for household products, chemicals and building materials.
- Expand of food-grade oilseed crops to capture high-value market share.
- Increase market opportunities for canola such as processing and exports.
- Explore feasibility of a soy biodiesel plant in Kansas.
- Enhance canola research through federal grants.
- Develop a canola production guidebook for producers to ensure those willing to add canola to their crop rotation have access to the best information.
- Recruit of a soy milk plant.
- Improve transportation infrastructure and seek to increase truck weights on additional axles.

# SOYBEAN AND OILSEED INDUSTRY OUTCOMES



## **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.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas soybean and oilseed industry:**

### **Phase 1 (Begin within two years)**

- 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.
- 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.
- Reduced basis by promoting the expansion of in-state oilseed processing.
- Faster regulatory approvals for inputs imperative to oilseed production
- Increased export opportunities for soybean and oilseed products.
- Increased double cropping of oilseeds after wheat. Expansion of double crop insurance by USDA-RMA would benefit farmers who choose this option, as well as increased promotion by K-State Research and Extension.
- Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of oilseeds and reduce environmental impact.
- Clear, factual information about GMOs easily available to consumers, particularly relating to the efficiency of resources offered by GMOs.
- Canola insurance available statewide. Current USDA regulations limit canola insurance to specific counties.

### **Phase 2 (Begin within 2-4 years)**

- Increased research funding to Kansas State University for sunflowers and canola. Benefits of oilseeds are not well known to farmers or to consumers.
- Increased processing facilities to add value to all types of oilseeds within the state.

# SPECIALTY CROPS

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## EXECUTIVE SUMMARY

Many different types of specialty crops are grown in Kansas, and the industry has received increased focus over the past few years to learn more about the various crops within this category. The U.S. Department of Agriculture defines specialty crops as tree nuts, dried fruits, horticulture, and nursery crops (including floriculture). Kansas also includes grapes and other specialty crops which don't fit under the USDA definition but do contribute to the Kansas economy. In 2014, a Local Food and Farm Task Force was appointed (reauthorized in 2016) and tasked with learning more about this industry. Specialty crops offer a variety of advantages, including small acreage requirements and a low reliance on water, and many communities see the production of fresh fruits and vegetables as a benefit provided by this industry.

To realize the potential of the specialty crop market, several challenges must be faced that could otherwise serve as a barrier to growth. The small scale of most of these crops makes it hard to identify and understand the crop production currently in existence. A better understanding of the crops that are currently grown would help expand and promote the market. The state of Kansas does not belong to any organized specialty crop association — though some producers do participate in local and regional organizations — making advocacy, education and marketing a continued challenge. Small-scale operations face difficulties overcoming problems with distribution, marketing, growing conditions and labor-intensive harvest methods.

The specialty crops industry offers opportunities for growth, but a successful long-term growth strategy will require input and discussion from key partners. A survey currently under way by the Kansas Department of Agriculture and K-State Research and Extension should provide more information about the current producers and crops in order to better serve them. The Local Food and Farm Task Force will continue to gather information and advocate for specialty crop growers. Increased involvement in the regional and national specialty crops industries will help Kansas identify ways to expand the specialty crops sector. Collaborative efforts from all stakeholders, both public and private, are critical to the success of a strategic growth plan for the specialty crops sector in Kansas.



## STATUS

The specialty crops industry in Kansas has garnered increased attention over the past few years, including the appointment of a Local Food and Farm Task Force (SB 286, 2014; reauthorized SB 314, 2016) that was tasked with identifying financial opportunities, technical support and training necessary for local and specialty crop production. It is a known fact that Kansas contains pockets of specialty crop producers; however, it is not known exactly what types of specialty crops are grown and how these products are merchandised.

The U. S. Department of Agriculture defines specialty crops as tree nuts, dried fruits, horticulture and nursery crops (including floriculture). As reported by the USDA National Agricultural Statistics Service in 2014, Kansas harvested 4,100 acres of summer potatoes and 6,900 acres of dry, edible beans. Kansas is ranked 4th in the country in summer potato production. No other specialty crops meet minimal quantities for ranking.

The 2006 Kansas Horticultural Survey coordinated by the Kansas Department of Agriculture in cooperation with NASS indicated the horticulture industry added over \$1 billion in sales and expenditures to the Kansas economy during the year. Additionally, more than 780,000 acres in Kansas were involved in horticulture activities. For survey purposes, sectors included were fruit, berries, nuts, vegetables and melons, grapes and wine, medicinal plants, Christmas trees, sod, nurseries and greenhouses, florists, arborists, turf installation and maintenance, and lawn care firms. Not all of these sectors are specialty crop sectors by USDA definition; however, they have a positive economic impact to Kansas.

Interest in specialty crops is viewed from a variety of angles. One view is that specialty crop production generally requires minimal acreage and low initial investment — thus a potential avenue to attract new and beginning farmers. Another thought is that the specialty crops industry's reliance on water may be less than traditionally produced commodity crops. Other communities may see the specialty crops industry as a service to the region providing fresh fruits and vegetables during specific growing seasons in food deserts across the state.

When evaluating growing climate and the availability of natural resources, historical data indicates Kansas is well positioned (but not limited) to grow the following specialty crops: fall decorative vegetables (pumpkins, squash, decorative corn), watermelons and muskmelons, sweet corn, sweet potatoes, and ethnic crops. In order to encourage specialty crop production, steps must be taken to identify end markets interested in consistently purchasing these crops. This statement is true for all specialty crops.

## OPPORTUNITIES

In order to develop a strategic growth plan for the specialty crops 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
<b>Industry Association</b>	<p>The Kansas Vegetable Growers Association is the organized industry association for producers. This group partners with bordering states Iowa, Missouri and Nebraska to organize the Great Plain Vegetable Growers Conference for educational purposes. At this time there is no known industry association for large-scale specialty crop producers in the state.</p> <p>Subcultures that currently exist are farmers' markets, local level farm and food councils, the Local Food and Farm Task Force, and seasonal high tunnel EQIP (Environmental Quality Incentives Programs) locations across the state.</p>

## OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Industry Development</b>	Identifying current specialty crop producers, acreage and locations across the state is a key to understanding what specialty crop production exists in Kansas. In July 2016, KDA agriculture marketing distributed a statewide specialty crop survey. The survey period is open through October 1. Specialty crop survey responses will aid in identifying producers, types of specialty crops grown and grower regions across the state.
<b>New Products</b>	Historically, edible beans, sweet potatoes, pumpkins, watermelons, muskmelons and ethnic crops have all grown successfully in the Kansas climate. Large-scale onion and potato farms exist in the central and western regions of the state.

## CHALLENGES

Specialty crop producers face challenges to business development and potential industry growth.

Challenge	Details of Challenge
<b>Available Resources</b>	There is limited land-grant university knowledge and research. Although many specialty crop extension resources are located in the eastern part of the state, the need exists for public education on specialty crop production in the central and western parts of Kansas, due to the lack of extension personnel and educational programming in these regions. Seward County Community College is in the process of growing the college's sustainable agriculture resources program, which includes specialty crop education. Additionally, Cloud County Community College will add the institution's first commercial horticulture class in fall 2016.
<b>Critical Infrastructure</b>	There is a lack of published information regarding specialty crop transport across the state. Some of our known "bulk" growers or aggregation points are shipping commodities out of the state.
<b>Environment</b>	Growing conditions and distribution logistics including cold storage of growing fruits and vegetables year-round are noted producer challenges.
<b>Industry Association &amp; Perception</b>	Kansas does not belong to any organized specialty crop association. Thus advocacy, education and marketing of this sector attracts very limited attention. Additionally, overall attitudes within the agriculture industry may be divided with some believing a growth in the specialty crop industry may have a negative effect on traditionally grown row crop acreage.

## CHALLENGES

Challenge	Details of Challenge
<b>Water</b>	Some crops — like sweet corn — could be considered water intensive. Others — like sweet potatoes — require very little water to grow. Additionally, understanding how much water a crop takes depends on how many growing rotations are harvested on an annual basis.
<b>Workforce Development</b>	At this time most specialty crops require labor-intensive harvesting methods. As technology evolves, mechanized harvesting will become available to producers. However, this mechanized method is very expensive.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the specialty crops industry.

Focus Area	Solution
<b>Domestic Sales</b>	What do we need in Kansas — where are our producers? What specialty crops are being grown and harvested? How are these crops being merchandised? Continuation of the Local Food and Farm Task Force will allow for research and better understanding of these questions.
<b>Industry Development</b>	Continue to engage with Western Vegetable Growers Association contacts. Research large-scale specialty crop producers located in eastern Colorado, southern Nebraska, and the panhandles of Oklahoma and Texas. Investigate specialty crop checkoff programs as potential sources of revenue for education, research and promotion of the industry.
<b>Industry Needs</b>	Complete the statewide specialty crop survey in partnership with K-State Research and Extension. Also consider updating the 2006 Horticulture Survey that was completed by KDA in cooperation with the National Agriculture Statistics Service. Once survey data is gathered and organized, create a statewide specialty crop marketing campaign to boost awareness of and support for all specialty crop sectors.
<b>Knowledge Development</b>	KDA attended the Western Growers annual meeting in November 2015, gaining industry knowledge and initiating conversations with key western growers.

# NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<p><b>Policy</b></p>	<p>The Local Food and Farm Task Force made the following recommendations to the legislature in January 2016.</p> <ol style="list-style-type: none"> <li>1. Identify financial opportunities, technical support and training necessary for local and specialty crop production.</li> <li>2. Identify strategies and funding needs to make fresh and affordable locally grown foods more accessible.</li> <li>3. Identify existing local food infrastructures for processing, storing and distributing food and recommendations for potential expansion of these operations.</li> <li>4. Develop strategies to encourage farmers' markets, roadside markets and local grocery stores in unserved and underserved areas.</li> </ol>

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Continuation of the Local Food and Farm Task Force was approved by the Legislature in 2016, and the task force convened on Aug. 23, 2016, to continue work on identifying local food and specialty crop initiatives.
- Consider establishing a Kansas Vegetable Initiative — similar to Kansas Dairy Initiative — to assist with recruiting large-scale producers into Kansas.
- Identify current small- and large-scale specialty crop producers who may be interested in expansion and present incentives to expand/grow acreage in Kansas.
- Identify distribution networks and encourage broker procurement within the Kansas specialty crops industry.

# SPECIALTY CROP INDUSTRY OUTCOMES



## **Growth Objective:**

*Develop partnerships and resources that will grow the Kansas specialty crop industry, defined by USDA as "fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture)."*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas specialty crop industry:**

### **Phase 1 (Begin within two years)**

- Analysis of possible specialty crop checkoff programs as a source of revenue for the education, promotion and research of industry sectors.
- Completion of a survey process by K-State Research and Extension and the Kansas Department of Agriculture in order to provide broad baseline knowledge of the specialty crop industry, including the scope and needs of producers and the specific crops that are grown and harvested.
- Gathering of knowledge pertaining to the growth and needs of the horticulture industry in Kansas, as provided by a comprehensive survey championed by KDA, Kansas Forest Service, Kansas State University Department of Horticulture & Natural Resources, and other industry partners.
- Comprehensive specialty crop marketing initiative designed to support and recruit growth to the industry.
- Identification of temporary, seasonal and alternative workforce needs for Kansas specialty crop producers in relation to general workforce needs of the state.
- Educational programs that teach Kansas communities about current specialty crop practices and industry growth opportunities for the purpose of business development and economic growth.
- A vibrant Kansas Vegetable Growers Association providing industry support and connections to its members.

### **Phase 2 (Begin within 2-4 years)**

- Additional K-State Research and Extension specialists and increased specialty crop/horticulture research and research plot placement throughout the state.
- Statewide specialty crop marketing campaign to educate consumers and encourage support for Kansas specialty crop producers and service providers.
- Feasibility study to determine the impact and proper alignment of food hubs as a part of the specialty crop industry in Kansas.
- Development of Kansas specialty crop network to support mid- to large-scale food processors, including an expanded distribution network targeted for Tier 2 marketing outlets.

# SPECIALTY LIVESTOCK

## EXECUTIVE SUMMARY

The specialty livestock industries in Kansas are relatively small, compared to more traditional livestock production in Kansas; however, the industries that do exist are successful and have benefited from increased consumer demand. Specialty livestock species in Kansas include bison, goats, sheep, alpaca and llamas, along with any other small herds of other livestock. These livestock operations benefit from many of the same advantages Kansas offers traditional livestock production: abundant land and feed supplies, a strong transportation infrastructure, state support for the livestock industry, and a wealth of research and knowledge about livestock health and management within the state.

Just as the advantages facing larger operations help specialty livestock, the challenges facing the entire livestock industry also present possible barriers to growth for the specialty livestock industries. Access to an abundant water supply is critical, and laws regulating water use can be problematic for new or expanding livestock operations, along with concerns relating to workforce and transportation. The specialty livestock industries face additional challenges, because the size and unfamiliarity of these industries may make them seem a less reliable investment. There are few in-state processing facilities that cater to specialty livestock. Also, while consumer demand is increasing, that demand is accompanied by an expectation of consistency of product which is difficult for smaller producers.

Growth within the specialty livestock industries will require input and discussion among key partners to develop a long-term growth strategy. Coordination between the specialty livestock industries will be an important component, as they work toward increased access to processing and value-added facilities. Economic development and marketing programs could assist in the enhancement of existing businesses as well as the recruitment of new businesses to expand the industry. A collaborative effort between public and private stakeholders to create a strategic growth plan is critical to the future of this agricultural sector.



## STATUS

Kansas is home to many livestock species such as goats, sheep, bison, alpaca, llamas and other specialty livestock. Compared to more traditional livestock production in Kansas, the size of these industries is relatively small. Kansas is ranked 13th and 24th in the nation in meat goat and sheep production, respectively. Kansas ranks 8th in bison with just over 4 percent of the U.S. bison herd.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the specialty livestock (bison, sheep and goat) industries in Kansas combine for a direct output of nearly \$11.6 million and create 70.8 jobs in the state. Through indirect and induced impacts, the industries support a total of 112.4 jobs and create a total economic contribution of approximately \$17.8 million.

Although not inventoried by the U.S. Department of Agriculture's National Agricultural Statistics Service, Kansas is also home to other specialty livestock production such as alpacas and llamas.

## OPPORTUNITIES

In order to develop a strategic growth plan for the specialty livestock industries 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
<b>Biosecurity</b>	Kansas is recognized as one of the best exercised states in foreign animal disease. The construction of the National Bio and Agro-Defense Facility and the existing Biosecurity Research Institute enhance the research capabilities for animal health and biosecurity for the state, U.S. and global livestock community.
<b>Consumer Demand</b>	Increased consumer demand for meat grown locally has increased the demand for specialty livestock meats. This has benefited many specialty livestock producers and processors.
<b>Feed Supply and Land Availability</b>	<p>Kansas is home to abundant feedstock supplies including corn and corn derived dried distiller's grain, sorghum and sorghum derived dried distiller's grain, soybeans and soybean meal, forages and grassland.</p> <p>Kansas has the second most farm land of any state, roughly 90 percent devoted to agriculture. Small animal operations demand relatively less land than other animal facilities. These two factors together equate to a relatively available and affordable base for expanding operations.</p>
<b>Human Capital</b>	The Kansas State University Department of Animal Sciences and Industry houses respected faculty with expertise in livestock issues as well as faculty within the Cooperative Extension Service with knowledge of some specialty livestock species. This wealth of knowledge in the livestock industry in Kansas drives continual improvement that carries over to the specialty livestock sectors.

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Policy Environment</b></p>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations; a sales tax exemption on the construction, reconstruction, and remodeling of livestock facilities for projects greater than \$50,000; and a sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>Also at the state level, the state of Kansas works closely with the livestock community to ensure that the Kansas livestock industry is protected from overreaching federal regulation. Governor Sam Brownback has been a national leader in speaking out against Waters of the U.S. and the Endangered Species Act and is a strong proponent of easing transportation restrictions on the agricultural industries.</p> <p>Through the KDA Animal Health Board and key partnerships throughout the industry, KDA regularly meets with and seeks input on policy-related issues to ensure industry concerns are heard and included in policy decisions.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agricultural industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, antibiotic use, livestock facility requirements, transportation rules, natural resources and more.</p> <p>In partnership with K-State, KDA can provide plan writing and training to meat processors to meet Hazard Analysis and Critical Control Points (HACCP) standards.</p>
<p><b>Supporting Infrastructure</b></p>	<p>Kansas is home to an intermodal freight facility in Edgerton with supporting cold storage warehouse infrastructure to handle more than 1 billion pounds of frozen meat products on an annual basis as well as ample capacity to ship other raw and value-added animal products worldwide.</p>
<p><b>Weather and Natural Resources</b></p>	<p>The semi-arid climate in Kansas is suitable for livestock production.</p> <p>Kansas is taking significant proactive steps to preserve and extend the usable life of water supplies in Kansas. In recent years, voluntary, flexible and producer-driven water conservation tools have been implemented to help farmers and ranchers manage their water rights while continuing to raise crops or livestock. Additionally, Kansas has developed a <i>Vision for the Future of Water Supply in Kansas</i> with goals and specific action items to help ensure a reliable water supply while continuing to grow the economy.</p>

## SUCCESS STORIES

The specialty livestock community in Kansas works to improve practices and efficiencies. In recent years state and industry partners have taken several steps to improve the industry.

- A buffalo ranch located in eastern Kansas is a breeding stock ranch that also offers meat sales and agritourism opportunities. In recent years their herd has increased from 12 to 75 cows, and offered over 600 ranch tours in 2015.
- A specialty meats processing company founded 30 years ago now employs 31 full-time people and can process virtually any animal and bird except pheasant and quail. They process under private label and custom processing for customers across the United States.

## CHALLENGES

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

Challenge	Details of Challenge
<b>Capital</b>	Due to the unfamiliarity of the industry, access to capital can be an issue for both producers and processors.
<b>Critical Infrastructure</b>	<p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p> <p>A lack of rail access in the western portion of the state will require producers to ship products across the state to be loaded onto the rail or use alternative transportation.</p> <p>As livestock producers and processors identify when and where to grow their presence, a key factor they will consider are utility rates.</p>
<b>Industry Perception</b>	Kansas' roots in some specialty livestock industries are not as strong as in other states, so potential Kansas producers and investors may be hesitant to invest in specialty livestock projects.
<b>International Trade</b>	<p>Access to international markets for specialty livestock products is key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access.</p> <p>Other countries have been producing products more cheaply and flooding the U.S. market.</p>
<b>Lack of Facilities</b>	Kansas could benefit from additional local or regional slaughter facilities.
<b>Large Customers</b>	Big clients demand consistency, expecting all product to look and taste the same. Therefore, entering those markets is a challenge for smaller producers.

# CHALLENGES

Challenge	Details of Challenge
<b>Water</b>	Critical to starting a livestock operation is access to an abundant and reliable water supply. This can prove challenging in many areas of western Kansas that are closed to new water appropriations. New or expanding livestock operations in these regions with stock water use requirements above 15 acre-feet will have to purchase land with sufficient water rights. Also related to water are challenges with consumptive use laws that can be costly and burdensome to convert from irrigation to stock water use.
<b>Workforce Development</b>	Growth in the specialty livestock industry may require a skilled and non-skilled workforce, which continues to be a significant challenge throughout the entire agricultural industry.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the specialty livestock industry.

Focus Area	Solution
<b>Business Development</b>	<p>Steps can be taken to encourage new business development in Kansas.</p> <ul style="list-style-type: none"> <li>• Pursue the creation of economic development programs applicable to the specialty livestock production and processing industries.</li> <li>• Create a marketing program that promotes Kansas as the place for specialty livestock businesses throughout the production and processing chain.</li> <li>• Develop a database of federal programs available to assist start-up companies such as the USDA Small Business Innovation Research fund.</li> </ul>
<b>Federal Policies</b>	Monitor and take appropriate action on federal policies that could adversely affect the livestock industry.
<b>Industry Outreach</b>	<p>Identify potential partners and establish a schedule for strategic growth plan meetings. Proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.</p> <p>The Kansas Meat Processors Association would be a resource which could support the industry with growth, succession plans and mobile processing units.</p>
<b>Water</b>	All parties will continue implementation of the action items identified in the Kansas Water Vision, including continued outreach related to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas.

# OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Kansas could reach the top 10 in meat goat production with the addition of 2,000 goats. Top 5 would require doubling of current numbers.
- Increase opportunities for small-scale goat, sheep, bison, alpaca and llama producers and processors.
- Partner with K-State to provide objective research and outreach on the specialty livestock industry.
- Provide training and plan development to processors to become HACCP compliant.

# SPECIALTY LIVESTOCK INDUSTRY OUTCOMES



## **Growth Objective:**

*Raise the prominence of the specialty livestock industry in Kansas, and increase profitability for those who raise specialty livestock.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas specialty livestock industry:**

### **Phase 1 (Begin within two years)**

- On-farm education for producers to promote the benefits of raising specialty livestock.
- Increased visibility of specialty livestock products in Kansas for consumers seeking alternative forms of protein through increased education and marketing.
- Economic development incentives for specialty livestock processors. The scope of specialty processors does not match the incentives that currently exist.
- Widespread, accessible markets for specialty livestock producers. Expansion would involve promoting existing markets and pursuing opportunities for new ones.
- Zoning regulations in cities and counties which are in line with local and state regulations so livestock producers are allowed to operate under agricultural exemptions statewide.
- Educational opportunities to promote mobile processing units and inform potential investors so that mobile processing capabilities are available to small processors with necessary food safety guidelines.

### **Phase 2 (Begin within 2-4 years)**

- Additional K-State Research and Extension personnel to support specialty livestock production.

### **Items for further consideration**

- A specialty livestock checkoff program to provide additional research and promotional funding.

# UNMANNED AERIAL SYSTEMS (UAS)

## EXECUTIVE SUMMARY

The unmanned aerial systems (UAS) industry is a growing sector within agricultural technology, and Kansas joins the rest of the nation in seeing great opportunity in this growing field. UAS technology is becoming increasingly important on farms and ranches as farmers and ranchers work to implement precision technologies into their management practices. Kansas is home to multiple manufacturers of agricultural equipment and technology companies, as well as a large aviation industry, and the combination of these industries creates an atmosphere that supports development of UAS technology. Educational support has already begun, with UAS-related degrees now available within the state.

Although the potential of this sector is vast, it is a relatively new field and carries with it several unique challenges which can serve as barriers to growth. The technology is new, so there are few people with a background in UAS, making it difficult to find the expertise needed for a steady workforce. The effectiveness of UAS technology is dependent on capturing and applying data in a way that can maximize the potential of the system, and there remains a lack of sufficient information and algorithms to fully utilize the UAS technology.

The UAS industry offers significant opportunity for growth, and to realize that potential will require input and discussion among key stakeholders across not only the UAS industry but in other agricultural sectors as well. New research in data collection and economic benefits of UAS will increase usefulness and demand in the agricultural industry. Additional steps to encourage and support entrepreneurs within this developing industry, including marketing and training, could expand new business opportunities. Collaboration between public and private entities to develop a strategic growth plan is an important first step.



## STATUS

Nearly 90 percent of Kansas' land mass is devoted to farming and ranching, providing ample customers for agricultural technology applications. Pairing the prevalence of the agricultural industry with Kansas' pro-business climate and Midwest values makes Kansas a prime location for entrepreneurs to create or expand their businesses.

A growing sector within agricultural technology is the unmanned aircraft systems (UAS) industry. The Association for Unmanned Vehicle Systems International estimates the economic impact of UAS integration to reach \$2,941 million by 2025 and to create 3,716 additional jobs nationwide. Agriculture is anticipated to be the largest benefactor from UAS use. UAS technology is becoming increasingly important on farms and ranches as farmers and ranchers work to implement precision technologies into their management practices. When combined with the fact that agriculture and aviation are the largest contributors to the Kansas economy, the impact of UAS technology on the state is significant and has great potential for additional growth.

## OPPORTUNITIES

In order to develop a strategic growth plan for unmanned aerial systems, 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
<b>Existing Customer Base</b>	<p>Over 46 million acres are devoted to farming and ranching in Kansas, nearly 90 percent of the state's total land mass. Kansas has an abundance of potential customers for agricultural technology companies that produce products for unmanned systems.</p> <p>Kansas is also home to multiple agricultural equipment manufacturers, which serve as potential customers for agricultural technology companies to develop strategic partnerships to enhance equipment with the latest precision technologies.</p>
<b>Human Capital</b>	<p>Kansas State Polytechnic boasts a strong aviation component and now offers one of the nation's first bachelor's degree programs in unmanned aircraft systems. Kansas State Polytechnic is nationally recognized for its expertise in the UAS field. Specific areas of study include UAS design and integration, and UAS flight and operations.</p>

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<p><b>Policy Environment</b></p>	<p>Recent changes to the tax code have reduced state tax burdens on the agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations.</p> <p>The High Performance Incentive Program (HPIP) provides sales tax exemption on the construction, reconstruction and remodeling of facilities for projects greater than \$50,000. Sales tax exemptions are also present for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>Also at the state level, the state of Kansas works closely with the agricultural industry to ensure its protection from overreaching federal regulation.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agricultural industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, transportation rules, natural resources and more.</p>
<p><b>Supporting Infrastructure</b></p>	<p>Kansas is home to a large aviation industry. Several major aircraft manufacturers are located in Wichita, and together with their allied industries they create an atmosphere that promotes and supports future aviation technology, such as UAS.</p>
<p><b>Weather and Natural Resources</b></p>	<p>Kansas is taking significant proactive steps to preserve and extend the usable life of water supplies in Kansas. In recent years, voluntary, flexible and producer-driven water conservation tools have been implemented to help farmers and ranchers manage their water rights while continuing to raise crops or livestock. Additionally, Kansas has developed a <i>Vision for the Future of Water Supply in Kansas</i> with goals and specific action items to help ensure a reliable water supply while continuing to grow the economy.</p> <p>Agricultural technologies such as UAS can assist in addressing key challenges in other agriculture sectors, such as reducing usage of water, chemicals and fertilizers.</p>

## SUCCESS STORIES

The UAS industry is rapidly moving towards greater influence in the agricultural industry. Although it is a budding industry, there are a few areas of notable success:

- In 2012, a technology company formed a partnership with Kansas State University to merge small radio controlled airplanes and near infrared photo image technology to determine crop health. Since that time, the company has become a leader in UAS manufacturing and has dealers across the U.S.
- Kansas State Polytechnic became the first entity in the nation to achieve statewide access during flight operations.
- K-State, the University of Kansas and Wichita State University are three of the twelve members of the FAA Center of Excellence for Unmanned Aircraft Systems.
- The Kansas UAS Summit, held in October 2015, has prompted greater cooperation and organization of the UAS industry within the state.
- In June 2016, the FAA released final regulations on small unmanned aircraft use commercially, creating certainty about future ability to use this technology effectively.

## CHALLENGES

While Kansas is poised for expansion of production and development of new technology related to UAS, the following factors represent challenges serving as barriers to achieving the objective of the UAS growth plan.

Challenge	Details of Challenge
<b>Critical Infrastructure</b>	A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.
<b>Industry Perception</b>	Unmanned aerial vehicles are commonly referred to as “drones.” The term drone originated in the military and drones were commonly utilized as a stealth weapon. Now, many citizens view “drones” in a negative viewpoint related to a threat to their ability to maintain privacy and safety.
<b>International Trade</b>	Access to international markets for technology products is a great potential revenue stream. Resistance to free trade agreements at the federal level can hinder this access.
<b>Policy</b>	Federal laws and regulations impacting the agricultural community as a whole include Waters of the U.S., the Endangered Species Act and more. These policies, while potentially not impacting UAS directly, affect the profitability of agriculture which creates downward pressure on farmers’ ability to purchase and incorporate UAS into their management plans.
<b>Research and Information</b>	While there are a lot of useful methods for capturing data related to crop production, there is a dearth of information and algorithms to actually interpret the data in a way that is helpful for a farmer looking to make management decisions.

# CHALLENGES

Challenge	Details of Challenge
<b>Small Entrepreneurs</b>	<p>It is difficult for small entrepreneurs to get their products in stores to make them accessible to consumers.</p> <p>Marketing assistance is also difficult. It is difficult to find sufficient scale to make an economic impact on marketing efforts outside of Facebook and social media.</p>
<b>Workforce Development</b>	<p>Currently, there are very few people with a background in UAS technology. This makes the job market incredibly competitive. At the university level, it is hard to keep PhD level faculty because they can be offered such lucrative salaries in the industry. Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of the technology industry.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the UAS sector.

Focus Area	Solution
<b>Business Development</b>	<p>Initial steps to begin encouraging growth in this sector could include the following:</p> <ul style="list-style-type: none"> <li>• Pursue the creation of economic development programs applicable to the UAS production and processing industries.</li> <li>• Create a marketing program that promotes Kansas as the place for UAS businesses throughout the supply chain.</li> <li>• Develop a database of federal programs available to assist start-up companies such as the USDA Small Business Innovation Research fund.</li> </ul>
<b>Economic Incentives</b>	<p>Pursue development of agricultural business zones composed of existing state business incentive programs.</p>
<b>Federal Policies</b>	<p>Continue to monitor and take appropriate action on policies that could adversely affect the UAS industry, such as FAA regulations, potential restrictive state legislation, etc.</p>
<b>Industry Outreach</b>	<p>KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders regarding the development of a strategic growth plan.</p>

# NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Labor Force</b>	Work with K-State to explore developing an entrepreneurship internship program similar to Iowa State University.
<b>Research</b>	<p>Determine methods to secure federal and state research funds to develop algorithms for interpreting the data collected by UAS systems. With the new FAA guidelines released, this is the critical next phase to determine the future success of the industry in agriculture.</p> <p>An economic analysis of the potential return for agriculture producers who use UAS technologies needs to be available to justify the expense.</p>
<b>Water Vision</b>	Complete the vision action items related to water saving technology research and demonstration where UAS can be of benefit.

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Kansas can be a top 5 state in UAS and UAV production.
- Partner with educational institutions — such as Kansas State Polytechnic, community colleges and secondary career and technical education programs — to prepare a qualified future UAS workforce.
- Utilize retiring veterans from the U.S. Army with extensive UAS experience.
- Work with the K-State industry boot camp to help develop the next generation of up and coming agricultural entrepreneurs.
- Develop enhanced economic incentive programs that are more encompassing to agricultural businesses.
- Leverage existing knowledge base to serve as mentors.

# UNMANNED AERIAL SYSTEMS INDUSTRY OUTCOMES



## **Growth Objective:**

*Develop Kansas as a leader in UAS technology, activity and expertise while also working to attract manufacturing and assembly operations.*

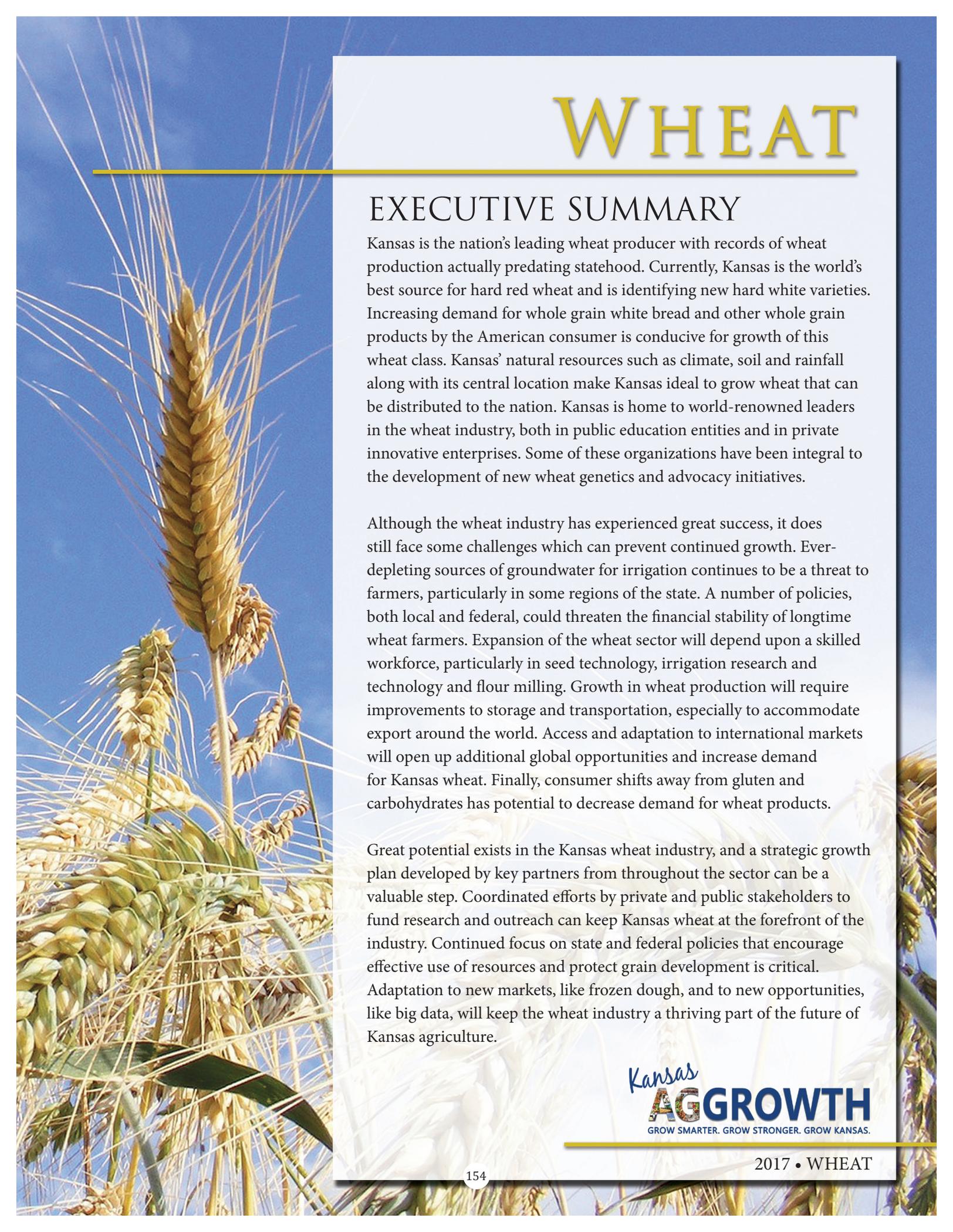
**The following outcomes will be the result of industry collaboration and effort to grow the Kansas unmanned aerial systems industry:**

### **Phase 1 (Begin within two years)**

- Information showing a demonstrated return on investment from incorporating UAS technology into farm management decisions. Evidence of ROI would promote farmer adoption of UAS, assist farmers in becoming more comfortable in utilizing the technology, and result in greater farm profitability.
- Algorithms in use with UAS systems that provide useful recommendations to farmers. With current UAS technology farmers and ranchers are not able to understand the data generated by UAS, nor create solutions and management decisions, such as fertilizer application plans.
- Regulations based on sound science and supportive of business success, particularly in regard to regulations on unmanned aerial vehicles. Restrictive regulations on either the state or local level that are based on fear would limit growth in this industry.
- Partnerships between Kansas' existing military bases and the aviation industry to enhance the research, development and expertise of the UAS industry in Kansas.
- Increased UAS study and degree options at secondary and postsecondary educational institutions in Kansas
- Partnerships among agricultural equipment enterprises that may find mutually beneficial results from incorporating UAS technology into the menu of features provided by their products.

### **Phase 2 (Begin within 2-4 years)**

- Faster download and upload speeds from mobile networks in rural Kansas. This is critical to adoption and implementation of UAS technology on the farm.
- Business-friendly environment that attracts further expertise and innovation to the state.
- Research on applications in animal agriculture through collaborations between Kansas State University and industry, an area that remains largely untapped.
- Kansas presence at national UAS events in an effort to attract unmanned aerial vehicle manufacturing to Kansas.



# WHEAT

## EXECUTIVE SUMMARY

Kansas is the nation's leading wheat producer with records of wheat production actually predating statehood. Currently, Kansas is the world's best source for hard red wheat and is identifying new hard white varieties. Increasing demand for whole grain white bread and other whole grain products by the American consumer is conducive for growth of this wheat class. Kansas' natural resources such as climate, soil and rainfall along with its central location make Kansas ideal to grow wheat that can be distributed to the nation. Kansas is home to world-renowned leaders in the wheat industry, both in public education entities and in private innovative enterprises. Some of these organizations have been integral to the development of new wheat genetics and advocacy initiatives.

Although the wheat industry has experienced great success, it does still face some challenges which can prevent continued growth. Ever-depleting sources of groundwater for irrigation continues to be a threat to farmers, particularly in some regions of the state. A number of policies, both local and federal, could threaten the financial stability of longtime wheat farmers. Expansion of the wheat sector will depend upon a skilled workforce, particularly in seed technology, irrigation research and technology and flour milling. Growth in wheat production will require improvements to storage and transportation, especially to accommodate export around the world. Access and adaptation to international markets will open up additional global opportunities and increase demand for Kansas wheat. Finally, consumer shifts away from gluten and carbohydrates has potential to decrease demand for wheat products.

Great potential exists in the Kansas wheat industry, and a strategic growth plan developed by key partners from throughout the sector can be a valuable step. Coordinated efforts by private and public stakeholders to fund research and outreach can keep Kansas wheat at the forefront of the industry. Continued focus on state and federal policies that encourage effective use of resources and protect grain development is critical. Adaptation to new markets, like frozen dough, and to new opportunities, like big data, will keep the wheat industry a thriving part of the future of Kansas agriculture.

## STATUS

Kansas has long been known as the Wheat State, and with good reason: Kansas is the nation's leading wheat producer with records of wheat production actually predating statehood. There are indications that wheat was produced in the region as early as 1839. In 2015, 9.2 million acres of wheat were planted and 8.7 million acres were harvested with an average yield of 37 bushels per acre. This accounts for 12 percent of the state's total agricultural production and 15 percent of the nation's total crop. The state also ranks first in flour milling capacity.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the wheat industry in Kansas has a direct output of over \$1.53 billion and creates 2,780 jobs in the state. Through indirect and induced impacts, the industry supports a total of 9,329.2 jobs and creates a total economic contribution of approximately \$2.6 million.

Currently, Kansas is the world's best source for hard red wheat and is identifying new hard white varieties. The hard white (HW) varieties account for more than two percent of the wheat grown in the state. The overall HW market appears to be ending its consolidation phase and is now entering a steady growth phase. Increasing demand for whole grain white bread and other whole grain products by the American consumer is conducive for growth of this wheat class. The largest increases are likely to be in contracted acres as domestic millers look to guarantee supplies.

## OPPORTUNITIES

In order to develop a strategic growth plan for the wheat industry, 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
<b>Big Data</b>	As more and more data becomes available related to cropping systems, there are increased opportunities to use the data to improve profit margins for wheat, thereby increasing its economic impact and the number of farmers interested in growing wheat.
<b>Breeding</b>	Wheat breeders are learning more about wheat genetics every day and working to use that information to build better varieties.  The Kansas infrastructure is very attractive for growth. Kansas is home to the best research and positioned well for the future, with potential marketing channels for high-yield bread wheat, hard white wheat, durum and historical attributes (heritage) which are starting to pique consumer interest.
<b>Central Location</b>	Kansas is a great central hub location for enterprises looking to serve the whole United States.
<b>Consumer Demand</b>	There exist possibilities to expand the frozen dough market based on convenience products and consumer demand.

# OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
<b>Feed Stuffs</b>	Combining the natural attributes of Kansas that make it a good place to grow wheat such as climate, soil and rainfall with the well-established cattle feeding sector creates potential for increased use of feed wheat. Feed wheat is a potential alternative to corn or sorghum in areas or farming operations where wheat is a better fit.
<b>Hard White Wheat</b>	New varieties of hard white wheat are being released and offer an opportunity to expand Kansas' production diversity in the state.
<b>Leadership</b>	Kansas is home to world-renowned leaders in the wheat industry, including leaders at the Kansas State University Department of Agronomy, the Wheat Genetics Resource Center, Kansas Wheat, etc., with many active grower leaders across the state serving or having served nationally.
<b>Policy Environment</b>	<p>Recent changes to the Kansas tax code have reduced state tax burdens on the Kansas agricultural community. Some of the key changes include a state income tax exemption for partnerships, LLCs, Limited Liability Partnerships, Sole Proprietorships and Subchapter-S Corporations and a sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the wheat industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, transportation rules, natural resources and more.</p>
<b>Reputation</b>	Kansas is known around the world for high quality hard red winter wheat.
<b>Supporting Institutional Infrastructure</b>	Kansas has a solid foundation throughout the entire wheat production community. Long known as the Wheat State, Kansas has the infrastructure to go along with it including a strong road and rail network, more than 1 billion bushels of commercial grain storage, and the largest flour milling capacity of any state in the nation.

## SUCCESS STORIES

Key successes in this industry:

- The Kansas Wheat Innovation Center is a farmer-owned center that brings together all facets of wheat production and uses on the K-State campus. The facility is a great testament to the importance that Kansas places on the wheat industry.
- The Wheat Genetic Resource Center provides a world renowned gene bank and does cutting edge foundational research regarding wheat genetics. The center is now being privately funded as part of a National Science Foundation Center in which industry has come together to supply funds and provide direction for the work of WGRC.
- A Federal State Marketing Improvement Program grant was awarded to KDA and the Kansas Wheat Commission for the hard white wheat initiative. The initiative seeks to develop improved branding for Kansas hard white wheat.
- K-State has developed nine new varieties targeted specifically for success in Kansas within the last six years.
- Private investments in unit train facilities in central Kansas have improved the ability to take advantage of lower freight rates for unit trains and move Kansas wheat efficiently across the country.

## CHALLENGES

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

Challenge	Details of Challenge
<p><b>Consumer Demand</b></p>	<p>Global usage is over 700 million metric tonnes. U.S. diets have reduced wheat consumption by approximately nine percent since 2000 as people have shifted away from consuming carbohydrates.</p>
<p><b>Critical Infrastructure</b></p>	<p>There is a need for more unit train loading facilities as the cost of freight continues to rise; being able to take advantage of price discounting for the use of unit trains would be advantageous for moving Kansas wheat to end users around the country as well as to ports for export.</p> <p>In order to see significant growth in the hard white wheat sector in Kansas, the ability to segregate wheat types (red versus white) in commercial storage needs to exist and handlers must understand its importance.</p> <p>A great way to add value to Kansas wheat is turning it into Kansas flour. Additional flour milling in Kansas would increase demand as well. Flour mill location is most influenced by the cost of transportation to the customer and the cost of wheat transportation.</p> <p>As the demand for Kansas wheat around the world grows, having access to a port is critical. Currently much of the wheat leaving Kansas, particularly southeast Kansas, travels to the Port of Catoosa in Oklahoma to be transloaded onto barges. Keeping the port in good repair, and maintaining and increasing its grain handling capacity, is important to Kansas wheat producers.</p>

# CHALLENGES

Challenge	Details of Challenge
<b>Dietary Trends</b>	<p>Recent increase in demand for gluten-free products by consumers has the potential to decrease demand for wheat products at retail. Gluten-free has moved beyond health needs for a small percentage of the population into a dietary fad resulting in much misunderstanding about gluten, where it comes from and what advantages it brings to food.</p> <p>Standardized marketing claims for advertised characteristics such as gluten-free, natural, organic, local, etc. could help consumers better understand the products they are buying.</p>
<b>Education of the Scope of the Industry</b>	<p>The wheat industry must work to increase the knowledge of farmers and consumers about different uses for the grain and use of different varieties to achieve desired characteristics. The challenge today is a belief that all wheat, particularly hard red winter, is equal and its single use is flour for baked goods.</p>
<b>Global Opportunities</b>	<p>Maintaining more agronomic traits and building them into varieties that are good for milling and baking will create desire for Kansas wheat around the world, and increased production will make it more widely known and available.</p> <p>Regulatory approval of new seed technology around the world is important as Kansas farmers look to take advantage of the latest advancements to improve yield and meet worldwide demand.</p> <p>Access to international markets for wheat products is key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access.</p> <p>The overriding export problem is the lack of a champion to sell Kansas wheat. Kansas needs a better relationship with the people selling wheat from the U.S. and Kansas shippers need to be able to make sales to foreign buyers. Russia is our biggest competition and often wins on pure price decisions around the world, so Kansas has to supply superior quality that buyers are willing to pay more in order to get.</p>
<b>Identity Preservation</b>	<p>Farmers and grain handling firms need the ability to keep classes separate such as hard red winter and hard white, but also keep GMO and non-GMO separate in the future.</p> <p>Kansas has a strong hard red winter brand reputation around the world that can be built upon, but export blending makes it difficult to truly source 100 percent Kansas wheat for shipment to other countries.</p>

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<b>Policy</b>	<p>Maintaining the flexibility farmers have in how they depreciate capital purchases as it relates to federal income taxes is critical for management and planning. Any changes that reduce that flexibility or threaten to reduce it compromise farmers' ability to plan expenses.</p> <p>Farm families work their whole lives to build and maintain the family farming operation including the acquisition of land. Being forced to sell hard-earned assets to satisfy estate taxes is a devastating blow to family farmers particularly beginning farmers. The estate tax is the number one cause of the breakup of multigenerational family farms and ranches.</p> <p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: Waters of the U.S., the Endangered Species Act, burdensome Occupational Safety and Health Administration regulations and more.</p> <p>U.S. Department of Agriculture Animal and Plant Health Inspection Service is currently working on a biotech policy which may include double haploids as biotech versus traditional breeding. This type of process regulation is ineffective and unjust. Attention should be paid to the end product and whether genetic modification has actually occurred or not.</p>
<b>Water</b>	Wheat farmers rely on ever-depleting sources of groundwater for irrigation.
<b>Workforce Development</b>	Growth in the wheat sector, particularly in seed technology, irrigation research and technology and flour milling, will require a skilled workforce, which continues to be a significant challenge through the entire agricultural industry.
<b>Yield vs. Quality</b>	The balance between yield and quality is an old struggle for wheat breeders insofar as determining how much yield to sacrifice to incorporate good milling and baking quality traits or how much quality to sacrifice in order to boost yield. The marketplace is not currently signaling much value for quality in terms of price.

## NEXT STEPS IN STRATEGIC DEVELOPMENT

The development of a long-term growth strategy will require input and discussion among key partners. The following strategies have been identified as next steps in developing a strategic growth plan for the wheat.

Focus Area	Solution
<b>Big Data Management</b>	<p>Big data is a major subject facing the wheat industry. Big data provides opportunities to get ahead of some of the environmental issues and is also attractive to federal-level funding. Second generation precision ag will be based on data with varieties tailored to soil type. Industry capacity to handle data is limited currently. There exists a big opportunity to be the ag tech center of the country and growth in big data is a good way to keep talent in Kansas.</p>
<b>Federal Policies</b>	<p>Continue to monitor and take appropriate action on policies that could adversely affect the wheat industry such as Waters of the U.S., the Endangered Species Act, Occupational Safety and Health Administration regulations, trade agreements, the future Farm Bill, crop insurance, dietary guidelines, nutrition policy, etc.</p> <p>Encourage a blend standard that allows for some hard white wheat in hard red wheat or hard red wheat in hard white wheat. This will help eliminate significant logistical challenges for grain handlers when it comes to embracing hard white wheat. The next step is starting the conversation with the Federal Grain Inspection Service.</p>
<b>FSMIP Grant</b>	<p>Implement activities of the Federal State Marketing Improvement Program grant, including promotion of HW wheat through website, logo creation, educational meetings for producers and more. The Kansas Wheat Commission is coordinating the implementation in cooperation with KDA agriculture marketing.</p>
<b>Industry Outreach</b>	<p>KDA will identify potential partners and establish a schedule for strategic growth plan meetings. KDA will also proactively reach out to key industry leaders and major processors in Kansas regarding the development of a strategic growth plan.</p>
<b>Irrigation Research</b>	<p>Continue to push the envelope on what's possible in the realm of irrigation technology to increase efficient delivery of water to wheat. Use the momentum and action items of the <i>Vision for the Future of Water Supply in Kansas</i> to ensure effective prioritization of irrigation research. Work with K-State to establish a degree program in irrigation engineering.</p>

## NEXT STEPS IN STRATEGIC DEVELOPMENT

Focus Area	Solution
<b>Project Funding</b>	Secure funding for WGRC through KDA agriculture marketing budget enhancements. This will ensure that the state of Kansas can continue to be an active investor in WGRC and all of the research WGRC is conducting.
<b>Water</b>	Continue implementation of the action items identified in the Kansas Water Vision, including continued outreach related to increased adoption of voluntary, flexible water conservation tools like Water Conservation Areas and Local Enhanced Management Areas. Work with K-State to implement area groundwater specialists in the Cooperative Extension Service.

## OPPORTUNITIES TO EXPAND PRESENCE

Initial list of potential opportunities:

- Engage industry leadership in hard white wheat production and marketing.
- Ensure space for refrigerated storage at intermodal facilities for frozen dough products.
- Expand targeted marketing of quality grain by industry to domestic and international markets looking for specific quality characteristics.
- Consistently be the top producer of hard red winter wheat.
- Establish goals and targets for hard white wheat production and utilization.
- Work on opportunities to add value to bushels to make them worth more.

# WHEAT INDUSTRY OUTCOMES



## **Growth Objective:**

*Increase demand for Kansas wheat both domestically and around the world to help ensure profitability for the Kansas wheat industry. Expand on the world-renowned Kansas reputation for hard red winter wheat by offering identity preserved hard red winter while also expanding into hard white and durum varieties.*

**The following outcomes will be the result of industry collaboration and effort to grow the Kansas wheat industry:**

### **Phase 1 (Begin within two years)**

- Sustained public/private partnerships which support research, particularly in wheat variety development. These partnerships would include Kansas State University, Wheat Genetics Resource Center, USDA Center for Grain and Animal Health Research and others which have the public and private support necessary to advance this research.
- Regulations which are based on sound science and are supportive of business success, particularly in regard to GMO regulation. The double haploid process employed in wheat breeding to reduce the time required for new variety development is not genetic modification and should be defined accurately.
- Identity preserved wheat for customers around the world. This can be achieved by capitalizing on the availability of shipping containers to ship identity preserved wheat from the point of filling the container to the point of delivery.
- Increased quantity of Kansas wheat that is processed and has value added in Kansas. Incentives are attractive to agriculture enterprises looking to grow in Kansas.
- A grain grading standard by USDA Federal Grain Inspection Service that allows for the presence of hard red winter wheat in hard white wheat or white wheat in red wheat.
- National reputation as a home for agriculture technology that fosters the next Green Revolution with a focus on converting research discoveries into marketable products.
- A durum wheat variety for farmers in Kansas, to offer an alternative to hard red winter and to create a new production region and growing season for durum that can compete with the northern plains region of the United States.
- Significant tools available and in use by farmers to demonstrate the sustainability of wheat farming in Kansas.
- Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of wheat and reduce environmental impact.
- Military veterans looking for a foothold in farming matched with established farms looking for new owners and/or operators.
- Commercial grain storage in Kansas using current technology and with adequate capacity for increased production from Kansas farms.

### **Phase 2 (Begin within 2-4 years)**

- A pasta company located in Kansas which utilizes durum wheat grown in Kansas. This will be dependent on the development of a durum wheat variety for Kansas.



Grow Smarter. Grow Stronger.  
Grow Kansas.