

Kansas

AGGROWTH

GROW SMARTER. GROW STRONGER. GROW KANSAS.

Growing Kansas agriculture... *together*



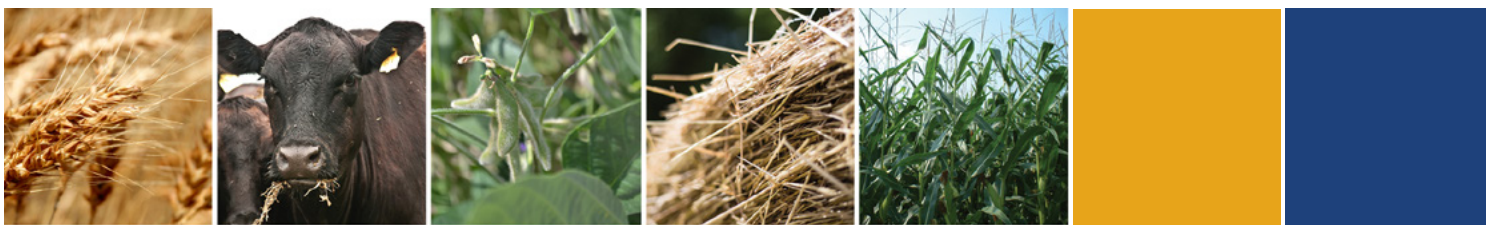
KS AG
GROWTH
2019

2019 Strategic Action Plans for Kansas Agricultural Growth

GROWING KANSAS AGRICULTURE

Agriculture is Kansas' largest industry and economic driver. Sixty-six agriculture and food sectors combine to provide nearly \$64 billion in total economic contribution to the state, approximately 42 percent of the total economy. The industry employs more than 238,000 people, or nearly 13 percent of the Kansas workforce. If food retail and ethanol production are included, the economic contribution rises to over \$75 billion or 50 percent of the state's economy, and employs more than 21 percent of the workforce.

In Kansas, there are 46,137,295 acres of farmland, which accounts for 88 percent of all Kansas land. More than 21 million acres in Kansas are harvested for crops and over 16 million acres serve as pastureland for grazing animals. In addition to growing crops and raising livestock, the Kansas agricultural sector includes renewable energy production, food processing, research and education, agribusiness, technology, entrepreneurship, and many value-added enterprises. Between Columbia, Missouri, and Manhattan, Kansas, sits the single largest concentration of animal health interests in the world. Kansas farmers and ranchers make a global impact, exporting over \$3.6 billion in agricultural products. The leading Kansas agricultural exports include beef, wheat, soybeans and corn.



Clearly, the success of the Kansas economy is directly linked to the success of the agriculture industry.

To grow the Kansas economy, the agriculture industry must grow.

Strategic industry growth requires communication, coordination and collaboration. Since early 2016, hundreds of meetings have been held among agriculture industry leaders to discuss the opportunities in and the barriers to economic growth, and to identify the outcomes desired for each agricultural sector.

In August 2018, the third Governor's Summit on Agricultural Growth was held in Manhattan, Kansas, bringing together more than 400 leaders from across industry sectors under one roof to outline specific action items to achieve those outcomes.

The annual Ag Growth Summit has been hailed for its ability to bring all industry sectors together in one place with one goal — growing Kansas agriculture.

This document provides background information on each sector, identifies sector challenges and opportunities, describes desired industry outcomes by sector, and lists the action items for each outcome. All content is based on the direct input of agricultural stakeholders during the Summits and other meetings of leaders within the various agricultural sectors.

KANSAS ADVANTAGES

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 *Long-Term 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.

The **Strategic Growth Initiative** enables local and state governments to work together in partnership with private partners to help **local communities** that want to grow by matching them with **growth opportunities** which meet each community's resources and interests.

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**.



CHALLENGES and 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 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 expansion.

Kansas needs to be poised to work collaboratively to help craft quality legislation aimed at serving our farmers and ranchers in the **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 a good place to do business.

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 an **agriculture-related skilled workforce and talent pool** through expanded high school agricultural education, programs, veterans' agriculture career programs and legal immigration tools.



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.



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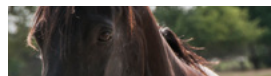
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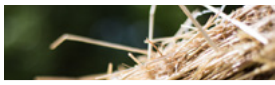
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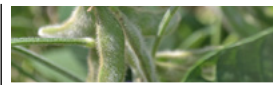
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AG EQUIPMENT

MANUFACTURING & SALES

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 ag 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 can be 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 currently 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.

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 \$2.3 billion to the Kansas economy and is the 36th 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 \$2.3 billion and creates 4,648 jobs.

The industry supports a total of 10,871 jobs and provides a total economic contribution of \$3.3 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 \$3.2 billion with an employment of 7,266. These sectors have a total economic impact of \$4.6 billion and support 16,210 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
Economic Development Opportunities	KDA is engaged in the Strategic Growth Initiative, a pilot program as part of the Land in Kansas statewide economic development initiative to help counties and communities proactively seek potential business growth opportunities.
Existing Customer Base	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.
International Trade	The Kansas Department of Commerce Golden Key Matching Service may provide export assistance to Kansas companies via U.S. commercial service programs.

Factor	Implications for Growth and Development Opportunities
Policy Environment	<p>Kansas tax law allows 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 High Performance Incentive Program (HPIP) provides sales tax exemption on the construction, reconstruction and remodeling of facilities for projects greater than \$50,000.</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>
Workforce Development	<p>Kansas is home to a strong community college and technical college network that can provide training for manufacturers. There is potential to develop apprenticeship and internship programs 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>

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
Critical Infrastructure	A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.
Domestic Sales	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.

Challenge	Details of Challenge
Industry Association	There is no real connection within the industry. Kansas currently does not have a sector association; rather, the Association of Equipment Manufacturers (AEM) is a national organization that hosts an industry sector for agriculture.
International Trade	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.
Policy	Federal laws and regulations impacting the agricultural community as a whole, including trade policies, 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.
Small Businesses	<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 challenging. 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>
Workforce Development	Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of this industry. Involving students at a younger age is a challenge as the industry needs to recruit these students while they are in secondary programs.

SUCCESSSES

Key successes in the ag equipment manufacturing and sales industry:

- Prairieland Partners has developed a strategy to reach out to secondary schools to recruit students while in high school.
- A State Trade Expansion Program grant enabled a new trade mission to AGRO 2018 in Kiev, Ukraine.
- Great Plains Manufacturing expanded operations in Abilene by adding a 350,000-square-foot facility that will add 200 jobs in four years.



Ag Equipment Manufacturing & Sales

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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Increased emphasis on technology-related agricultural education at the high school level.

ACTION ITEMS:

- KDA, Kansas State Department of Education (KSDE) and Kansas Department of Commerce work with business and industry to partner with secondary schools on developing open houses for all levels of students.
- Local manufacturers, KDA and KSDE work to encourage high schools to offer education in technology.
- Kansas Department of Labor, KDA, KSDE, Commerce and the Kansas Insurance Department work to develop policies for secondary school internships for students who are 16-17 years old with local manufacturers and dealers.
- Reach out to nonagricultural students interested in technology to encourage them to consider a program of study focusing on agricultural technology.
- Establish exact needs of technology companies and communicate those needs to high schools.
- Develop education-to-business partnerships on secondary and postsecondary levels that address needs of both the classroom and the workplace in recruiting ag technicians.
- Work with school counselors/administration on "branding" ag technology as a valued path in education.
- Increase number and awareness of scholarships for students.

Increased exports and international presence bolstered by an international trade tour for potential foreign customers to meet with Kansas equipment manufacturers. Expanded trade program promotion efforts and assistance to make international marketing more accessible for a wider variety of manufacturing businesses, including small businesses.

ACTION ITEMS:

- Encourage companies to participate in trade missions as well as reverse trade missions.
- Evaluate promotion programs to ensure applicability to equipment manufacturers.
- Engage with trade organizations and farm shows to determine feasibility.
- Increase education/promotion of Kansas International Trade Show Assistance Program (KITSAP).
- Inform, involve and recruit dealers and manufacturers to participate in international opportunities through resource meetings provided by Commerce and KDA.

Fully functioning agricultural equipment coalition or association for manufacturers and dealers to combine resources with a focus on marketing Kansas-made products.

ACTION ITEMS:

- Convene a meeting of agricultural equipment manufacturers to discuss the framework.
- Act upon recommendations of the manufacturers interested in joining the coalition.
- Work with Kansas Agribusiness Retailers Association to target small dealers in manufacturing and personally invite them to join a state association.

Continuation of state policies which encourage business success, specifically pro-growth policies on income, property and sales tax for industry, as well as state-sponsored economic development incentives and “soft” incentives (e.g. mentorships, internships and training on interaction with financiers) which meet the needs for all equipment manufacturers to ensure they have the information, workforce and financing they need to economically grow and thrive in Kansas.

ACTION ITEMS:

- Market the benefits of Kansas' business friendly environment.
- Educate law makers how the current environment is good for business.
- Engage in legislation that affects Kansas' pro-growth business environment.
- Engage Kansas Agriculture and Rural Leadership (KARL) program as an avenue for soft-incentive development, internships, interactions with financiers, etc.
- Secure state financing for the development of agriculture technology programs in high schools.
- Secure state tax credits for those businesses that use training partnerships with secondary and postsecondary schools.

Increase in agricultural equipment manufacturing and sales companies in the state of Kansas.

ACTION ITEMS:

- Promote the Strategic Growth Initiative process, a pilot program to help counties and communities proactively seek potential business growth opportunities, working with KDA and the Kansas Department of Commerce.
- Gather company contact information to set up meetings.
- Meet with site consultants to introduce them to Kansas.
- Establish potential workforce pipeline to include graduating/credentialed students, Transition Assistance Program (TAP), Kansas Industrial Training (KIT), Kansas Industrial Retraining (KIR), KansasWorks, and other employee-ready programs.
- Work with economic development leaders in various communities to create network of locations that welcome agricultural manufacturing business development growth.
- Development of marketing/public relations materials targeting agricultural manufacturing recruitment.
- Work with Kansas Department of Corrections to increase amount of work release programs.
- Work with local economic development professionals in rural areas to support local efforts already happening.
- Partner with Kansas Economic Development Alliance on local economic development activities.

Policies in this document are a reflection of industry discussion and not a representation of state government.



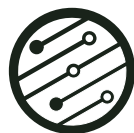


AG TECHNOLOGY & ENTREPRENEURSHIP

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. Entrepreneurship within the state has experienced growth in recent years and is poised for tremendous expansion. A strong agriculture and entrepreneurial culture positions Kansas as an excellent area for development.

The state's commitment to water conservation creates a need for new and expanded 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 with limited data 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. The financing of start-up companies generally occurs outside the traditional finance arena where much of agriculture operates. Additionally, 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' 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
Animal Health Corridor	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.

Factor	Implications for Growth and Development Opportunities
Established Tech & Entrepreneurship Industry	<p>Discovery of new technologies and support for start-up enterprises requires funding for research and development and more. The Kansas State University Institute for Commercialization (KSU-IC) is dedicated to the start-up and expansion of technology-based, high-growth enterprises and enabling the commercialization of university and underutilized corporate intellectual property.</p> <p>Key communities and regions in Kansas have also taken proactive steps to recruit and support 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-IC, KSU Foundation, KSU Research Foundation and the City of Manhattan that works to recruit and support knowledge-based companies that complement K-State's existing research strengths — including animal health, food science and safety, grain science, and plant science — to the Manhattan region. In addition, the Bioscience & Technology Business Center, a partnership of the City of Lawrence, Douglas County, Kansas Department of Commerce, University of Kansas and Lawrence Chamber of Commerce, provides support to grow the bioscience and technology industries in northeastern Kansas.</p>
Existing Customer Base	<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>
Human Capital	<p>Kansas Regents institutions boast strong technology opportunities and unique experiences with unmanned aircraft systems. Additionally, departments within the Kansas State University College of Agriculture are developing new technologies and tools on the leading edge of agricultural technology. These educational programs contribute to the development of a workforce that is trained and prepared for growth in the technology sector.</p>
Natural Resources	<p>Kansas is recognized nationwide for implementing proactive practices of conserving water, 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>Long-Term Vision for the Future of Water Supply in Kansas</i>.</p>

Factor	Implications for Growth and Development Opportunities
Policy Environment	<p>Kansas tax law allows 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 High Performance Incentive Program (HPIP) provides sales tax exemption on the construction, reconstruction, and remodeling of facilities for projects greater than \$50,000.</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>
Supporting Infrastructure	<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>

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
Access to Capital	<p>The financing of start-up companies generally falls outside of the traditional agricultural lending arena. Therefore, financing options need to be sought outside of traditional lenders and inside the venture capital and start-up financing environments.</p>
Critical Infrastructure	<p>There is a lack of adequate work spaces in rural areas to provide flexible office and meeting solutions.</p>
Policy	<p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations that affect technology. Other federal laws and regulations impacting the agricultural community as a whole could have an impact on opportunities in the agricultural technology and entrepreneurship sector.</p>

Challenge	Details of Challenge
Retention of Entrepreneurs	<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> <p>Marketing assistance is also challenging, particularly when it comes to finding sufficient scale to make an economic impact on marketing efforts outside of Facebook and social media.</p>
Uncertainties of Industry	<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>
Workforce Development	<p>Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of the technology industry.</p>

SUCCESSES

Key successes in the ag technology and entrepreneurship industry:

- Topcon Agriculture announced a comprehensive partnership with Kansas State University to boost research and design technology advancement in agriculture research.
- The first Ag Tech Expo — a collaboration between Northwest Kansas Technical College, Kansas Ag Research & Technology Association and KDA — was held at the campus of Northwest Tech in August 2018. It was attended by more than 260 farmers, ranchers, agribusinesses and students from secondary and post-secondary programs along with 19 precision agriculture businesses which attended as vendors and provided hands-on demonstrations of their products.
- Collaborative efforts have taken place to connect established entrepreneurs with new potential business entities in a mentorship setting.
- Economic development organizations statewide have actively involved agriculture representation in efforts to bring new ag enterprises to their communities.
- Technology is growing in prominence in many sectors across Kansas agriculture, from increased use of precision agriculture in irrigation to the addition of robotic milking in dairies to the use of ultra high frequency tags and readers as part of the CattleTrace pilot program.

Ag Technology & Entrepreneurship 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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Programs of study in agricultural technology and data management available at Kansas high schools and colleges that meet the needs of start-up companies.

ACTION ITEMS:

- Reach out to nonagricultural students interested in technology and entrepreneurship and encourage them to consider a program of study focusing on agricultural technology and entrepreneurship.
- Collaborate with Board of Regents and Regents schools to place a priority on current, relevant agriculture education in postsecondary programs across the state.
- Establish exact needs of technology companies and successful entrepreneurs and communicate to secondary and postsecondary levels addressing current skills gap.
- Develop education-to-business partnerships on secondary and postsecondary levels that address needs of both the classroom and the workplace. This could include entrepreneurship mentoring programs and/or internships (e.g., Iowa Entrepreneurship Internship Program).
- Develop Centers of Excellence and Ag Innovation Campuses.
- Determine if blockchain technology is applicable as a program of study for data management.

Adequate in-state workforce through creation of agricultural entrepreneurship internships, projects and mentorships in conjunction with Kansas high schools and colleges.

ACTION ITEMS:

- Utilize existing resources in middle schools and high schools to offer exposure and hands-on experiences demonstrating the diversity of agriculture careers (e.g., Seed to Stem, Ag in the Classroom).
- Integrate agriculture with internships, projects and mentorships held in other professions (e.g., information technology, engineering and communications).
- Market availability of technology-related positions in the agriculture field.
- Develop database of existing resources and training materials to be used by teachers and guidance counselors in middle schools and high schools.
- Broaden messaging of diverse professions held in food and agriculture to attract urban youth involved in 4-H and FFA (e.g., information technology, engineering and communications).



Start-up capital available to agricultural entrepreneurs through investor-funded programs or state programs such as JumpStart Kansas Entrepreneur.

ACTION ITEMS:

- Develop a network that can help identify and market available programs (e.g., angel tax credits, SBA loans).
- Create a business incubator that offers incentives to start a business and that provides an avenue for entities to invest in those businesses.
- Enhance marketing of current availabilities that Network Kansas and Midwest Venture Alliance has to offer.
- Develop a newsletter with information for entrepreneurs and investors to share success stories and availability of opportunities across Kansas.
- Encourage a business-friendly climate to support agriculture technology and agriculture entrepreneurship.
- Establish regional events to link entrepreneurs with interested investors in a coordinated effort between Kansas Department of Agriculture, local governments, and local Chambers of Commerce. As progression occurs, move to a statewide event.

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.

ACTION ITEMS:

- Pursue the creation of programs that provide training to start-ups on interfacing with the investment community.
- Create a marketing program that promotes Kansas as the place for agricultural technology businesses.
- Utilize successful agricultural entrepreneurs for marketing and training of potential start-ups.
- Distribute resources through seminars, onsite trainings and webinars.
- Author a review of current state economic development benefits and pursue legislation to alter existing programs and/or create new programs to support this sector.
- Develop a coordinated effort between economic development directors, agriculture entrepreneurs, technology companies, Kansas Department of Commerce, and Kansas Department of Agriculture to approach the Kansas Legislature for funding to create incentives to attract potential businesses.
- Develop economic impact studies of agricultural technology companies to show the importance of funding incentive programs.
- Increase partnerships between state and local entities to expand available incentives.

Dynamic network between small and mid-sized technology companies, agricultural entrepreneurs, investors and mentors, including investment forums to encourage networking of start-ups and potential investors, and an agricultural technology incubator network to support faster company timelines.

ACTION ITEMS:

- Develop a task force of county economic development directors, agriculture technology companies and Kansas Board of Regents institutions to meet monthly and discuss advancements and availabilities in agriculture technology and entrepreneurship.
- Establish workshops for entrepreneurs and new businesses on giving “pitches” to investors.
- Support development of a “1 Million Cups” program in Manhattan geared toward agricultural entrepreneurs.
- Support “RedTire” program for business transition.

Policies in this document are a reflection of industry discussion and not a representation of state government.





Grow Smarter. Grow Stronger.
Grow Kansas.



ANIMAL HEALTH

Livestock production is the largest contributor to the agriculture industry in Kansas, representing a wide breadth of farmers, ranchers and agribusinesses. Kansas is a leader in livestock production, largely due to the presence of 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. The presence of strong agriculture educational resources and an expansive transportation network together create a sound foundation for animal health success in Kansas.

Preparing for an animal health emergency situation is a priority in Kansas, and government and private industry have taken multiple steps to make Kansas a recognized leader in foreign animal disease preparedness. Kansas regularly exercises its foreign animal disease response plan and is conducting a pilot program, CattleTrace, to develop and test a cattle disease traceability system that could be a model for the nation. Kansas was the first state in the nation to work with feedlots to implement individual biosecurity plans, and in 2017 the Kansas Secure Food Supply Project was launched by the Kansas Department of Agriculture Division of Animal



Health with a goal of working with Kansas dairy, beef, and pork producers to develop Secure Food Supply Plans. To date, more than 1.24 million head of beef cattle, 118,000 head of dairy cows, and 1.49 million head of pigs have been covered under Secure Food Supply Plans.

In order to continue growing animal agriculture in Kansas, there is a critical shortage of food animal veterinarians willing to work in rural America. In addition to working with current veterinary students to expose them to careers in food animal practices, there is also a need to review admissions processes and explore opportunities to conduct outreach with high school students interested in veterinary medicine.

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 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.



2019 Animal Health

STATUS

Livestock production is the largest contributor to the agriculture industry in Kansas, representing a wide breadth of farmers, ranchers and agribusinesses. Kansas is a leader in livestock production, largely due to the presence of 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 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 14,700 people across approximately 884 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 and will be fully operational in 2022 or 2023, 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.

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.

There continues to be a shortage in the number of food veterinarians willing to practice in rural communities. In order to grow and expand animal agriculture in Kansas and across the nation, it is imperative that there is a sufficient number of large- and mixed-practice veterinarians who are willing to serve in rural locations in proximity to industry. According to USDA in 2010, the most recent year for which statistics are available, about 15 percent of veterinarians practiced on food animals or in mixed-animal practices while two-thirds were practicing exclusively on companion animals. In addition to working with current veterinary students to expose them to careers in food animal practices, there is also a need to review admissions procedures and explore opportunities to conduct outreach with high school students interested in veterinary medicine.

The foundation of a prosperous industry today and into the future is a healthy herd. In Kansas, government and private industry work closely together to advance foreign animal disease preparedness, in an effort to be the best prepared state in the nation with regard to animal health emergencies. In addition to annual, multi-day, fully-functional foreign animal disease exercises, Kansas is also a national leader in the implementation of Secure Food Supply Plans on dairy, beef and pork operations across the state. To date, more than 1.24 million head of beef cattle, 118,000 head of dairy cows, and 1.49 million head of pigs have been covered under Secure Food Supply Plans. In June 2018, CattleTrace was launched in Kansas as a pilot project with a goal of developing and testing a purpose-built infrastructure for disease traceability purposes.

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
Business Development	The state of Kansas offers a variety of incentive programs for qualified companies involved in bio-science 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.

Factor	Implications for Growth and Development Opportunities
Critical Infrastructure	<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 United States.</p> <p>Highways Kansas ranks sixth for quality and access to transportation, and third nationally in total road mileage with more than 140,000 total road and street miles and more than 10,000 highway miles.</p> <p>Rail Service Kansas ranks in the top 10 in the U.S. in railroad mileage with more than 4,800 miles of track.</p> <p>Air Service According to the Kansas Department of Commerce, Kansas has 137 public use airports that offer convenient access to our communities, and direct routes to all national air service hubs. Within Kansas, passenger service is offered at eight commercial airports. Wichita Dwight D. Eisenhower National Airport (ICT) is the only airport that handles substantial freight movements.</p>
Education Resources	<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.</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>

Factor	Implications for Growth and Development Opportunities
Established Animal Health Industry	<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>Discovery of new technologies, including therapeutics, diagnostics, biologics, and nutrition and feed products, requires funding for research and development and more, and is significant to a thriving animal health sector. The Kansas State University Institute for Commercialization (KSU-IC) is dedicated to the start-up and expansion of technology-based, high-growth enterprises and enabling the commercialization of university and underutilized 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-IC, 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 & 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>

Factor	Implications for Growth and Development Opportunities
Established Research Capabilities	<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 a 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>
Leader in Livestock Production	<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 \$8.27 billion in cash receipts in 2017, which account for more than 50 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 6.3 million on Jan. 1, 2018. Kansas is also home to 153,000 dairy cows, 2.1 million head of pigs, and is ranked 12th in the nation in meat goat inventory and 23rd in the nation in sheep inventory. Kansas is also home to innovative and high value egg laying and poultry genetic companies.</p> <p>The state is recognized for its strength in meat processing, ranking third nationally in red meat production with production capacity of nearly 5.7 billion pounds annually. There is also a growing presence of dairy processing facilities throughout the state, including a new facility in Garden City, Kansas, which began service in fall 2017.</p>

Factor	Implications for Growth and Development Opportunities
Policy Environment	<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. Close collaboration with USDA on animal health issues, including traceability and foreign animal disease preparedness, also contribute to opportunities to enhance 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>
Traceability	<p>In response to calls to action from cattle producers in Kansas, a public-private partnership that includes the Kansas Livestock Association, KDA, K-State and private industry formed in early 2018 to explore opportunities to move the industry forward on the topic of traceability. In June 2018, CattleTrace was launched as a pilot project with a goal of developing and testing a purpose-built infrastructure for disease traceability purposes. The launch of CattleTrace has established Kansas as a leader on the topic of traceability and provides an opportunity for the Kansas beef industry to be a driver in the development of a disease traceability infrastructure that could be expanded to a national-level system.</p>
Qualified Workforce	<p>The animal health industry is known for creating high-wage, family-sustaining jobs. In 2014, the average annual bioscience wage was \$68,059, compared to \$44,768 as the average Kansas wage. These jobs often require college-level education and, potentially, specific training.</p> <p>In Kansas there are more than 15,000 individuals employed in 884 bioscience-related firms.</p>

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
Consumer Perception	<p>The foundation of a safe food supply is healthy animals, but some individuals and organizations provide misleading, and oftentimes non-science-based, information 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 technologies in their efforts to raise healthy animals.</p>

Challenge	Details of Challenge
Communication and Coordination	<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>
Evolving and Emerging Diseases	<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 and 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 a large percentage of emerging diseases are zoonotic. Currently, there is not a laboratory in the U.S. that can research and work on zoonotic diseases, and also develop vaccines and countermeasures to those zoonotic diseases, which affect livestock.</p>
Growing Global Population	<p>As the global population climbs and is expected to surpass 10 billion within the next 30 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>
International Trade	<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>

Challenge	Details of Challenge
<p>Policy</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 and regulators who continue to call for increased scrutiny and regulation on the use of antibiotics in food-producing animals.</p> <p>The FDA Center for Veterinary Medicine in fall 2018 released strategic goals for 2019-2023. Specifically, CVM identified goals to (1) align antimicrobial drug product use with the principles of antimicrobial stewardship; (2) foster antimicrobial stewardship in veterinary settings; and (3) enhance monitoring of antimicrobial resistance and use in animals in order to further preserve antimicrobial drugs to ensure human and animal health. It will be important for the livestock industry, state government, and veterinary practitioners to engage with CVM as these goals are further developed.</p> <p>Animal disease preparedness and response is a top priority in Kansas and was an important topic in the development of the 2018 Farm Bill. It is expected that the final bill included the development of a National Animal Disease Preparedness, Response and Recovery Program that includes a competitive grant program for preparedness, planning and response capabilities and biosecurity improvements, among other things. There has also been significant discussion about the development of a National Animal Vaccine and Veterinary Countermeasure Bank. The use of vaccine is an important tool in an effective response plan, but a comprehensive response plan must also include components related to surveillance, biosecurity (including Secure Food Supply Plans), trained personnel (including Foreign Animal Disease Diagnosticians), enhanced traceability, logistics, and indemnity plans, as well as more rapid diagnostics support and capabilities. Policy discussions about foreign animal disease are critical to the livestock industry, and Kansas will continue to play an important leading role in these discussions.</p> <p>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 non-science-based 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.</p>

Challenge	Details of Challenge
Workforce Development	<p>In order to grow and expand animal agriculture in Kansas and across the nation, it is imperative that there is a sufficient number of food animal veterinarians who are willing to serve in rural locations in proximity to industry. While the shortage of food animal veterinarians willing to work in rural communities is not unique to Kansas, leaders across the agriculture industry in the state have highlighted this issue as a top priority. Issues related to recruitment and placement programs including loan repayment and scholarship programs, admissions policies at the Kansas State University College of Veterinary Medicine, career exposure opportunities that include undergraduate and high school students, engagement with current food animal practitioners, and more need to be considered in addressing this challenge.</p> <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>

SUCCESSES

Key successes in the animal health industry:

- Kansas is a national leader in the development of Secure Food Supply Plans for cattle feeding and dairy operations. As of February 2019, 14 Kansas dairies, 40 feed yards, 38 sow farms/nurseries, and 140 sow finishers have completed or are in the process of developing site-specific biosecurity plans. This represents approximately 1.4 million head of beef cattle, 118,000 head of dairy cattle, and more than 1.6 million head of swine. More are in progress.
- The Kansas Agriculture Emergency Response Corps was launched in 2017 with a goal to recruit and train Kansas citizens who have skills that will be important in an agricultural emergency response, ranging from ag finance and communications to community liaisons and more. Approximately 70 members have applied and received training as of July 1, 2018.
- In order to help ensure a sufficient supply of food animal veterinarians in rural communities, the Kansas Veterinary Medical Association, the Veterinary Training Program for Rural Kansas (VTPRK), and the United States Congress are being proactive and innovative in recruitment and development of food animal veterinarians.
- A collaborative partnership that includes the Kansas Livestock Association, Kansas Department of Agriculture, and K-State individual producers came together to conduct a pilot project aimed at developing and testing a purpose-built infrastructure capable of tracing cattle movement through the supply chain for disease traceability purposes. CattleTrace will collect movement data on at least 55,000 cattle and will help inform and guide the development of enhanced disease traceability systems for the entire U.S.
- Kansas conducts an annual functional exercise to practice the state's ability to respond to a foreign animal disease. The exercise regularly has more than 250 participants, including local, state, federal public agencies as well as private businesses in various animal agriculture sectors.

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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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.

ACTION ITEMS:

- Establish a Kansas Rural Veterinary Task Force that will be challenged to review issues and make recommendations to Kansas State University, the Kansas Governor, congressional and legislative leaders, and state and federal agencies related to recruitment and placement programs. Issues could include loan repayment and scholarship programs, admissions policies at the KSU College of Veterinary Medicine, career exposure opportunities that include undergraduate and high school students, engagement with current food animal practitioners, and more.

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.

ACTION ITEMS:

- Continue to lead and advance the Kansas Secure Food Supply project through assistance to Kansas dairies, feedlots, and swine operations to adopt foreign animal disease preparedness plans with a goal to have 90 percent of the industry with a biosecurity plan in place in 10 years.
- Continue recruitment and training opportunities for the Kansas Agriculture Emergency Response Corps.
- Conduct multi-day functional exercise in December annually, to practice the state's ability to respond to a foreign animal disease.
- Continue to meet with federal leaders, including the USDA Under Secretaries for Food Safety and Marketing and Regulatory Programs, regarding foreign animal disease response and challenges with the state-federal relationship during a response.
- Continue to meet with state leaders from the region on FAD preparedness to improve understanding of each state's plans and coordination of response efforts.
- Meet with consulting industry, including veterinarians and nutritionists, etc., to determine how they will function in a foreign animal disease response. Provide information and training opportunities for consulting industry through the Kansas Agricultural Emergency Response Corps.
- Teach a college-level class regarding foreign animal disease outbreaks and biosecurity plans for students at K-State.
- Host foreign animal disease awareness forums or community meetings to foster increased awareness about how a FAD outbreak would affect a community at large.
- Coordinate with industry organizations to conduct at least five tabletop exercises and other training opportunities per year, for farmers and ranchers to better understand how a FAD response would be carried out and to increase their on-farm preparedness.

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.

ACTION ITEMS:

- Implement the CattleTrace pilot project in accordance with the established primary objectives, including:
 - Develop a purpose-built infrastructure for an animal disease traceability system.
 - Evaluate the efficiency and capabilities of the animal disease traceability system and infrastructure.
 - Determine the value of an animal disease traceability system throughout the supply chain.
- Utilize traditional media, social media, www.CattleTrace.org, and a monthly e-newsletter to provide regular updates and information about the pilot project to partners and interested stakeholders.
- Based on results of the initial pilot project, determine next steps in the advancement of disease traceability in the beef cattle industry.

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.

ACTION ITEMS:

- Conduct an Animal Agriculture Media Summit. Convene industry organizations, farmers and ranchers, and subject matter experts to develop media training and outreach to consumers.
- Continue social and traditional media outreach about the use of animal health technologies and tools in livestock production.
- Provide more frequent training for farmers and ranchers about how to engage with consumers.
- Coordinate with livestock industry to identify subject matter experts on technical animal health issues and provide social media training to better equip them to serve as a recognized and trusted spokesperson.

Medium Priority Outcomes

A federal regulatory approval process for animal health products that encourages innovation and is not overly burdensome and unnecessarily lengthy in time.

ACTION ITEMS:

- Collaborate with FDA, USDA, producers and veterinary practitioners in the development and implementation of FDA CVM's strategic goals for 2019-2023 related to the alignment of antimicrobial drug product use with the principles of antimicrobial stewardship; fostering antimicrobial stewardship in veterinary settings, and enhancing the monitoring of antimicrobial resistance and use in animals in order to further preserve antimicrobial drugs to ensure human and animal health.
- Collaborate with industry to identify potential changes to the regulatory approval process and communicate those with congressional delegation, USDA and FDA.

A strategic economic development plan surrounding NBAF to complement and enhance the research to be conducted at the facility, in a coordinated and collaborative effort between local, regional and state partners and private industry.

ACTION ITEMS:

- Develop education/information to establish initial outreach and recruit enterprises to support NBAF and provide infrastructure for NBAF.
- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.
- Identify financial resources to provide entrepreneurs with access to capital in start-up phase.
- Coordinate with KC Animal Health Corridor to identify companies.
- Develop education/information to establish initial outreach.

State-sponsored economic development incentives which meet the needs of lab-based enterprises.

ACTION ITEMS:

- Based on feedback from industry related to existing incentives, draft legislation to address those challenges and create new incentives that work for agriculture.
- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.

Partnerships among animal health enterprises, livestock producers and unmanned aerial systems (UAS) developers to incorporate UAS technology into animal health and management plans.

ACTION ITEMS:

- Encourage research and development of UAS technologies to monitor herd health through thermal imaging and to track herd patterns including grazing, calving, nutrition and more.
- Encourage research and development of UAS technologies to deliver pest control products.
- Explore opportunities to incorporate UAS technologies in a foreign animal disease response plan.
- Support the growth strategy within the UAS sector.

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Animal Health



BEEF

The beef cattle sector is 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 abundant feed supply to the pastureland to the efforts to conserve the water supply. The beef industry in Kansas includes leaders throughout the supply chain, as well as in research, health, marketing and advocacy. Agriculture-related education is a source of strength in the state. 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 to environmental regulations and international trade. Fluctuating land prices, changes in land use, and generational transfer add to the challenges the industry must continue to address. The ability to access



markets — either physically or electronically — is critical to future success in the industry. There is a need to continue improving infrastructure to deliver products and information. The workforce required to maintain successful beef operations involves issues of education and immigration which adds complexity to operation management and sustainability, especially as the industry continues to become more competitive.

As the beef industry adapts to meet consumer demands, it must identify goals for strategic growth based on competitive advantages of raising and feeding 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. Collaboration 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 \$8.27 billion in cash receipts in 2017, which accounted for more than 50 percent of Kansas agricultural cash receipts that year. Not only does Kansas have the third largest number of cattle on ranches and feedyards at 6.35 million on Jan. 1, 2019, the state also has a significant footprint in the cattle processing sector. In 2017, Kansas produced nearly 5.69 billion pounds of red meat, or nearly 11 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 \$6.3 billion and employs nearly 34,130 Kansans. In addition, animal slaughtering and meat processed from carcasses, except poultry, has a direct output of \$11.2 billion and supports a total of 17,292 jobs.

The beef industry is also recognized nationally and globally for raising healthy cattle and producing the beef which consumers demand. In 2017, exports of beef and beef products from Kansas totaled over \$1.25 billion, the largest export value in the past five years. Beef and beef product exports from Kansas have accounted for between 18 and 26 percent of total U.S. beef exports for each of the last five years. 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 July 2018, the U.S. Meat Export Federation estimates that exports have added \$318.31 per head in value.

The success of the Kansas beef cattle industry has not come without significant challenges, though. Volatile markets, regulatory challenges, weather extremes and natural disasters, and a growing number of anti-agriculture and anti-meat activists spreading false information regarding cattle production practices and beef nutrition can make 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
Biosecurity	The Kansas beef industry has been aggressive and progressive in advancing biosecurity and foreign animal disease preparedness. In addition to participation in KDA-led foreign animal disease exercises, feedyard operators throughout the state are working with KDA to develop or update biosecurity plans. As of February 2019, 40 feedyards and 14 dairies have completed individual Secure Beef Supply Plans or Secure Milk Supply Plans and more are in progress. Kansas can continue to be at the forefront of development of biosecurity plans throughout the beef supply chain. It should be noted that many feedyards have existing biosecurity plans.
Education	The Kansas State University Department of Animal Sciences and Industry is recognized throughout the cattle industry as one of the premier animal sciences programs in the nation and a prime spot not only for superior 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.

Factor	Implications for Growth and Development Opportunities
Export Potential	<p>In 2017, exports of beef and veal products were \$1.25 billion and exports of hides and skins were \$208 million, according to the U.S. Census Bureau. Through July 2018, the U.S. Meat Export Federation estimates that exports have added \$318.31 per head in value. Beef produced from cattle raised, fed and processed in Kansas will be critical in meeting the strong demand from domestic consumers and the growing global middle class.</p>
Human Capital	<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 the supply chain. There is a wealth of knowledge driving the continual improvement in the beef cattle industry, including research and extension leaders at K-State (College of Veterinary Medicine, Department of Animal Sciences and Industry, the Beef Cattle Institute) and Fort Hays State University and throughout private industry, including industry consultants, companies located within the KC Animal Health Corridor, and cattlemen and women who are serving in leadership roles in industry associations. As the industry works to improve production capabilities, it will be critical to work alongside these well-recognized industry leaders.</p>
Consumer Outreach	<p>Today's consumers are increasingly interested in knowing how and where their food is grown, raised and processed. Throughout the beef supply chain, private operations have opened their doors to welcome consumers and influencers from urban and suburban areas in Kansas for learning opportunities. The Kansas Beef Council (KBC) has significantly increased its social media presence, promoting the health benefits of beef and advocating for beef production practices to consumers and influencers. Since refocusing its efforts on digital, the KBC has experienced a 1,264 percent increase in its Facebook following (from 2,008 to 27,400 followers) and received over 1.8 million video views on Facebook. The KBC Instagram account was created in 2017 and has over 2,100 followers, most of whom are 18-25 years old living in Kansas City and Wichita.</p>
Policy Environment	<p>Kansas tax law allows 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 High Performance Incentive Program (HPIP) provides a 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, 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. Appointed leaders in the federal government, including at the U.S. Department of Agriculture, Office of the U.S. Trade Representative, Environmental Protection Agency and more have worked with Kansas to seek solutions to policy challenges.</p>

Factor	Implications for Growth and Development Opportunities
Supporting Institutional Infrastructure	<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 supply 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, 2018, Kansas has 2.45 million cattle on feed. Kansas ranked second in fed cattle marketed with 4.94 million in 2017. That represents more than 22 percent of all cattle fed in the United States.</p> <p>As one of the top grain producing states (including corn, sorghum, and wheat), 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> <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, national and global beef cattle community. Kansas has also stepped up as a leader in the development of an enhanced disease traceability system with the launch of the CattleTrace pilot project in 2018.</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>
Traceability	<p>In response to calls to action from cattle producers in Kansas, a public-private partnership that includes the Kansas Livestock Association, KDA, K-State and private industry formed in early 2018 to explore opportunities to move the industry forward on the topic of traceability. In summer 2018, CattleTrace was launched as a pilot project with a goal of developing and testing a purpose-built infrastructure for disease traceability purposes. The launch of CattleTrace has established Kansas as a leader on the topic of traceability and provides an opportunity for the Kansas beef industry to be a driver in the development of a disease traceability infrastructure that could be expanded to a national-level system.</p>

Factor	Implications for Growth and Development Opportunities
Verification/ Certification Programs and Quality Assurance	<p>Beef producers have shown a strong willingness to participate in voluntary certification or verification programs, including the Beef Quality Assurance program 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 while also potentially increasing transparency in the supply chain, allowing for information to be provided to consumers about how the animal was raised and processed. 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 continue to increase herd size, there may be opportunities to add value to cattle raised in Kansas through increased participation in third-party audited certification/verification programs to meet specific consumer demands for increased transparency as well as packer and retailer demand for specific traits and qualities.</p>
Weather and Natural Resources	<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 16.3 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>

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
Access to Capital	<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>

Challenge	Details of Challenge
Critical Infrastructure	<p>As beef packers and processors identify when and where to grow their presence, one factor they will consider is utility rates. There are challenges with competitive utility rates in Kansas that have resulted in burdensome and unnecessarily high utility rates.</p> <p>With technology continuing to advance, there is growing reliance on live feeds and video auction services to conduct business transactions in the beef cattle industry, especially in the seedstock sector. The lack of consistent, reliable broadband access limits the ability of some Kansas producers to reach additional customers and expand their business through the use of Internet video auction services and other online business services.</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. Federal transportation regulations related to hours of service and electronic logging devices also challenge the ability to safely and efficiently transport livestock.</p> <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>
Generation Transfer	<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>
Industry Capacity and Competition	<p>Historically and even still today, Kansas, Nebraska and Texas have been the top three beef producing states nationwide. Industry growth and expansion in other states may present a challenge for growth in Kansas.</p> <p>After multiple years of expansion, increases in the beef herd are moderating. From Jan. 1, 2017, through Jan. 1, 2018, the total number of cattle and calves on ranches decreased by 2 percent, but the number of heifers retained was up 4 percent.</p>
Industry Fragmentation	<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 supply 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 supply chain.</p>

Challenge	Details of Challenge
Industry Opponents	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. While the beef industry has and will continue to compete with other proteins, the emergence of synthetic meat, and issues related to labeling of the product in a manner that is clear and not misleading to the consumer, is a challenge the beef industry must address.
International Trade	A key area for growth will result from increasing global demand for beef. Kansas has the opportunity to increase exports not only of beef but also of live cattle to countries wanting to expand their own domestic herd. Since implementation, NAFTA has given duty-free access for U.S. beef into Canada and Mexico, markets that equal roughly \$2 billion in U.S. beef exports. The United States-Mexico-Canada Agreement, signed on Nov. 30, 2018, maintains market access for beef; the USMCA will have to be ratified by Congress. In addition, an intent to engage with Japan in bilateral negotiations is encouraging as Japan is the top market for U.S. beef exports despite a 38.5 percent tariff. With the opening of the China market in 2017, there is tremendous potential for Kansas beef, but regulatory hurdles, including traceability, limit the ability to export U.S. beef to China's 1.3 billion people. Additional opportunities exist in the European Union, throughout Asia and more.
Market Volatility	Market volatility continues to be a challenge for all segments of the beef industry.
Policy	<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, 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. A suit has been filed challenging the law, and the case is pending.</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. Regulations related to the use of Electronic Logging Devices and hours of service have resulted in challenges for the cattle industry. A one-year ELD exemption for livestock haulers is pending in Congress as of October 2018. The Federal Motor Carriers Safety Administration opened a public comment period related to potential revisions to hours-of-service regulations. The comment period closed in September 2018.</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 that not only prevent growth of grasses but also can be dangerous fuel in a wildfire emergency, as evidenced by wildfires in both 2016 and 2017 in southern Kansas. 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>

Challenge	Details of Challenge
Policy cont.	<p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: transportation, international market access, the Endangered Species Act, environmental rules and regulations related to air and water quality, and more. The 2018 Farm Bill includes provisions related to disaster assistance, foreign animal disease preparedness and response, workforce training, conservation and more that directly affect the beef cattle industry.</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, however, 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>
Talent Development and Quality of Life	<p>Growth in the beef cattle industry, particularly in cattle feeding and cattle processing, will require a skilled workforce, which continues to be a significant challenge through the entire agriculture industry. In addition, a decline in the number of graduates from the K-State College of Veterinary Medicine with a desire to work in a food animal practice in rural Kansas presents a challenge.</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>
Traceability	<p>The lack of an end-to-end national traceability system inhibits export growth potential and could potentially create animal health threats.</p>
Water and Natural Resources	<p>Access to an abundant and reliable water supply is critical to growing any livestock operation. 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>Delays in the amount of time it can take for approval of certain Kansas Department of Health and Environment permits can prevent beef industry operations from expanding in a timely manner.</p>

SUCCESSSES

Key successes in the beef industry:

- A collaborative partnership that includes the KLA, KDA, and individual producers came together to conduct a pilot project aimed at developing and testing a purpose-built infrastructure capable of tracing cattle movement through the supply chain for disease traceability purposes. CattleTrace will collect movement data on at least 55,000 cattle and will help inform and guide the development of enhanced disease traceability systems for the entire U.S.
- In 2017, exports of beef and beef products from Kansas totaled \$1.25 billion, the largest export value in the past five years, and beef and beef product exports from Kansas have accounted for between 18 and 26 percent of total U.S. beef exports for each of the last five years.
- The Kansas Beef Council (KBC) has significantly increased its social media presence, promoting the health benefits of beef and advocating for beef production practices to consumers and influencers. Since refocusing its efforts on digital, KBC has experienced a 1,264 percent increase in its Facebook following (from 2,008 to 27,400 followers) and received over 1.8 million video views on Facebook. KBC has created a YouTube channel that has received over 73,000 video views. The KBC Instagram account was created in 2017 and has over 2,100 followers, most of whom are 18-25 year olds in Kansas City and Wichita. The organization has also rebranded its website, which now receives over 1,000 pageviews per day. Lastly, KBC has focused on digital influencer marketing programs in the Kansas City Metro Area.
- Across Kansas, stakeholders are working to expand cellular coverage and broadband access. In early June 2018, the Kansas Farm Bureau was granted a waiver from the Federal Communications Commission to challenge the legitimacy of cellular coverage maps from various major carriers in Kansas. Challenging the map may provide opportunities to secure funding to expand cellular coverage in Kansas. Also, Governor Jeff Colyer secured a grant to complete a statewide broadband mapping project. Together, these efforts will help identify locations in Kansas that lack connectivity and coverage and will help allow for future cellular and broadband development.
- After multiple years of drought and wildfires, industry partners, KDA and other state leaders, federal partners, and community stakeholders took a proactive and collaborative approach to providing drought relief and stopping wildfires. These actions resulted in more than 50 fires in 2018 being extinguished without any major, catastrophic disasters as in previous years. They also secured early access to CRP acres for haying and grazing, and other expedited relief and additional flexibility.
- To prepare the next generation of beef leaders, a continuum of opportunities exist in Kansas. The KJLS LEAD Challenge, the K-State Animal Sciences Leadership Academy and the KLA Young Stockman's Academy provide opportunities for youth — from as young as 7 years old to young professionals — to learn about and prepare for careers in the beef cattle industry.

Beef

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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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.

ACTION ITEMS:

- Continue to implement the CattleTrace pilot project in accordance with the established primary objectives, including:
 - Develop a purpose-built infrastructure for an animal disease traceability system.
 - Evaluate the efficiency and capabilities of the animal disease traceability system and infrastructure.
 - Determine the value of an animal disease traceability system throughout the supply chain.
- Utilize traditional media, social media, www.CattleTrace.org, and a monthly e-newsletter to provide regular updates and information about the pilot project to partners and interested stakeholders.
- Based on results of the initial pilot project, determine next steps in the advancement of disease traceability in the beef cattle industry.

Federal immigration reform with a focus on long-term visas for agricultural workers, and a potential immigration pilot program in Kansas.

ACTION ITEMS:

- Establish a coalition to support legislation to create an H2C guest worker program, or something similar, that allows for a year-round, multi-year, renewable visa. Consider a state pilot program.
- Compile resources to aid employers to work within the current federal immigration system.
- Compile educational resources about the importance of migrant labor to the Kansas economy.

Continued industry-led proactive social and traditional media outreach about the beef production chain and beef safety, quality and nutrition to encourage trust from consumers, influencers and media and a better understanding of the industry.

ACTION ITEMS:

- Coordinate with established beef industry organizations to continue social and traditional media outreach about beef production and beef safety, quality and nutrition.
- Identify influencers, including but not limited to retail outlets and food service providers, at the state level to expand reach of social and traditional media with general consumer audiences.
- Coordinate with agricultural industry organizations to provide more frequent training for farmers and ranchers about how to engage with consumers.

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.

ACTION ITEMS:

- Coordinate with industry to influence federal policymakers on topics related to CDL exemptions, electronic logging devices and hours of service regulations.

Kansas established as a top choice for high-quality beef and cattle genetics for export opportunities.

ACTION ITEMS:

- Support bilateral and multilateral trade pacts that expand export potential for beef and beef products.
- Host inbound trade missions bringing potential new international customers to Kansas to showcase the whole Kansas beef industry, including ranches, stocker and background operations, feedyards, packers and processors, and retail and food service.
- Coordinate with industry organizations to recruit more beef producers willing to either host inbound trade missions or travel on outbound missions.
- Develop branded marketing materials to tell the Kansas beef story to potential new markets and in existing markets.
- Evaluate potential barriers (policy issues, exchange rates, trade agreement challenges, etc.) to increasing export potential for genetics.
- Develop informational materials regarding specific market trends in potential new markets — what cuts are preferred, what is their interest in beef products — in order to better meet the demands of new customers.

Rural broadband access throughout Kansas.

ACTION ITEMS:

- Support continuation of USDA Rural Development Telecom and Rural Utility Service grant, loan and loan guarantee programs.
- Support the Statewide Broadband Expansion Planning Taskforce, established in the 2018 legislative session, that will identify opportunities and potential funding sources to expand broadband infrastructure and increase access, remove barriers that may hinder deployment of broadband, and consider options for deployment of new advanced communication technologies.
- Support Kansas Farm Bureau's effort to challenge the FCC cellular coverage maps from various major carriers in Kansas. Challenging the map may provide opportunities to secure funding to expand cellular coverage in Kansas.
- Support a collaborative project led by Connected Nation and supported by Governor Jeff Colyer that will prepare a statewide broadband map of wireline and wireless coverage.

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.

ACTION ITEMS:

- Support innovative educational opportunities that will provide hands-on experiences in beef cattle medicine and production.
- Work with Kansas beef producers at each step of the production chain to identify and list specific skills and skill sets needed.
- Identify Kansas Board of Regents institutions, community colleges, technical schools, industry and others who have the capacity and resources to provide training in specified subject areas to meet the needs of industry employers.
- Develop career and education programming at the 4-H level.
- Develop education and outreach campaign related to careers in the beef industry as a means to showcase the broad range of career opportunities and dispel myths about working in the industry.
- Encourage additional opportunities for English language training to break down linguistic barriers in the beef industry to foster personal and professional development for employees and improved business communication throughout the industry.
- Develop partnerships to place military veterans in positions of employment on beef operations.
- Explore opportunities to develop educational programs related to beef nutrition for pre-health, pre-medicine, nutrition and other human health related fields of study at Regents schools.

Cooperation and strong public-private partnerships in the recruitment, expansion and development of livestock production and meat and dairy processing, as well as affiliated industry partners throughout Kansas to further solidify Kansas' role and reputation as a recognized leader in the beef industry.

ACTION ITEMS:

- Attend annual beef industry conventions and meetings and participate in trade show events to gain exposure for Kansas within beef industry enterprises.
- Work on all levels — state, regional and local — to be pro-business and open to agriculture development.
- Develop branded marketing materials to tell the Kansas beef story to potential new partners.
- Encourage and support research and innovation at the retail level in an effort to capitalize on consumer interest in beef products.
- Support expanded value-added beef processing in Kansas and concentrate recruitment in that sector of the industry.
- Encourage housing development programs to address housing shortages in areas with concentrated beef processing and feeding sectors.
- Explore the development of a 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.
- Encourage and support opportunities to increase collaboration and information sharing among the different sectors in the beef production community in a manner that creates opportunity to foster trust, speak with one voice and add value throughout the supply chain.
- Discuss expansion of the Sunflower Supreme Replacement Heifer program statewide.
- Encourage more producer education opportunities related to risk management methods and cattle marketing.

Medium Priority Outcomes

Farm transition planning resources for farmers and ranchers to utilize during preparations for intergenerational transfer or alternative forms of succession planning.

ACTION ITEMS:

- Identify existing organizations and resources with farm transition information and assistance.
- Encourage the inclusion of farm transition presentations and materials at beef industry events.
- Make farm transition materials and resources available at KDA website.
- Distribute public information, including a press release, about the importance of farm transition planning.
- Identify farm transition success stories to use in outreach and education materials.
- Work with banking/financial sector professionals to develop and disseminate farm transition resources to farmers and ranchers.

State tax policies, economic incentives and business regulations focused on the reduction of burdens on agricultural entities.

ACTION ITEMS:

- Market the benefits of Kansas' business-friendly environment.
- Educate lawmakers how the current environment is good for business.
- Engage in legislation that affects Kansas' pro-growth business environment.
- Support efforts to repeal or otherwise eliminate current corporate farming laws in Kansas that limit certain ownership structures from operating in the state, which curtails investment and limits growth and modernization.
- Draft legislation to address the challenges related to existing economic development incentives and create new incentives that work for agriculture, based on feedback from industry.

Science-based environmental management and range management tools, especially for prescribed burning in the Flint Hills, which are accessible to producers.

ACTION ITEMS:

- Continue coordination with KDHE and industry on development and distribution of educational and outreach materials about the importance of prescribed burning that can be distributed to regional and statewide ag media.
- Coordinate with the Kansas congressional delegation to advocate for and protect the use of science-based range management tools, including prescribed burning.
- Work with the state of Nebraska to protect the ability to conduct prescribed burns in Kansas.
- Encourage K-State Research and Extension to assist landowners to prepare land management plans.
- Encourage university research related to alternative burning strategies, integrated approaches to invasive control, and multi-species grazing.

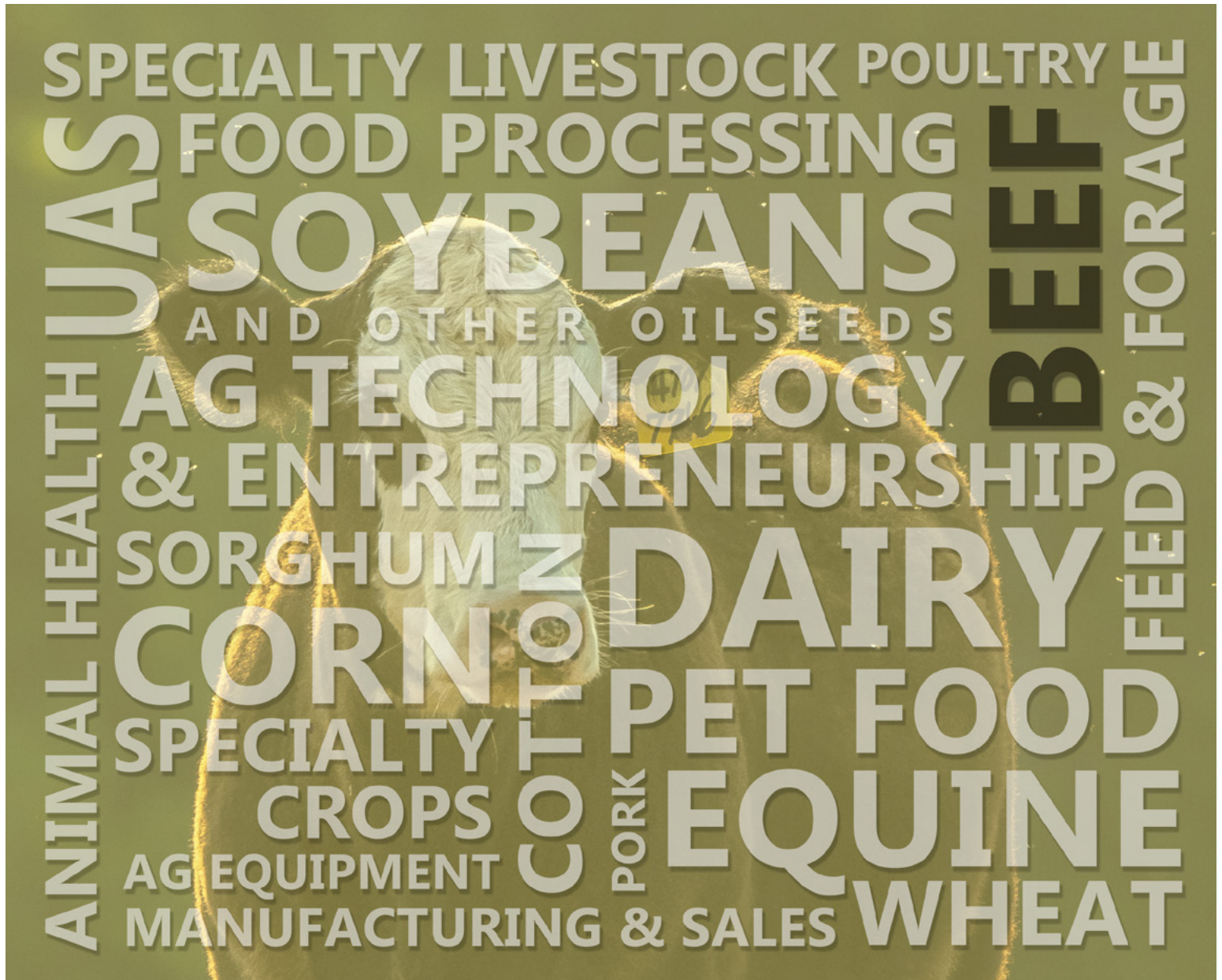
Competitive utility rates in Kansas that do not create a competitive disadvantage with other states and that allow Kansas to maintain existing enterprises and grow industry in the future.

ACTION ITEMS:

- Work with electric utilities to understand the most economical places to locate major processing facilities and what drives those economics.
- Include industrial electrical rate options and favorable locations in pre-selected site data.
- Evaluate options for adjusting the regulated nature of Kansas electricity such that rates can be more competitive.
- Encourage 0% loan program for infrastructure expansion.

Policies in this document are a reflection of industry discussion and not a representation of state government.





Grow Smarter. Grow Stronger.
Grow Kansas.



CORN

The Kansas corn industry fills a significant role in the agriculture economy. 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 supplies feedstock for ethanol and thus, ethanol by-products. 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 leading 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 additional potential for corn to contribute to additional products and bring increased manufacturing options to the state.

A number of challenges face the corn industry and present potential barriers to future growth within this sector. Several 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 international question the role of genetic technology in corn production and in fuel use, as well as nutritional issues. Ever-depleting groundwater sources for irrigation continue 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 increasing 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.

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 686.4 million bushels in 2017. 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 66.45 million bushels were exported from Kansas in 2017. Kansas ranks 7th 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.

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 \$2.2 billion and creates 4,806 jobs in the state. Through indirect and induced impacts, the industry supports a total of 15,675 jobs and provides a total economic contribution of \$3.85 billion. The ethanol industry, a primary supporter of the corn industry in Kansas, provides an added 2,623 in total jobs, as well as a total economic contribution of over \$1.2 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. While a key climatic challenge is in the amount of rainfall received, many areas of the state utilize irrigation for corn production. Therefore, irrigation is a critical component to allow the quantity of corn produced in Kansas to meet demand, particularly in the areas of high feed usage. 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 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 abroad. 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, although close study reveals that ethanol DDGS continue to provide a viable feed source from 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 increased soil health, management to weather patterns, incorporation of additional data in 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 additional markets around the world. Further, increased efficiency in the regulatory approval of genetically engineered corn globally would allow new technology to come to market sooner so that corn produced in Kansas 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
Alternative Uses and Bioscience Business Development	<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 (e.g., corn flakes, 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 to workforce assistance and more.</p> <p>KDA is engaged in the Strategic Growth Initiative, a pilot program as part of the Land in Kansas statewide economic development initiative to help counties and communities proactively seek potential business growth opportunities.</p>
Big Data Use	As more and more data become available related to cropping systems, there are more opportunities to use the data to improve profit margins for corn, thereby increasing both the fiscal and economic impact and the number of acres used for corn production.
Ethanol	<p>Expansion of ethanol capacity will create additional demand for Kansas corn in addition to the economic impact in rural Kansas of increased capital investment and job creation.</p> <p>Making sure corn ethanol is favorably included in the Renewable Fuel Standard and initiatives such as Prime the Pump and the U.S. Department of Agriculture's Biofuel Infrastructure Partnership (BIP) grant will build demand for ethanol by increasing consumer access to and awareness of E15 and E85.</p>
Export Infrastructure	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.
Genetic Advancements	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 Kansas without significant yield loss. This would increase the number of acres on which corn can be produced.

Factor	Implications for Growth and Development Opportunities
Genetic Advancements cont.	<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 use 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.</p> <p>It is uncertain whether the market would support varieties suited for specific livestock such as beef, swine or poultry, and whether specific varieties would increase yield in ethanol plants.</p>
Irrigation Technology	<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 to achieve the same economic return with less water. Being more efficient with irrigation systems will help reduce water use and potential pumping costs while maintaining good yields.</p>
Land Availability	<p>Kansas has the second most farm land of any state with roughly 90 percent devoted to agriculture.</p>
Leadership	<p>Kansas is home to strong leadership in the corn sector, creating additional investment opportunities.</p>
Livestock Feeding	<p>Kansas is a top three state in cattle production, a top ten producer in hogs, has a fast-growing dairy sector, and is in line for expanded poultry production. 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>
Policy Environment	<p>Kansas tax law allows 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 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>

Factor	Details of Challenge
Supporting Institutional Infrastructure	<p>Kansas has a solid foundation throughout the entire corn production community. With cow-calf production and stocker operations throughout eastern and central Kansas, 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. Hogs and poultry provide a smaller but important level of additional 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>

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
Critical Infrastructure	<p>Port access is critical and because Kansas doesn't have a port, having the transportation infrastructure necessary to move corn to ports is critical as well. Ports on the coasts where Kansas corn would travel by rail to be transloaded onto ocean-going vessels need to be maintained such that shipping capacity isn't delayed or reduced due to aging infrastructure.</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 to use alternative transportation.</p>
Demand	<p>The dynamics of corn demand in Kansas, particularly in the cattle feeding sector, present some questions. Does Kansas have the capacity to meet all the needs for grain, silage, high moisture corn, DDGS? If not and if production were increased does that prevent the need for other states' product?</p>
Industry Competition	<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>

Challenge	Details of Challenge
Industry Opponents	<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.</p> <p>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, as some consumer groups question whether high fructose corn syrup (sugar) affects humans differently than sugar extracted from sugar cane.</p>
International Trade	<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>
Policy	<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 U.S., the Endangered Species Act, burdensome OSHA regulations and more. The focus on atrazine by the Environmental Protection Agency 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>

Challenge	Details of Challenge
Policy cont.	<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>
Sustainability	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.
Water	Corn production relies on ever-depleting sources of groundwater for irrigation.
Workforce Development	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.

SUCCESSES

Key successes in the corn industry:

- A biofuels infrastructure grant to Kansas for \$1.3 million is being used to improve consumer access to E15 by partnering with gas stations across the state to install pumps that can supply E15. This benefits consumers as well as producers.
- The Kansas Corn Commission, through their Seed to STEM learning opportunities provided to school teachers and other parties, are being utilized to help educate youth about GMOs. Appropriate labs are currently available related to GMOs and biotechnology for 6th-12th grade teachers, as well as training and funding specifically created to meet state science standards.
- Environmental Protection Agency Administrator Scott Pruitt visited a Kansas ethanol plant, East Kansas Agri-Energy, in June 2018 and had a conversation with corn farmers on important issues such as the Renewable Fuel Standard.
- An irrigation efficiency study has been done 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.
- There has been significant innovation to allow for production of diesel from corn oil.
- An 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.

Corn

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

50 percent of Kansas fuel stations with readily available E15. Utilizing the U.S. Department of Agriculture Biofuels Infrastructure Partnership grant reduces the financial burden for stations to offer E15.

ACTION ITEMS:

- Continue utilizing the USDA Biofuels Infrastructure grant to reduce the financial burden for stations upgrading to pumps that offer E15.
- Continue working with USDA, Prime the Pump, and Kansas Corn Commission programs for additional funding to make necessary conversions at retail locations to ensure that funding comes from public/private partnerships.
- Support work in the Kansas City Metro Area to obtain a 1lb. waiver of the Reid Vapor Pressure standards to allow E15 to be sold year-round.
- Enlist the KDA weights and measures fuel program data to annually measure and report the percentage of stations offering E15.
- Educate consumers about the benefits of purchasing E15.
- Develop a consumer-driven message about why not to fear utilizing E15 (e.g., What vehicles can use it? Where can you get it?)
- Encourage petroleum marketers to use E15 availability as a customer draw.
- Work with wholesale terminals to offer E15 rather than all the blending being done at the station.
- Support removal of unjust regulatory barriers and push for strong administrative support of programming by USDA.

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.

ACTION ITEMS:

- Support federal trade policies that foster free and open trade and the reduction or removal of tariffs that hinder the export of DDGS.
- Work with industry partners (Kansas Corn Commission, Kansas Corn Growers, Renew Kansas, Kansas Feed & Grain Association, U.S. Grains Council, U.S. Meat Export Federation, etc.) to emphasize DDGS during both inbound and outbound state and federal trade missions, as well as align educational and promotional efforts.
- Educate on the international level to encourage continued adoption of DDGS as a feed ingredient through participation in international trade missions.
- Develop a plan for targeting those countries around the world with growth potential in the use of DDGS in feed rations.
- Encourage expansion of ethanol production and assist with new technology adoption for DDGS-based products.
- Research how to feasibly dry and transport distiller's grains to both increase market and provide value.

Clear, factual information about genetic engineering, or genetically modified organisms (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.

ACTION ITEMS:

- Ensure information available is scientifically based, but consumer focused, and provided through a partnership with the Kansas Corn Commission, Kansas Foundation for Ag in the Classroom, K-State Research and Extension, and other shareholders.
- Use the Center for Food Integrity or other research organization to help determine a percentage of consumer acceptance. This includes completing a study of the “general” consumer and what their attitudes and preferences are towards GMOS.
- Emphasize the importance of GMO products and highlight difference in false labeling claims at both the state and federal legislative levels.
- Ensure this message is clear in Kansas Foundation for Ag in the Classroom materials.
- Hit the highlights during Ag Month, harvest releases, speaking engagements, etc.
- Coordinate with agricultural industry organizations to continue social and traditional media outreach about corn production, safety, quality and nutrition.
- Use “GMO Answers” as a customer-facing education piece.
- Develop better relations with school teachers and dieticians and give them the tools they need to help educate youth about GMOs.
- Celebrate biotechnology as an industry.

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.

ACTION ITEMS:

- Promote the sustainable use of the Ogallala Aquifer through irrigation technology, drought-resistant crop varieties, soil moisture testing, and enhanced soil health (cover crops, no-till, etc.).
- Coordinate with Groundwater Management Districts, Kansas Water Office, KDA, KSRE, and additional partners to preserve water for future use.
- Research cost-sharing of technology adoption.
- Coordinate with USDA Risk Management Agency to address crop insurance policies that disincentivize water conservation, such as limited irrigation.
- Determine optimum plant development stages for most efficient water application opportunities by collaborating with the seed industry, Kansas State University, crop consultants and others.
- Collaborate with crop consultants and other agricultural advisors to support farmers interested in less water-intensive alternative crop production in coordination with corn.
- Partner with and support public and private entities focused on development of drought-resistant corn and related advancements.
- Implement research to increase drought-resistant corn production.
- Develop recommendations based on research related to corn and cotton rotations.
- Take into consideration the conservation that has been done when developing new conservation incentives and programs.
- Use public money to support the Vision for the Future of Water Supply in Kansas.
- Restore water plan funding for projects related to water education and outreach.
- Have locally led conservation districts be at the forefront of planning for soil and water conservation and other natural resources for the state of Kansas.

Improved corn yields in Kansas from better crop technology, better irrigation technology and evolving management practices.

ACTION ITEMS:

- Drive development and adoption of technology by bringing together equipment manufacturers, KSRE, KDA, resource districts, etc.
- Research cost-share programs to be offered to incentivize efficient water use.
- Build case studies and education around return on investment of technology.
- Promote irrigation scheduling.
- Provide local and regional certification for growers related to irrigation management.
- Offer a degree in irrigation engineering or groundwater management at K-State.
- Support water technology farms looking at irrigation practices applicable to corn production.
- Designate corn checkoff dollars to fund research gaps between what is currently being done by seed companies and the needs of the industry.
- Identify someone at K-State with a full-time focus on corn.
- Accelerate the release of varieties (drought tolerance, low mycotoxin susceptibility) through collaboration with international efforts focused on the same.
- Establish regional benchmarking, benchmarking by soil types and similar climate/rainfall area to allow growers to learn from top producers.

Medium Priority Outcomes

Increased amount of Kansas corn processed with value added in Kansas.

ACTION ITEMS:

- Partner in executing the food processing growth strategy.
- Partner in executing the pet food growth strategy.
- Partner in executing the feed and forage growth strategy.
- Target corn specialty traits that are Kansas specific or could benefit Kansas industries or processes.
- Focus research on opportunities to add value with corn.
- Increase grain-based pet food production in Kansas.
- Recruit industrial chemical production such as biobutanols.
- Recruit more distilleries.

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.

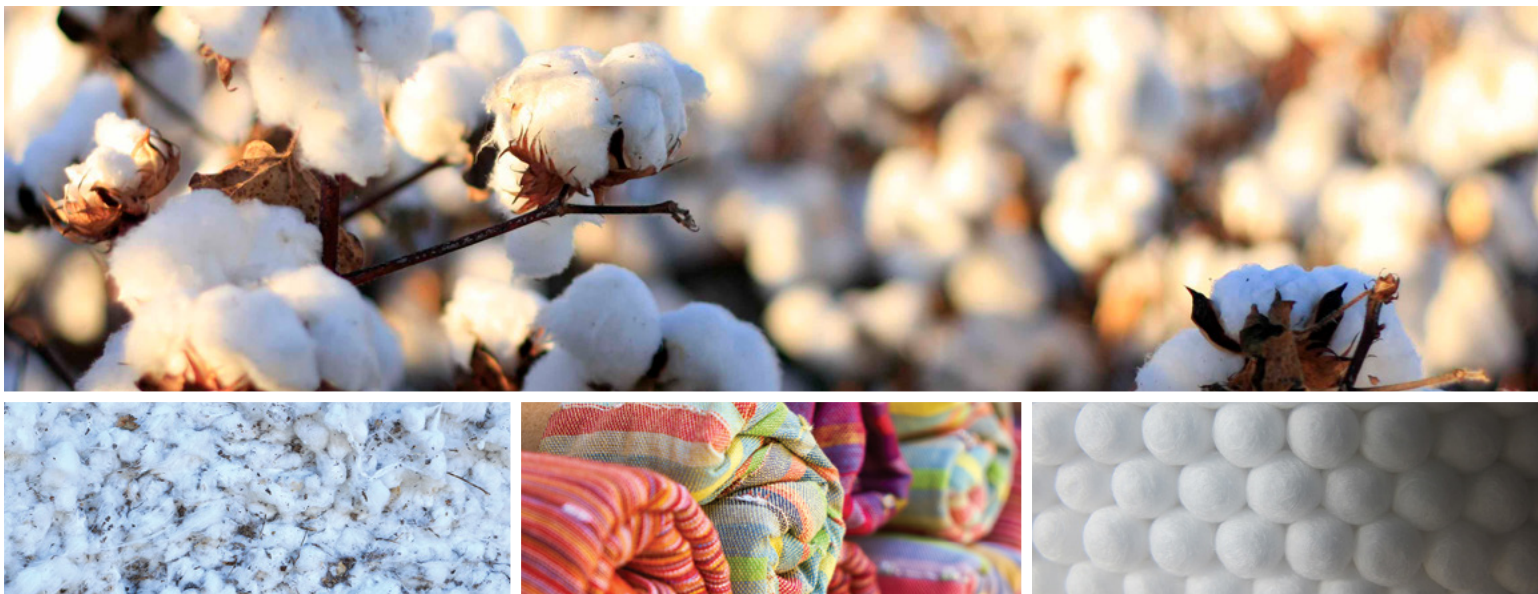
ACTION ITEMS:

- Consider an in-state option for lowering the age requirement if federal rules stand in the way.
- Create a list of military discharge placement services in Kansas.
- Connect Kansas truck driving school to placement services for potential students.
- Streamline the information from Kansas Corporation Commission, Kansas Highway Patrol and Kansas Department of Transportation.

Regulations based on sound science and supportive of business success, particularly in regard to Environmental Protection Agency regulations and issues important to the Kansas corn sector such as Waters of the U.S. (WOTUS), atrazine levels of concern and the renewable fuel standard.

ACTION ITEMS:

- Meet regularly with industry to stay connected on regulatory issues.
- Engage with the EPA on issues important to the corn sector.
- Engage Governor, Attorney General and congressional delegation to further the Kansas position as needed.
- Continue to meet with federal EPA leadership.
- Increase farmer involvement with the EPA in regard to crop protection chemicals.
- Help the EPA recognize the carbon footprint of corn ethanol production as an advanced biofuel.



COTTON

The cotton sector is smaller in production than other Kansas crops, ranking 14th nationwide, but production and ginning in the state has increased significantly since 1996. There are more than 400 active cotton growers, who together have exceeded 1.6 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 as 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 recent years, the status of cotton in the farm bill has varied, creating uncertainty for producers.

This lack of certainty 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 14th 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 increased significantly 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 \$24.8 million. Through indirect and induced impacts, the industry creates a total economic contribution of approximately \$43.6 million.

Cotton production and ginning in Kansas has exceeded 1.6 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 Winfield, 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. The number of acres planted has increased from 16,000 acres in 2015 to 165,000 acres in 2018, a 931.25 percent increase.

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
Climate	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.
Crop Rotation	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.
Genetics & Herbicide Development	<p>In 2016, regulatory approval provided for the release and availability of a weed control system and cotton seed variety 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 herbicide application may reduce the incidents of loss due to drift.</p>

Factor	Implications for Growth and Development Opportunities
Water	<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 Kansas Water Vision call for opportunities to address the policy and research challenges associated with increasing cotton acres in Kansas.</p>

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
2,4-D Loss	<p>Cotton is considered one of the most susceptible agricultural crops to 2,4-D. While the availability of 2,4-D tolerant seed varieties as well as alternative weed control systems has significantly addressed this challenge, additional information and education is needed for both cotton growers and non-cotton growers to reduce neighbor concerns and clarify the distinction between 2,4-D and dicamba tolerances.</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>
Chlorpyrifos	<p>In fall 2015, the Environmental Protection Agency issued a proposal to revoke all tolerances for chlorpyrifos. Additionally, in August 2018 the U.S. 9th Circuit Court of Appeals ordered the EPA to ban the sale of chlorpyrifos in the United States. 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>

Challenge	Details of Challenge
Critical Infrastructure	<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>
International Trade	<p>According to the Foreign Agriculture Service, as of July 2018 the top five export customers of raw cotton fiber are Vietnam, China, Turkey, Mexico and Indonesia. Export potential exists for any country experiencing growth in its GDP.</p>
Policy	<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 impacted cotton's status in the Agricultural Act of 2014 (Farm Bill). Cotton was not a covered commodity under the 2014 Farm Bill.</p> <p>Recognizing the need to provide support to cotton producers, the Bipartisan Budget Act of 2018 amended the Agricultural Act of 2014 and designated seed cotton as a covered commodity. This allowed seed cotton to be eligible for Title I farm programs effective for the 2018-2019 marketing year. Many of the priorities of the cotton industry were included in the 2018 Farm Bill, but there are still several priorities that will be sought in future farm bills.</p>
Water	<p>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.</p>
Workforce Development	<p>Workforce development issues impacting the cotton industry in Kansas relate to affordable and qualified custom harvesting.</p>

SUCCESSSES

Key successes in the cotton industry:

- The number of cotton acres planted increased to 165,000 acres, a 931.25 percent increase from 2015.
- The Bipartisan Budget Act in 2018 amended the 2014 Farm Bill, adding seed cotton as a covered commodity under the Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs.
- In February 2018, Kansas Cotton Association held informational meetings for new and existing cotton producers in Sublette and Wichita. Over 50 people attended each meeting.
- In March 2018, the USDA's Farm Service Agency announced a new Cotton Ginning Cost Share program. The program provides cotton producers with cost share payments to offset their 2016 cotton ginning costs and to assist with the marketing of cotton.
- Several million dollars has been invested throughout the state in harvesting equipment along with a \$20 million investment in the expansion of two gins.
- Access to shorter season EnlistDuo Phytogen cottonseed has expanded to allow for widespread use by Kansas cotton growers.
- The 2018 Farm Bill includes many of the cotton industry's policy priorities, including continuation of the seed cotton ARC/PLC program, full access to the marketing loan program, full funding for textile competitiveness programs, effective crop insurance products, no reduction in arbitrary payment limits, and addressing restrictive family farm eligibility requirements.

Cotton

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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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.

ACTION ITEMS:

- Address water policy issues that may limit the growth of cotton in Kansas.
- Evaluate profitability, prices and water use of cotton.
- The Kansas Cotton Association will use strategic marketing tactics to promote the action items in the Kansas Water Vision related to cotton at water conferences throughout the state

Predominant use of specific herbicide tolerant cotton varieties by Kansas growers. Misunderstandings currently exist related to the distinction between 2,4-D tolerance and dicamba tolerance.

ACTION ITEMS:

- Communicate information about cotton varieties through social media, field days and other educational opportunities.

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.

ACTION ITEMS:

- Communicate information about cotton varieties through social media, field days, and other educational opportunities.
- Expand education about varieties to include dicamba and EnlistDuo cotton and soybeans, so neighboring growers understand best management practices for herbicide application, as well as risks.
- Expand education initiatives targeted towards producers, retailers and the general public on the effects of 2,4-D and potential drift issues.

Inclusion of cotton as a Title I commodity in the Farm Bill allowing for improved insurance coverage. Both the House and the Senate versions of the 2018 Farm Bill include seed cotton as a covered commodity. However, until the bill passes the status of cotton in the next farm bill is still uncertain.

ACTION ITEMS:

- Monitor the progress of the 2018 Farm Bill and continue to advocate for the inclusion of cotton as a Title I commodity.
- Request to the U.S. Secretary of Agriculture the designation of cotton in the “other oilseed” category, to offer an alternative for improved coverage under existing commodity program.
- Invite cotton organizations to participate in future Farm Bill roundtable discussions.

Broad knowledge of the economic impact of growing irrigated cotton in Kansas, including expanded producer surveys, yield response curves and additional cost data.

ACTION ITEMS:

- Survey Kansas farmers about irrigated crop production to compare economics of cotton versus other crops.
- Complete a detailed profitability analysis for cotton versus other crops by refining yield response data, evaluating variable costs, and analyzing past data and expected future variables.
- Publish results of the survey and profitability analysis demonstrating advantages and disadvantages of growing cotton in Kansas.
- Continue to collect more Kansas field data through KDA or Kansas State University on cotton production, inputs and economic return.
- Promote to Kansas dairies and feedyards the value-added components of cotton including seed (protein source) and the burr by-product (forage).
- Complete profitability analysis and water use for cotton versus other irrigated crops.

Affordable access to cotton harvesting equipment in areas of the state with increasing cotton production through cooperatives or other organized approaches.

ACTION ITEMS:

- Host discussion to determine current availability of equipment.
- Explore opportunity to establish a cooperative network or other organized approach to share harvesting and stripping equipment.
- Provide low interest loans for the purchase of cotton harvesting equipment.
- Coordinate with equipment manufacturers to increase production and availability of cotton harvesting equipment.
- Increase media promotion of Kansas cotton (e.g., Check the Label, Kansas Cotton).
- Explore additional financing options that include a longer time frame than conventional loans.

Increase in Kansas farmers who include cotton in their crop rotation system as part of an overall water management strategy.

ACTION ITEMS:

- Communicate results of cotton’s water use and profitability more widely to encourage additional cotton acres in Kansas.
- Demonstrate through existing growers the potential water savings for growing cotton versus other irrigated crops.

Medium Priority Outcomes

Increased consumer desire for cotton over polyester and other non-cotton fibers.

ACTION ITEMS:

- Through a website, videos and field days, develop opportunities to increase consumer awareness and education of the cotton industry in Kansas.
- Host informational meeting for new cotton growers in early 2019 to discuss marketing, herbicide best management practices, etc. Coordinate with Oklahoma State University and Cotton Incorporated.

Availability of direct enrollment in DriftWatch™ program for local gins or co-ops.

ACTION ITEMS:

- Evaluate current enrollment process with KDA and identify necessary changes to allow direct enrollment of acres from gins or co-ops. KDA has internally reviewed process and criteria for enrollment and determined that a landowner signature is not required. Discuss outreach options to communicate this to cotton growers and encourage enrollment in DriftWatch.
- If changes are identified, plan for communication and outreach through coops, seed dealers, and cotton gins. Consider option to include the variety of seed (i.e., dicamba, 2,4-D, or other) for both cotton and soybeans in the DriftWatch™ enrollment.
- Enroll all Kansas cotton acres in DriftWatch™ program.

Low Priority Outcomes

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.

ACTION ITEMS:

- Communicate outcome and issue with Kansas Department of Transportation and local county organizations.
- Participate in Freight Advisory Council and communicate issue.
- Educate state lawmakers on the importance of adopting KDOT Freight Corridor of Significance Plan that calls for Highway 54 improvements.
- Coordinate with KDOT and Freight Advisory Council to consider hosting an informational hearing on the topic of key ag transportation projects for the next highway plan.
- Coordinate with state legislators, KDOT and local advocates to encourage the inclusion of Highway 54 improvements in the Transportation Vision Task Force recommendations.

Collaborative research working group to develop a strategic plan that addresses cotton research pitfalls.

ACTION ITEMS:

- Site a K-State Research and Extension specialist with cotton expertise in southwest Kansas to connect research to in-field management strategies.
- Provide education to new producers and new crop consultants that focuses on agronomy, pest management and harvest preparations.
- Identify individuals, disciplines and organizations that should be included in a collaborative research working group.
- Hold initial (and then annual) meeting of the collaborative research working group to review potential research needs and priorities such as fertility and weed control, improving cotton as a feed product, and profitability.
- Develop a strategic plan via a collaborative research working group, outlining the research needs and priorities.
- Routinely review progress towards implementing strategic research plan.
- Evaluate options to contract for additional research, through both the university and non-university researchers.

Participation of cotton growers in Kansas agricultural trade missions to provide opportunities for increased cotton markets, in coordination with the Cotton Council International.

ACTION ITEMS:

- Host discussion/scoping to identify priority trade countries.
- Develop schedule of potential trade missions to priority cotton trade countries; review annually.



DAIRY

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 minimize 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 issues 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 160,000 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. The recent addition of the DFA plant in Garden City has allowed an estimated 75 percent of milk produced in Kansas to now stay within the state to be processed.

Kansas has consistently ranked as one of the fastest growing dairy states. 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. 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 has a direct output of almost \$532.4 million and a total economic contribution of approximately \$994.8 million. The industry creates 1,337 jobs directly, and with indirect and induced impacts the total number of jobs grows to 3,825.

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
Feed Supply and Land Availability	<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 490,000 acres in 2018. 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 forage and has a good supply of water.</p>
Heifer Development	<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 be converted to heifer development facilities for raising heifers for out-of-state dairies.</p>
Kansas State Univ. Educational Resources	<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>In 2018, K-State approved a plan to build a \$13 million state-of-the-art dairy research facility on campus. Fundraising will begin soon.</p>

Factor	Implications for Growth and Development Opportunities
Milk Processing Expansion	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.
Policies and Guides	<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>
Water	<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>

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
Corporate Farming	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.

Challenge	Details of Challenge
International Trade	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.
Processing Facility Wastewater Disposal	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.
Threatened and Endangered Species	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.
Water	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.
Workforce Development	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.

SUCCESSSES

Key successes in the dairy industry:

- Southwest Kansas is home to the largest single-dryer dairy processing plant in North America, which recently received the Sustainable Plant of the Year award.
- Kansas dairies are innovative. Kansas is home to a 110-cow rotary — the largest rotary milking system in North America — and soon to one of the two largest fully robotic rotary platforms currently sold.
- Since 2008, Kansas dairies have increased milk production by 45 percent.
- Milk processing has grown significantly with the addition of three milk processing facilities since 2011; 75 percent of all Kansas milk is now processed in the state.
- Kansas has increased its national presence in the dairy industry by participation in three national trade shows, engaging with ten dairy operators interested in relocation.
- Four Kansas dairies in the last five years have been selected to be featured as virtual farm tours at the World Dairy Expo.
- The Kansas dairy industry partnered with Kansas State University to offer the first dairy career exploration seminar for secondary students.
- KSU, industry partners and KDA are partnering to design a new state-of-the-art K-State dairy research facility that will include expansion to 500 milking cows and robotics.
- Kansas is a national leader in the development of Secure Milk Supply plans at dairy operations, and 14 Kansas dairies have completed or are in the process of developing site-specific biosecurity plans as of February 2019.
- 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.
- 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 farms to approximately 30 percent of original volume and ships it to processing facilities in Texas in a cost-plus model.

Dairy

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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Federal immigration reform with a focus on long-term visas for agricultural workers, and a potential immigration pilot program in Kansas.

ACTION ITEMS:

- Create a report thoroughly documenting the issues dairy producers face on a daily basis in securing an adequate legal workforce.
- Draft a workable solution to current immigration challenges that will alleviate challenges the dairy industry faces.
- Submit the report to Kansas congressional delegation.
- Work with Kansas congressional delegation to secure an alternative workforce program to fill the talent and workforce needs of the industry.
- Develop multi-generational success stories of agriculture families built on immigration.
- Improve information and education in local communities on the visa application process.
- Increase public outreach and information on the need for federal immigration reform.

New university dairy teaching and research facilities that adequately meet research and educational needs and spur economic growth.

ACTION ITEMS:

- Create a network of support in the dairy industry by engaging dairy farmers statewide in the need for a new dairy facility at K-State.
- Ensure dairy farmers across the state convey the importance of dairy to university leadership (department head, dean, president) through phone calls and written communication.
- Secure at least one dairy farmer on the search committee for the head of the K-State Animal Sciences & Industry department who will advocate for the need for a new university dairy farm.
- Secure a landmark funding source for a new K-State dairy facility to kick off a capital fundraising campaign.
- Explore opportunities for dairy expansion relating to NBAF development, including the use of STAR bonds to help secure funding.
- Begin an aggressive funding campaign through private donations and securing grants and gifts that align with the vision of creating a world-class teaching and research facility.
- Work with the Kansas Legislature to secure funding.

- Encourage investment by the whole agriculture industry, including other commodities, through opportunities for feeding trials.
- Ensure training goals are dual-purpose at facility — both dairy cow development and milking.
- Consider a demonstration farm as a means for fundraising.
- Use Call Hall as a conversation/learning area.
- Consider the role of robotics and other emerging technologies.

Dairy Beef processing facility for cull cows and fat dairy beef to keep processing of dairy cattle in Kansas and to spur economic growth.

ACTION ITEMS:

- Engage beef producers, county economic development, KLA, Farm Bureau, DFA, and state agencies to help secure company.
- Work with Kansas Department of Commerce to secure incentives for a processing facility.

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.

ACTION ITEMS:

- Employ an engineer in a time share between KDA and the KDHE livestock waste management section to support permit application review.
- Hold a roundtable discussion with KDHE, KDA and university engineering departments regarding student internships and employment.
- Seek approval to increase available salary range for engineer positions to encourage increased interest and applications for vacant positions.
- Evaluate permitting process, including existing rules and regulations, to determine if efficiencies or streamlining could be gained without compromising compliance with federal standards or water quality conditions.
- Conduct outreach and education with livestock operations on waste permit regulations and permitting process to improve the quality and completeness of submitted applications.
- Expand professional staff to review permit applications and nutrient management plans using on-call engineering contracts, engineer position-sharing among state agencies, and recruitment of university engineering students.
- Review salary structure for engineer positions to encourage increased interest and applications for vacant positions.

New dairy heifer development operations in Kansas, either by repurposing existing empty feedlots or by creation of new facilities.

ACTION ITEMS:

- Conduct a cost analysis of renovating or building dairy heifer development facilities in Kansas versus comparably sized facilities in the upper Midwest.
- Collaborate with Kansans possessing existing empty facilities or greenfield sites suitable for dairy heifer development.
- Share information and widely distribute cost analysis at trade shows and at media and industry events.

Expanded influence, presence and professional standing of the Kansas dairy industry with consumers and policy makers.

ACTION ITEMS:

- Work to leverage dairy promotion programs in Kansas to increase consumption of dairy products.
- Work to inform policy makers of the impacts of potential legislation on the Kansas dairy industry.
- Ensure that Kansas dairy farmers are involved in leadership development programs that will enhance their leadership contribution to the industry.
- Ensure that Kansas dairy farmers are comfortable sharing their story through leadership development programs, trainings, materials, etc.
- Work to leverage dairy promotion programs to educate pediatricians and dieticians on the importance and role of dairy in a healthy diet.

Comprehensive employee training programs to complement the needs of dairy processing facilities.

ACTION ITEMS:

- Work with Kansas milk processors to identify and list specific skills and skill sets needed. Specific job titles and skill sets have been developed for the new processing plant in southwest Kansas.
- Support private and public education providers which have been identified to provide training in specified subject areas.
- Continue to develop and implement training programs to match the needs of the industry and execute according to demand and frequency required by industry employers.

Medium Priority Outcomes

Growth in milk production through the addition of new dairies or expansion of existing facilities.

ACTION ITEMS:

- Continue dairy recruitment activities at World Ag Expo and World Dairy Expo, and maintain the dairyinkansas.com website.
- Cultivate relationships initiated during the Governor's dairy recruitment mission to California and at World Dairy Expo, targeting key dairy prospects.
- Continue exploring and promoting adoption of technology such as robotic milking.
- Develop case studies to prove and promote new methods.

New facilities for export of shipping containers via railway directly from western Kansas to prevent wasteful backhauls across state.

ACTION ITEMS:

- Support continued development of transload facilities in Kansas.
- Assist in developing future options and collaborations that will allow for increased development around the transload facilities.

Farm transition planning resources for farmers to utilize during preparations for intergenerational transfer or alternative forms of succession planning.

ACTION ITEMS:

- Compile a list of tools available in Kansas and the United States and complete a gap identification for determining future necessary resources.
- Work to secure farm transition presentation opportunities at regular Kansas dairy events, such as the Kansas Dairy annual meetings and KSU Dairy Days.
- Encourage existing organizations which provide farm transition resources and information to proactively seek opportunities to engage with the dairy industry.

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.

ACTION ITEMS:

- Update informational materials regarding farm structure, farm size, land values comparing Kansas to states with similar agricultural industries but no laws restricting ownership.
- Prepare public information — including updated information materials, information from the judicial review highlighting the decision that the laws are likely unconstitutional, and more — to be distributed to dispel myths about the effects of corporate ownership in agriculture.
- Determine best option for sharing information from above and execute.
- Develop an “ag friendly communities” designation.

Expanded partnerships between From the Land of Kansas trademark programs and on-farm dairy processors.

ACTION ITEMS:

- Increase percentage of Kansas on-farm dairy processors with membership in the From the Land of Kansas program.
- Work to secure membership of Highland Dairy Wichita plant or Dillons milk in From the Land of Kansas since both products utilize a vast majority of Kansas milk. Undertake a thorough investigation of the Udderly Kentucky brand of milk and the approach they utilized to achieve success with a major processor.

_____ Low Priority Outcomes _____

Additional K-State Research and Extension dairy personnel, including dairy extension specialists and more active engagement in extension services by dairy farmers.

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

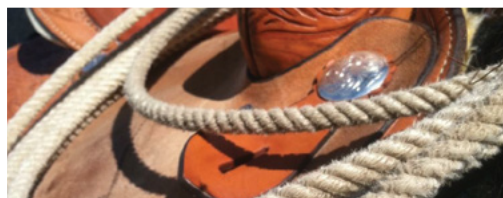
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2019 Dairy



Grow Smarter. Grow Stronger.
Grow Kansas.



EQUINE

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, including potential improvements to nearby airports for air transportation of horses. Although insurance is available for equine businesses, it is often cost prohibitive. While equine trails are available throughout Kansas, federal funding shortfalls have caused maintenance issues.

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 the Kansas equine 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
Consumer Demand	Horses and other equids have broad appeal for both pleasure and work uses. There are horses located throughout the state to serve many interests.
Facilities	The American Royal offers space for international, national, regional and local shows. The Kansas State Fair, Domer, and Western State Bank Expo all offer space for regional and local shows, and Celebration Centre offers space for smaller regional and many local shows.
Feed Supply and Land Availability	<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>
Human Capital	The Kansas State University department of animal sciences and industry houses respected faculty with expertise in equine nutrition and reproduction. Colby Community College offers an associate degree in equine science with 60 percent of graduates employed in the region following graduation. Studies cover reproduction and equine business management, including all facets of the equine business from breeding and foaling to training and selling.
Supporting Infrastructure	Kansas boasts many stables, arenas, horse breeders, farriers, veterinarians, trainers and other professionals available to offer services to horse owners.

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 equine industry growth plan.

Challenge	Details of Challenge
Air Transportation	The Kansas City International Airport is not currently equipped to handle the shipment of horses via air freight, a common practice with world class equine events. However, horses may be shipped through KCI by contracting a horse shipper, a.k.a. a “freight forwarder,” to provide the shipping stalls, book the airfare, and supervise the load and the unloading and trailering out process.
Capital	Equine facilities such as arenas and stables can become expensive, making it difficult for undercapitalized entrepreneurs to start up. Deferred maintenance funding is also a continual issue.
Checkoff Funds	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. One challenge that exists to doing a checkoff on feed bags is feed distributors look at this as another “tax” or a paperwork obligation. Thus, the industry may need to review an option on horse sales like the beef checkoff program for cattle.
Differing Definitions	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.
Economic Impact Information	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’s 2017 economic impact study did not have Kansas-specific information, but some information from the study may prove to be useful.
Equine Market	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, as animals have excessively long trips to slaughter facilities.

Challenge	Details of Challenge
Horse Racing	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 40 percent, which is higher than standalone casinos at 22 percent. 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.
Insurance	Despite the availability of commercial insurance for equine-related business, premiums are often cost prohibitive.
Sales Tax Exemption	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.
Trail Maintenance	Weather-related incidences, along with natural overgrowth and trail use erosion, create an ongoing need for required attention and upkeep to equestrian trails. Governing agencies supply routine maintenance staff and volunteers make up the balance, but due to the vastness of trails and the everchanging needs, there is a funding and staffing shortfall to cover continuous oversight. Additional opportunities for new trail development exist, but with concerns over current trail maintenance challenges, these opportunities are not pursued.

SUCCESSES

Key successes in the equine industry:

- The Kansas State Fair will receive additional revenue from Kansas sales tax and city excise tax for capital projects at the fairgrounds to allow the fair to expand and protect its assets providing Kansas with a first-class fair and facilities.
- The Kansas Expocentre has announced that Domer arena expansion plans have been approved and will provide greater opportunities for larger equine programming.
- Plans are underway to develop a new American Royal complex in Kansas to serve as a world-class events center, expanding the possibilities for equestrian shows and exhibitions.

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2019 Equine

Equine

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Restoration of federal appropriation funding for inspection of horse slaughter facilities.

ACTION ITEMS:

- Create consumer-facing materials to correctly inform the public about current slaughter practices. Kansas Horse Council will work with industry and vocational/educational programs.
- KHC will reach out to the other coalition members to see if they have a similar interest in pursuing federal changes.
- Work with congressional delegation to restore federal appropriations, then work with state legislature to set state specifics.

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.

ACTION ITEMS:

- Advocate strongly in support of the new American Royal "world class" multi-use event center with supporting features like stalls, camping, multi-arenas, etc.
- Help communities assess current facilities and identify potential revenue generating events that could be held if facilities were kept in top shape.
- Create plan for future investment in equine exposition facilities across Kansas to match anticipated needs.
- Identify funding sources for upgrading Kansas State Fair equine facilities.
- Advocate for inclusion of adequate airport quarantine facilities to allow transportation of horses into and out of Kansas City International Airport.
- Fund the promotion and marketing of event centers both nationally and internationally through Kansas Department of Wildlife, Parks and Tourism (dependent on improvements to airport).

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.

ACTION ITEMS:

- KHC to work with Kansas State University agricultural economics department to help formulate survey including timeline, distribution, etc. Plan to have initial survey available by late 2019 with final result tabulations by fall 2020.
- KHC to work on funding options for the survey.

Statewide equine extension specialist position for enhanced education and outreach.

ACTION ITEMS:

- Set up a meeting with KHC, Kansas Department of Agriculture, other industry groups like 4-H, and head of K-State's department of animal sciences and industry and/or K-State's Dean of the College of Agriculture to discuss extension specialist position needs.
- Explore possible funding support for extension specialist position at K-State, including possibly establishing an equine industry checkoff program.

Increased trail maintenance, trail riding promotion and opening of new trails for equestrian use.

ACTION ITEMS:

- Allow advanced reservation of corrals at state parks. KDWPT to work on passing regulations to allow and then incorporate into their reservation system.
- Form additional chapters of Back Country Horsemen of Kansas to target specific trails to maintain. This volunteer group is establishing a great working partnership with state, corps and local public land managements to meet the needs of trail maintenance with local grassroots efforts.
- Create a website of existing trails that includes maps, miles, level of difficulty, campgrounds and amenities by KDWPT and have KHC help with mapping.
- Include a directory of horse-friendly bed & breakfasts on KDWPT website.
- Encourage private guest ranches to become public facing and help them with insurance concerns which is one of the obstacles to overcome (KDWPT, KDA, KHC, Kansas Livestock Association).
- Increase promotion of trails using social media and advertisements. KDWPT to identify funding and support.
- Partner with Kansas Agritourism Advisory Council for trail investment and maintenance, and promote agritourism businesses who have by-the-hour trail rides.
- Pursue federal delegation on issue of Corps of Engineers funding shortfall for trail maintenance in Kansas.
- Investigate and promote insurance options for equine-related businesses.

Medium Priority Outcomes

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.

ACTION ITEMS:

- Work with Kansas legislators to amend laws to create uniformity.

Incorporation of an equine industry checkoff program to promote education and research.

ACTION ITEMS:

- Receive input from the equine industry on services and promotional activities that could be funded by a checkoff and would be beneficial to the industry.
- Create a well-defined vision of what a statewide checkoff program would offer and how it may be funded, through feed sales, equine sales, etc.
- Work with Kansas legislators to establish a statewide equine checkoff program.
- Develop effective branding for equine checkoff.

Horses classified as livestock under all state definitions in state statute. Current discrepancies between definitions result in inconsistency and confusion for the industry.

ACTION ITEMS:

- Conduct a thorough review of all equine definitions in statute.
- Work through legislative channels to ensure horses are consistently defined as livestock in statute.

Low Priority Outcomes

New Kansas City airport is built for easy transportation of horses via airplane.

ACTION ITEMS:

- Investigate where air cargo flights come from into Kansas City International Airport.
- Check U.S. Department of Agriculture Animal and Plant Health Inspection Service website for livestock import facility requirements.
- Write a report to share with Edgemoor Infrastructure regarding requirements for air transportation of horses.



FEED & FORAGE

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 positive 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, all of 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 in 2017: 29.3 percent of U.S. total
- 3rd in all hay production: 6.04 million tons — 4.6 percent of U.S. total
- 5th in feeds and fodder export: \$185.9 million
- 2017 corn silage production: 5.4 million tons — 4.2 percent of U.S. total
- 2017 sorghum silage production: 1.1 million tons — 29.3 percent of U.S. total

The top 5 destination countries for U.S. hay exports in 2017 accounted for 94 percent of total U.S. hay export volume. Japan is the major buyer of U.S. hay, followed by China, South Korea, Saudi Arabia, and UAE. China leads 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 \$557.5 million and creates 7,879 jobs in the state. Through indirect and induced impacts, the industry supports a total of 10,880 jobs and creates a total economic contribution of nearly \$992.9 million.

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
Ethanol	<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>
Export Infrastructure	<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>

Factor	Implications for Growth and Development Opportunities
Irrigation Technology	Some of the best crop yields in Kansas are achieved under irrigation. As available groundwater 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.
Land Availability	Kansas has the second most farm land of any state, with roughly 90 percent of the state devoted to agriculture.
Livestock Feeding	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.
Plant Genetics	<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>
Policy Environment	<p>Kansas tax law allows 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>

Factor	Implications for Growth and Development Opportunities
Research and Education	<p>Kansas State University departments of agronomy and animal sciences and industry 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 one 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>
Supporting Institutional Infrastructure	<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>

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
Critical Infrastructure	<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> <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>
Industry Opponents	<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 feed 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>

Challenge	Details of Challenge
International Trade	<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 is key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access.</p>
Policy	<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>

Challenge	Details of Challenge
Research, Education, Extension	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.
Water	Farmers rely on ever-depleting sources of groundwater for irrigation, especially in some regions of the state.
Workforce Development	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.

SUCCESSSES

Key successes in the feed and forage industry:

- A national alfalfa checkoff program was established in spring 2016 with the creation and implementation of the U.S. Alfalfa Farmer Research Initiative (USAFRI), better known as the Alfalfa Checkoff Program. The Land Institute in Salina was the first Kansas recipient of checkoff dollars in September 2018.
- A collaborative Alfalfa Variety Evaluation project led by K-State Research and Extension and Cowley County Extension, along with support from the Kansas Forage and Grassland Council, and private alfalfa seed companies has been established at a private farm in Cowley County to help provide alfalfa producers with the most current and unbiased performance information regarding alfalfa varieties.
- Two Kansans sit on the National Alfalfa and Forage Alliance board of directors.
- 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.
- A collaboration of subject matter experts including KDA dairy and feed safety program, KDA Division of Animal Health, and K-State's Beef Cattle Institute created a portfolio of compliance education materials to share with farmers, ranchers, feed mills and veterinarians to understand and comply with new Veterinary Feed Directive regulations.

Feed & Forage

GROWTH OBJECTIVE:

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

OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Reduced restrictions on haying, grazing and fertilizing Conservation Reserve Program fields.

ACTION ITEMS:

- Continue efforts to increase opportunities for allowing limited haying, grazing and vegetative management on acres enrolled in federal cost-share conservation programs.
- Maintain relationships with federal partners to ensure that Kansas is considered in policy development and decision making.
- Encourage creative policy options such as CRP "Lite," a cost-share conservation program that would be budget-neutral with a shortened time frame for participation (3-5 years) with USDA-FSA and congressional delegation.
- Support additional public funding for research on haying/grazing of sensitive range land.

Enhanced risk management options for forages. Forages currently lack coverage afforded to other commodities.

ACTION ITEMS:

- Invite forage representation to participate in future Farm Bill roundtable discussions.
- Coordinate with other states, building a coalition of support for inclusion of forages as a Title 1 commodity.
- Communicate desired outcomes for this sector with congressional delegation and U.S. Secretary of Agriculture.
- Create a mechanism in order to accurately measure yield, quality, price and value for purposes of federal program payments tied to USDA's Risk Management Agency.

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.

ACTION ITEMS:

- Improve adoptability of feed wheat, along with other alternative crops, through marketing, commodity segregation, research and education.
- Develop a strategy that supports research on the role of less water-intensive forage and grasses, such as triticale.
- Address sorghum research needs, such as yield, stalk length, silage density, nutritional value to livestock, weed control, and ability to be used for biofuels production.
- Coordinate and conduct a yearly area management meeting in order for producers, researchers and interested stakeholders to learn and address water supply and conservation issues at a local level.
- Identify opportunities and symbiotic relationships to increase funding opportunities for projects related to water conservation, water quantity, soil health, etc.
- Encourage research targeting cover crops, rotational crops, and other less water-intensive crop varieties.
- Support and encourage projects that address water quality as a means to extend the productive life of the water supply in Kansas.
- Encourage K-State Research and Extension and the Kansas Water Office and private seed companies to target more research monies towards sorghum and other forage-related cover crops.
- Promote forages as a replacement for traditional cash crops by demonstrating the financial pros and cons.

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

ACTION ITEMS:

- Hold input session with forage industry stakeholders to determine desire and specific interests for additional forage extension personnel and forage/alfalfa research.
- Evaluate methods for funding additional personnel and determine the areas of expertise that will best match the needs of the industry.
- Establish an additional forage extension position to serve the needs of the industry.
- Explore establishment of social media/Facebook groups to extend research information obtained through traditional forage/alfalfa research methods.
- Expand forage/alfalfa research to include range and pasture management and encourage practices focused towards both.
- Support invested and proactive conversations with faculty and administration about the current and future priorities of all covered programs, as well as the value of the programs.
- Encourage funding initiatives that address needs of forage, alfalfa and pasture applications.
- Encourage the utilization of public/private partnerships to increase grant funding opportunities and conduct a thorough review of all funding mechanisms.
- Encourage on-farm research projects with high practical application.
- Work to increase communication between industry and the private sector with extension faculty to capitalize on the needs and desires of stakeholders in terms of research and education.
- Develop a field test method for determining quality and average yield per bale/acre/etc.

Medium Priority Outcomes

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.

ACTION ITEMS:

- Establish understanding of the importance of feed and forage research, looking at the economic data.
- Maintain the state and nationally funded university research commitments.
- Petition USDA to balance their research portfolio to provide needed research to alfalfa and other forages.
- Develop research priorities with assistance from farmers and industry members. Circulate a request for proposals to all known alfalfa and forage researchers.
- Evaluate funding opportunities from neutral entities as a means in which to fund feed and forage research.

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.

ACTION ITEMS:

- Understand federal and state rules regarding CDLs and permitting requirements for farm vehicles.
- Consider an in-state option for lowering the eligible age for a CDL to 18 years of age if federal rules stand in the way.
- Form a coalition of industry willing to help lower the age requirements for CDLs.
- Form a coalition of industry willing to simplify permitting requirements for farm vehicles.
- Take the necessary steps determined by the coalition.
- Support and effect change when and if necessary through state statutory and regulatory change.
- Coordinate with state associations and conduct outreach if necessary to create awareness.

Forage sorghum representation on the national sorghum board.

ACTION ITEMS:

- Research opportunities to have forage sorghum represented on the National Sorghum Producers or sorghum checkoff board of directors.
- Encourage Kansas Grain Sorghum Commission and Producers Association to nominate a forage sorghum grower to serve on one of these boards.
- Evaluate potential opportunities for participation in National Grain and Feed Association, American Feed Industry Association, and others at the national level.
- Conduct specific and targeted recruitment of individuals interested in filling national board roles and garner support from industry to encourage their nomination.

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Feed & Forage



FOOD PROCESSING

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 logistical 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 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 nearly \$20.1 billion and creates 31,440 jobs in the state. Through indirect and induced impact, the industry supports a total of 121,081 jobs and creates a total economic contribution of approximately \$35.7 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
Demand	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.
Entrepreneurship	Having an attractive environment for value-added facilities — including access to raw ingredients, processing expertise at the university and being business-friendly — make it more likely that innovation will happen in Kansas.
Export Infrastructure	Maintaining and improving export infrastructure will help ensure demand for Kansas food products around the world. Good roads for trucks, plenty of rail access across the state, a state-of-the-art intermodal facility, and a central location in the United States are all key to a strong export infrastructure.
<i>From the Land of Kansas</i>	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 408 member companies, an online marketplace, and a great brand, being part of <i>From the Land of Kansas</i> could be an asset for any food processor.

Factor	Implications for Growth and Development Opportunities
Policy Environment	<p>Kansas tax law allows 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>
Supporting Institutional Infrastructure	<p>Kansas State University and KDA provide 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>

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
Consumer Demand	<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>
Critical Infrastructure	<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.</p> <p>Refrigerated shipping capabilities are also a key component in which Kansas has room to grow. 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>

Challenge	Details of Challenge
HRI Scale Requirements	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 (HRI) requirements for quantity and consistency.
International Trade	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. <i>From the Land of Kansas</i> has a role to play in building the international brand recognition for Kansas.
Meat Inspector Access	<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>
Policy	<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> <p>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.</p>
Water	Water efficiency and conservation is important in all business sectors.

Challenge	Details of Challenge
Workforce Development	<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>

SUCCESSSES

Key successes in the food processing industry:

- *From the Land of Kansas* has reorganized with a new benefits structure and more marketing opportunities which can help food processors.
- A Kansas sorghum processor has established a market for baijiu alcohol in China, expanding the operation's export opportunities.
- A system has been developed to share necessary food safety guidelines with small mobile processors.
- Licensed food processors in the state have increased by more than 10 percent from 2017 to 2018.

Food Processing

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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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.

ACTION ITEMS:

- Promote the Strategic Growth Initiative process, a pilot program to help counties and communities proactively seek potential business growth opportunities, working with the Kansas Department of Agriculture, the Kansas Department of Commerce, and K-State Research and Extension.
- Provide information to communities about how to bring food processing into a community (e.g., examples of successful communities that have shown interest and welcomed new business, ways to communicate locally to get communities on board, methods to identify if a community is qualified and has an adequate work force, etc.).
- Assist areas to identify attributes that are unique for recruiting businesses to the community, to possibly include land, infrastructure, transportation, housing, workforce, natural resources, etc.
- Maintain a listing of pre-certified sites for easy reference.
- Work strategically with Commerce representatives to identify locations in the state to fulfill the needs of inquiring parties.
- Work with local economic development professionals for site and resource availability that have the infrastructure to support a specific processing facility.

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.

ACTION ITEMS:

- Deliver training through K-State Research and Extension, Value-Added Food Product Development Laboratory or industry associations.
- Ensure clear awareness of required training.
- Provide training in multiple languages so entire workforce can be trained as needed.
- Break Food Safety Modernization Act topics down into small pieces.
- Find a subject matter expert for each small piece to address common questions and challenges regarding that piece.
- Film the subject matter expert addressing the questions and challenges.
- Post the video on the KDA website for easy access by industry.
- Promote web-based FSMA training written by K-State.
- Make seminars and workshops available to companies in all aspects of production (i.e., food safety, marketing, etc.).
- Partner with IGP or K-State Global Campus for distance delivery including online modules that would be accessible anytime at any pace.

Expanded benefits and marketing potential for food processors through the *From the Land of Kansas* trademark program.

ACTION ITEMS:

- Increase exposure of program and expand marketing efforts to encourage and enhance consumer knowledge and confidence with local products that are part of the program.
- Establish (or continue) additional private and public partnerships with organizations that can help local businesses (such as Food Lab at K-State and multiple grocery store chains).
- 90 days before harvest, start talking about local products being available so consumers and organizations are ready to shop for them.
- Increase communication between producers and From the Land of Kansas.
- Establish new benefits for the From the Land of Kansas program for food processors.
- Increase marketing opportunities for companies through program promotional venues.
- Establish networking opportunities among companies.
- Create options to obtain funding for locally grown or produced businesses to increase advertising or selling outlets.

_____Medium Priority Outcomes_____

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.

ACTION ITEMS:

- Kansas Department of Agriculture to coordinate with meat processing plants during inspections to understand the number of requests they receive to butcher products that can be sold across state borders.
- Speak at farmers' market workshops across the state and publish information in the From the Land of Kansas newsletters to educate and gather more information about the need to sell meat across state lines.
- Work collaboratively with other states that are interested in a joint effort to change interstate meat shipment rules.
- Work with USDA and the congressional delegation to get the state inspection recognized across state borders instead of requiring two inspections.
- If rules are changed, notify state-inspected plants that they can now conduct interstate meat shipment.
- Connect state-inspected plants to From the Land of Kansas to explore options for website sales, etc.
- Create easy-to-understand one-pager explaining differences between state and federal laws.

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.

ACTION ITEMS:

- Identify co-packer capability available to small processors to produce or package items.
- Expand existing facilities to assist others.
- Continue to make the effort to communicate with larger facilities to gain their perspective on industry needs or solutions.
- Work with Kansas Legislature to pass legislation to allow for agribusiness technology and entrepreneurship districts.

State-sponsored economic development incentives which meet the needs of value-added enterprises.

ACTION ITEMS:

- Evaluate all state incentives currently available.
- Meet with industry to learn which incentives work, which need to be adjusted, and what needs to be added to the list.
- Draft a white paper outlining challenges with current incentives for agriculture and propose an alternative plan that works for agriculture, with input from industry and incentive experts.
- Get approval from the Governor's office to move ahead with legislation.
- Make incentives for tax credits vs. training reimbursement programs available for the industry.
- Review options for obtaining low-interest loans and funding to support marketing initiatives.

Low Priority Outcomes

Strong reputation among the national industry as a state with great potential for food processing companies to expand or move their business.

ACTION ITEMS:

- Develop promotional materials highlighting Kansas as a food processing state.
- Market Kansas to companies in the food processing sector.
- Gather company contact information to set up meetings.
- Meet with site consultants to introduce them to Kansas.
- Send annual reports and letter of invitation from the Kansas Secretary of Agriculture to food processing companies which may be interested in Kansas.

Food processors have an industry-influenced pipeline of college graduates from K-State to hire into management, engineering, research and quality areas of their businesses.

ACTION ITEMS:

- Educate secondary agriculture education students on the opportunities available in the food processing industry.
- Increase communication between companies and K-State or other educational institutions.
- Find out what potential graduates/employees look for in a career, the company, incentives, pay scale, benefits, etc.
- Increase the number of trained graduates.
- Look into feasibility of creating a single list of all agriculture-related jobs/internships.
- Create listing of companies which would provide educational tours for students interested in a more in-depth look at careers in agriculture.
- Create guide for companies on how to establish a successful internship for students and the companies involved.
- Review options and requirements for various visas and make readily available to companies.

Increased export opportunities for Kansas food processors, including increased participation in export programs and other sales experiences (e.g., Food Export Midwest programs).

ACTION ITEMS:

- Encourage companies to participate in trade missions.
- Encourage companies to be open to reverse trade missions.
- Partner with other food processors to round out or help fill orders for export.
- Improve rail systems and access to shipping containers (Garden City, Dodge City — dairy and beef)
- Define how companies export on varying levels, including who and where.
- Work together to get retail goods consolidated for export to reduce expense.
- Advance food products through e-commerce worldwide.

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.

ACTION ITEMS:

- Create/enhance marketing materials for housing and cost of living factors as an incentive to recruit and move to the area.
- Partner on opportunities to share the “quality of life” options in Kansas.
- Identify state-sponsored incentives for processors which assist in securing employee housing.

Competitive utility rates in Kansas that do not create a competitive disadvantage with other states and allow Kansas to maintain existing enterprises and grow industry in the future.

ACTION ITEMS:

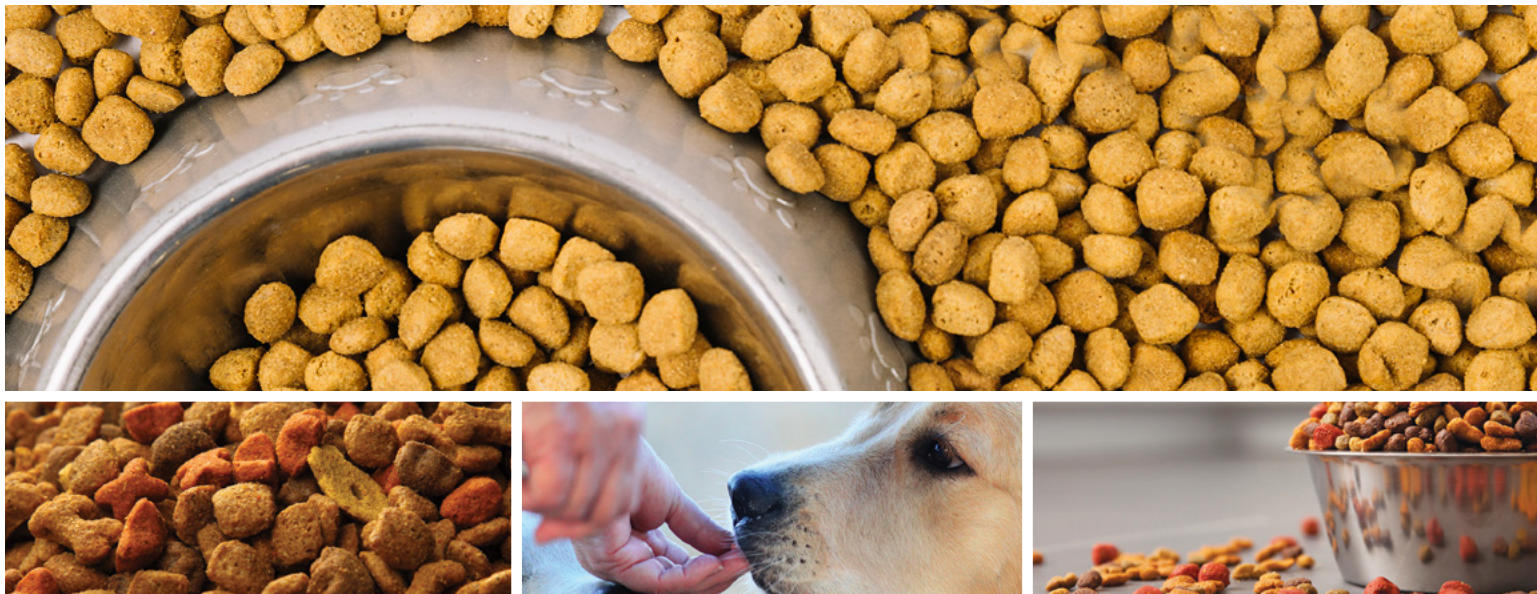
- Work with electric utilities to understand the most economical places to locate major processing facilities and what drives those economics.
- Include industrial electrical rate options and favorable locations in pre-selected site data.
- Evaluate options for adjusting the regulated nature of Kansas electricity such that rates can be more competitive.

Research to develop methods for phosphorus elimination in waste water.

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Food Processing



PET FOOD

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 account for over half of the total U.S. pet food sales, and an important 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 \$5.4 billion and creates 3,771 jobs. The industry supports a total of 19,940 jobs and provides a total economic contribution of over \$8.9 billion. The dog and cat food manufacturing industry alone employs 2,423 with a direct output of over \$3.6 billion. The dog and cat food manufacturing industry supports 12,308 employees through indirect and induced impacts and creates a total economic contribution of approximately \$5.7 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, Kansas, and Columbia, Missouri, 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 in fall 2018, global dog and cat food sales alone amounted to nearly \$86 billion with other pet food totaling an additional \$4 billion. In Kansas, animal and pet food exports were at 3.4 percent of total pet food production which equates to \$185.8 million and ranks this category 4th in state exports in 2017.

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 the APPA National Pet Owners Survey shows 68 percent of all U.S. households own a pet: 48 percent of the U.S. population owns a dog and 38 percent of the population owns a cat. Data from research firm GfK shows that among millennial households, the percentage rises to 57 percent of millennials who own a pet 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.

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
Capital of the Pet Food Industry	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.

Factor	Implications for Growth and Development Opportunities
Export Infrastructure	Maintaining and improving export infrastructure will help ensure demand for Kansas pet food products around the world. Good roads for trucks, plenty of rail access across the state, a state-of-the-art intermodal facility, and a central location in the United States are key to a strong export infrastructure.
Ingredient Sources	Pet food uses raw meat, animal renderings, and grains or grain co-products grown or produced in Kansas. Raw meat is the number one ingredient in premium dog and cat food. Manufacturers note the importance of processing facilities located near the ingredient supply. As Kansas grows animal agriculture, opportunities to support this market with co-products increase.
KC Animal Health Corridor	There is room for growth as other animal health companies locate to the KC Animal Health Corridor that stretches from Manhattan, Kansas, to Columbia, Missouri.
Policy Environment	<p>Kansas tax law allows 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>
Regulatory Compliance	<p>With the innovations at Kansas State University in pet food safety, Kansas is a leader in regulatory compliance and in 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 over the next 5-8 years.</p> <p>KDA received Federal State Marketing Improvement Program grant funds to develop FSMA training modules for Kansas pet food industry licensees which were completed and made available in fall 2018.</p>
Supporting Institutional Infrastructure	K-State and KDA provide expertise to guide pet food manufacturers 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.

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
Consultants	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.
Consumers	The fastest growing segment of pet food is “grain-free” which is not beneficial 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.
Critical Infrastructure	<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 governments do not help the issue by subsidizing low-income housing in rural communities.</p>
Distribution	<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 is made in Kansas.</p> <p>Many small manufacturers of pet food need a warehouse and distribution facility but are not big enough to 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>
Education of the Scope of the Industry	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.

Challenge	Details of Challenge
International Trade	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.
Microbiological Testing	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.
Policy	<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 co-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>
Supply Chain	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.
Workforce Development	<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 workforce 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>

SUCCESSSES

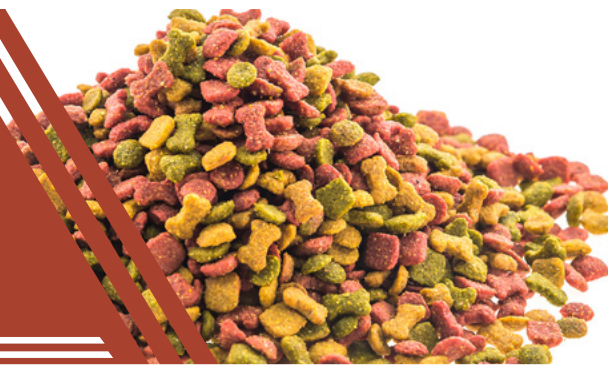
Key successes in the pet food industry:

- Petfood Forum relocated to Kansas City from Chicago; the relocation was received with enthusiasm and the event will be held in Kansas City again in 2019.
- In 2018, Kansas commodity partners joined KDA to host a Kansas grains trade show booth at Petfood Forum in Kansas City, highlighting corn, sorghum, soybean and wheat.
- Together with Food Export Association of the Midwest, the KDA ag marketing division brought a pet food ingredient buyer mission to Kansas City in April 2018. Five overseas buyers were sponsored as part of the mission.
- 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. In the 2017–2018 academic year, 25 students enrolled in the pet food minor and 27 students enrolled in the pet food option of the feed science and management major.
- The KDA ag marketing division secured a STEP grant to include a trade mission to Petfood Forum–Asia. The department took two Kansas pet food industry companies to the forum and the VICTAM trade show in late March 2016. In 2018, KDA secured a STEP grant and returned to the trade show with three Kansas companies.
- Numerous pet food trade missions over the past year have opened discussions with potential export market opportunities: Petfood Forum Asia in March 2018, China in August 2017, Cochran Fellowship in-country from Serbia in March 2018.
- K-State has received sponsorship to establish a professorship in the pet food program as well as a gift supporting faculty and research in the area of pet food and nutrition science.
- In collaboration with other states and national organizations, online FSMA pet food training modules and a training course were created and made available to pet food licensees in fall 2018, bringing increased training opportunities to Kansas.
- K-State received two Federal State Marketing Improvement Program grants to support pet food research.
- Expansion of FFA programs in urban areas could help expand the workforce to meet the needs of pet food companies in Kansas; Wichita Southeast established an FFA program in 2017 and Washington High will start an FFA program in 2019.
- K-State began hosting the Petfood R&D Showcase, an annual event featuring leading suppliers, researchers and pet food industry colleagues, with cutting-edge scientific presentations and interactive labs.

Pet Food

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.



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

National reputation as the destination for expansion in the pet food industry through trade show displays, marketing initiatives, advertisements, recruitment trips, and proven success.

ACTION ITEMS:

- Develop promotional materials highlighting Kansas as the pet food capital of the world.
- Meet with site consultants to introduce them to Kansas.
- Send annual reports and letter of invitation to Kansas.
- Build relationships with protein and grain suppliers.

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.

ACTION ITEMS:

- Focus on middle school and high school programs to find individuals with the necessary skills to fill jobs in pet food companies.
- Expand FFA programs in urban areas.
- Develop talent outside of Kansas State University to broaden the pool. Use community colleges and urban high schools in addition to high school agricultural education programs.
- Increase awareness and educate students on the job opportunities available in the industry by having Kansas Department of Agriculture and industry representatives speak at Kansas schools, participate in career fairs, and host facility tours.

Continued support of the pet food minor in the grain science and industry department in the K-State College of Agriculture.

ACTION ITEMS:

- Work with advisors to encourage students to look into this industry.
- Encourage companies to visit K-State and establish a relationship as a supporter of the program.
- Work with K-State and pet food companies to design internships.
- Support pet food innovation center.
- Expand pet food options to offer B.S./M.S./Ph.D. level degrees.
- Explore technical training and support consortium for workforce development.
- Engage industry in reworking curriculum to meet industry needs including marketing, business principles and technical skills.

Fully functioning pet food industry association at the state and national level to advocate for the pet food industry.

ACTION ITEMS:

- Work with industry experts to establish needs and goals of an association, which could then be a leader for the pet food industry nationwide.

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

ACTION ITEMS:

- Assemble a group of representatives from across the supply chain to identify the type of facilities and incubator spaces needed for the industry.
- Hold the first group meeting and identify the primary need by spring 2019.

_____ Medium Priority Outcomes _____

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.

ACTION ITEMS:

- Establish testing capability at the KDA laboratory in Topeka.
- Consider addition of private labs in northeast Kansas, possibly at the new American Royal business park.
- Advertise the testing services offered in Kansas.
- Recruit third-party lab services (they exist, but we need a location in Kansas).

Private and public collaboration to develop and construct manufacturing facilities or distribution centers as speculation plants to attract and accommodate new companies to Kansas.

ACTION ITEMS:

- Work with industry consultants to identify companies which may be interested in a move to Kansas.
- Contact private sector individuals for investment purposes.
- Work with design and construction companies to determine if the potential facility could fit more than one industry.

A marketing program to promote the importance of the pet food industry in Kansas, similar to the dairy initiative.

ACTION ITEMS:

- Design a campaign similar to the Kansas Dairy Initiative.
- Create marketing materials to promote Kansas and the pet food industry.
- Attend industry events to establish relationship and credibility with industry representatives.
- Work with local economic development professionals to determine sites, resource needs, etc.
- Promote the Strategic Growth Initiative process, a pilot program to help counties and communities proactively seek potential business growth opportunities, working with the Kansas Department of Agriculture, the Kansas Department of Commerce, and K-State Research and Extension.
- Help farmers connect with pet food manufacturers.

Low Priority Outcomes

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.

ACTION ITEMS:

- Continue to host the Petfood R&D Showcase for industry, K-State and economic development representatives.
- Focus on value-added products, specialty ingredients, consumer trends, marketing, etc.
- Incorporate new ideas into the state association's efforts.
- Consider a pet food innovation center.

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.

ACTION ITEMS:

- Find small spaces for start-up companies.
- Distribute resources and information through seminars, webinars, industry outlets, etc.
- Research investment forums conducted in other states.
- Research Iowa Entrepreneurship Internship program.
- Combine with marketing objective.
- Work to establish tax incentives.



Grow Smarter. Grow Stronger.
Grow Kansas.



PORK

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.

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 2.7 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 2017, Kansas producers sold 3,282,258 market hogs, feeder pigs and seedstock with a gross market value of \$467.7 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, 2018).

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 2018 prices, the pork industry spends over \$90 million on grain sorghum and corn annually. Kansas pork farms also consume the equivalent of more than eight million bushels of soybeans through soybean products. At January 2018 prices, the pork industry spends over \$72 million on soybean meal annually (KPA Kansas Pork Industry Facts, 2018).

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 nearly \$427.1 million and creates 3,151 jobs in the state. Through indirect and induced impacts, the industry supports a total of 5,003 jobs and creates a total economic contribution of over \$731.6 million.

Modern swine production has become very specialized and farm sizes have grown as economies of scale are sought. Environmental regulations and litigations have put pressure on some producers to relocate.

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
Biosecurity and Foreign Animal Disease Traceability	<p>The Kansas pork industry has been progressive in advancing biosecurity and foreign animal disease preparedness. In addition to participation in KDA-led foreign animal disease exercises, hog operations throughout the state are working with KDA to update or develop biosecurity plans through the Secure Pork Supply Plan program. Kansas can continue to be at the forefront of development of biosecurity plans throughout the pork supply chain.</p> <p>The KDA Division of Animal Health has worked with veterinarians and swine industry partners to 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>

Factor	Implications for Growth and Development Opportunities
Contract Production and Nutrient Utilization	<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 not only allows them to diversify their operation, but 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>
Environment	<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 housing hogs 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 the water supply 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>
Human Capital	<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>
Policy Environment	<p>Kansas tax law allows 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>
Public Outreach	<p>Kansas Pork Association staff work on marketing and outreach both online via social media platforms and at events around the state.</p>

Factor	Implications for Growth and Development Opportunities
Supply Chain	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.
Supporting Institutional Infrastructure	<p>Kansas is recognized as one of the best exercised states in foreign animal disease response. The construction of the National Bio and Agro-Defense Facility and the existing Biosecurity Research Institute at K-State enhance the research capabilities for animal health and biosecurity for the state, U.S. and global swine industry.</p> <p>BRI became the first non-federal facility to be approved for work with African Swine Fever (ASF) virus. ASF is one of the diseases currently being researched at NBAF.</p>

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
Biosecurity and Foreign Animal Disease Traceability	<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 would provide 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>
Critical Infrastructure	<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>
Industry Support	At permit hearings, there is a greater voice in opposition of hog farms than in support.

Challenge	Details of Challenge
International Trade	Global demand is key for pork producers' profitability. With Kansas' partnerships in U.S. Meat Export Federation and commodity groups, the state can help increase global demand for red meat. In 2017, exports added more than \$62 to the value of each hog marketed. Kansas must work with elected officials to keep export markets open and accessible for producers.
Labor Availability	<p>Growth in the swine industry will require a skilled workforce, which continues to be a significant challenge through the entire agricultural industry. Although the implementation of technology may help reduce labor needs, the education and skill sets needed to operate technically advanced facilities now require individuals who have different education levels and work experiences than have been required in the past.</p> <p>Immigration and visa challenges continue to be a problem. 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>
Policy	<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>
Public Outreach	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.
Supply Chain	<p>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. If electronic data logging regulations are put into effect, long hauls of animals may require two drivers or staged drivers, adding to the cost of transportation.</p> <p>Pork is currently imported and processed into value-added products in Kansas.</p>
Water	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.

SUCCESSSES

Key successes in the pork industry:

- The Kansas Department of Health and Environment has worked to strengthen the livestock waste management section. They have improved efficiency of the permitting process by implementing new internal policies that involve the engineering workflow.
- Kansas is a national leader in the development of Secure Food Supply Plans at cattle feeding and dairy operations, and Secure Pork Supply Plans are now being written for a major pork company within the state. As of February 2019, 1.6 million head of pigs are covered under Secure Pork Supply Plans.
- The Kansas Pork Association has reached over 4 million consumers with targeted messaging showing how hogs are grown and raised, and with positive messages about the pork industry.
- Several of the state's agricultural organizations cooperated to successfully encourage citizens in Rush County to pass a measure allowing corporate ownership of hog farms. Newspaper advertising was developed, and the Kansas Pork Association utilized targeted social media advertising in the county.
- Over 2,000 students from across Kansas and other states participated in KPA's live virtual field trips to Kansas pig farms. Pre- and post-trip surveys continue to show positive shifts in regard to animal welfare, environmental effects of raising animals, and knowledge about pig farming. Support for this project is provided by several groups.
- KPA, in cooperation with other agricultural groups, provided tours for influencers including bloggers and dietitians. These tours work to make positive impacts about food and farming on the participants. The topics include pig farming, antibiotic and hormone use in food animals, GMOs, and meat processing.
- More than 8,500 posts about pig farming by Kansas pig farmers have been shared since August of 2017 with the #RealPigFarming hashtag. These posts show how hogs are grown and raised, and educate the public on modern hog production.
- State legislators are receiving a periodic e-newsletter featuring a video showcasing a Kansas pig farm or a part of the swine industry.
- Operation Main Street presentations facilitate conversations with consumers statewide about pork production, health and nutrition information, and current technologies in agriculture. In 2017, Kansas OMS speakers gave 23 presentations to agriculture and culinary classes, dietetic associations, vet techs and high school classrooms.
- Expansion of a large pork operation in north central Kansas is expanding economic growth of that region.
- Several national meat processing companies are importing meat to Kansas for value-added processing.
- A large hog operation in southwest Kansas expanded its business.
- Revised consumptive use regulations are in the final stages of publication, and will create an equitable, science-based process for converting from irrigation to stockwater or any other water use.
- An existing operation in west central Kansas is renovating and expanding for producing breeding stock.

Pork

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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. — along with federal immigration reform with a focus on long-term visas for agricultural workers and a potential immigration pilot program in Kansas.

ACTION ITEMS:

- Develop a document describing alternative workforce programs currently available.
- Create a report thoroughly documenting the issues pork producers face on a daily basis in securing an adequate legal workforce.
- Draft a workable solution to current immigration challenges that will alleviate challenges the pork industry faces.
- Submit the workforce report and proposed solutions to the Kansas congressional delegation.
- Work with the Kansas congressional delegation to secure an alternative workforce program to fill the talent and workforce needs of the industry (e.g., H-2A, H-2B, family-based immigrant visas, NAFTA Professional [TN] visa, etc.).
- Create public awareness of the impact that alternative workforce programs have on the economy.
- Create specialized programs to meet workforce needs of the Kansas pork industry (e.g., work release program, military service program).

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.

ACTION ITEMS:

- Engage with consumers and influencers about facts and realities of the pork industry to gain trust and confidence of consumers.
- Conduct an economic impact study for the Kansas swine industry and publish results.
- Work with economic development professionals in various communities to understand data.
- Develop marketing/public relations materials.
- Initiate industry communication and education for local-level leaders on topics such as roadways, water resource availability, economic development incentives, and health and environment statutes and regulations.
- Work on all levels — state, regional and local — to be pro-business and open to agriculture development.

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.

ACTION ITEMS:

- Recruit a section chief to complete staffing of KDHE livestock waste management section.
- Develop a checklist for the permitting process (KDHE livestock waste management section).
- Develop a branding strategy to inform the livestock industry that KDHE is ready and equipped to permit (KDHE public relations and livestock waste section).
- Hold a roundtable discussion with KDHE, KDA, and university engineering departments regarding student internships and employment.
- Review the public hearing process to seek ways to allow the environmental concerns to be brought to the table while mitigating the hostile environment they tend to create.
- Evaluate permitting process, including existing rules and regulations, to determine if efficiencies or streamlining could be gained without compromising compliance with federal standards or water quality conditions.
- Conduct outreach and education with livestock operations on waste permit regulations and permitting process to improve the quality and completeness of submitted applications.
- Expand available professional staff to review permit applications and nutrient management plans through the use of on-call engineering contracts, engineer position-sharing among state agencies, and recruitment of university engineering students.

Expansion of talent development and educational training opportunities for students preparing for careers in the pork industry.

ACTION ITEMS:

- Work with the Kansas pork industry to identify specific skills and skill sets needed.
- Develop short-term programs that would introduce potential workers to the pork sector.
- Develop promotional materials (KPA) highlighting careers in the pork industry for 4-H members, middle school, high school and college students.
- Develop internship programs including a broader exposure to careers in the pork industry. Internship programs should include younger people such as high school students as well as college freshmen and sophomores.
- Develop swine industry certifications or degrees for community/technical colleges in rural areas such as southwest and southeast Kansas.
- Develop a veteran or military workforce program.
- Recruit immigrants to work in the pork industry in Kansas through guest worker and foreign exchange programs.

Intra-industry partnerships aimed at developing and expanding niche market opportunities for pork producers.

ACTION ITEMS:

- Develop guidance on finding local markets or how to market niche pork.
- Organize cooperative for processing of niche pork.
- Increase marketing of Kansas pork to consumers and restaurants.
- Create a *From the Land of Kansas* branded meat program.

Medium Priority Outcomes

Develop critical tools to manage a disease outbreak, protect food safety, and enhance consumer confidence and trust in Kansas livestock.

ACTION ITEMS:

- Work with pork producers to increase percentage of Kansas swine covered by a Secure Pork Supply Plan.

Continued proactive social and traditional media outreach about the pork production chain and about pork safety, quality and nutrition to encourage trust from consumers, influencers and media and a better understanding of the industry.

ACTION ITEMS:

- Work with industry partners, including KPA and others, to continue their successful social and traditional media outreach about the pork production chain and about pork safety, quality and nutrition.
- Secure industry support from key stakeholders to provide testimonials and/or inclusion in public campaigns.

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.

ACTION ITEMS:

- Update informational materials regarding farm structure, farm size, and land values comparing Kansas to states with similar agricultural industries but no laws restricting ownership.
- Prepare public information — including updated information materials, information from the judicial review highlighting the decision that the laws are likely unconstitutional, and more — to be distributed to dispel myths about the effects of corporate ownership in agriculture.
- Determine best option for sharing information from above and execute.
- Develop an “ag friendly communities” designation.

Kansas State University research focused on innovative and scalable nutrition, health and management solutions for the state’s pork industry.

ACTION ITEMS:

- Develop research priorities for the state/nation with assistance from industry members.
- Support long-term maintenance and growth of swine-focused faculty and research and teaching facilities.

Low Priority Outcomes

Pre-identified building sites for swine facilities with available natural resources (e.g., water, waste disposal).

ACTION ITEMS:

- Identify attributes that are unique for recruiting facilities to the community to include land, infrastructure, transportation, housing, workforce, natural resources, ability to meet current CAFO set-back distances, etc.
- Finalize certified site selection program.
- Work strategically with Kansas Department of Commerce to identify locations in the state to fulfill needs of incoming inquiries.
- Assist in the development of a certified site selection program.

Dedicated business development resources for the exploration and evaluation of value-added pork and sow processing opportunities within the state.

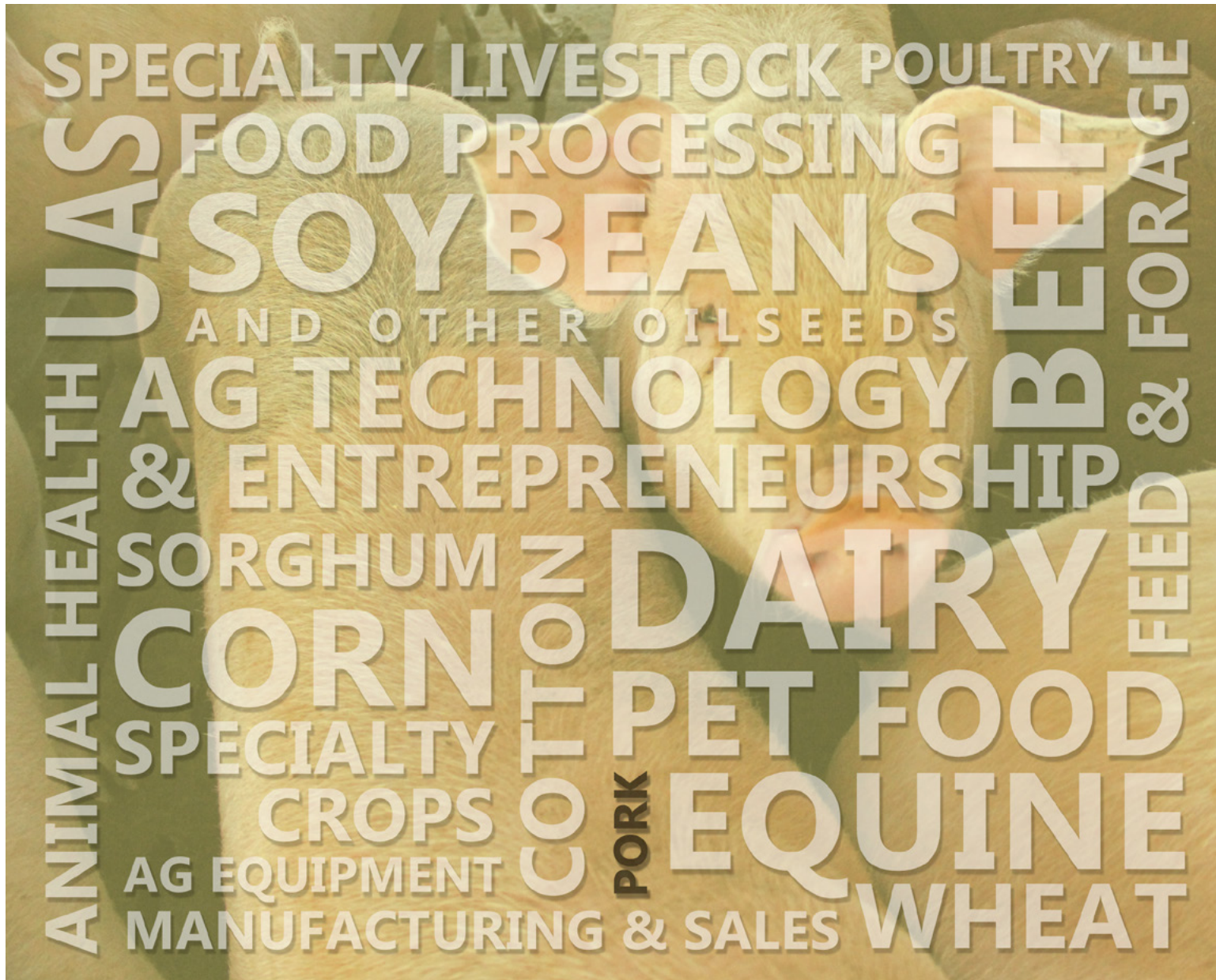
ACTION ITEMS:

- Evaluate all state incentives currently available.
- Meet with major pork processors to discuss expansion, relocation, value-added, or sow processing facilities. Learn which incentives work, which need to be adjusted, and what needs to be added to the list.
- Draft a white paper outlining challenges with current incentives for agriculture and propose an alternate plan that works for agriculture.
- Get approval from the Governor’s office to move ahead with legislation.
- Draft a bill for consideration by the Kansas Legislature.

Competitive utility rates in Kansas that do not create a competitive disadvantage with other states and that allow Kansas to maintain existing enterprises and grow industry in the future.

ACTION ITEMS:

- Work with electric utilities to understand the most economical places to locate major processing facilities and what drives those economics.
- Include industrial electrical rate options and favorable locations in pre-selected site data.
- Evaluate options for adjusting the regulated nature of Kansas electricity such that rates can be more competitive.



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POULTRY

Following the 2016 Governor's Summit on Agricultural Growth, the Kansas poultry industry received attention by groups outside of the state who also see growth potential. Within four months of the Summit, a business development site consultant made contact regarding this agriculture sector. This inbound communication was the beginning of active development for statutes and regulations that define and support growth of the Kansas poultry industry.

Compared to more traditional livestock production in Kansas, the poultry industry is relatively small and unknown. Kansas is home to some innovative and high-value egg laying and poultry genetics 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, potential producers may be hesitant to invest in what they may see as an uncertain or simply unknown sector in the state.

To realize the potential growth in the poultry industry, key Kansas partners must continue to provide input and discussion to develop a long-term growth strategy. Efforts are being made to increase public education, industry outreach and active collaboration between public and private stakeholders. This cooperative effort toward investment in the poultry strategic growth plan will 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 \$65 million and creates 95 jobs in the state. Through indirect and induced impacts, the industry supports a total of 321 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 genetics 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
Biosecurity	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. Since this outbreak, the Division of Animal Health continues to perform HPAI surveillance testing at county fairs across the state as well as increased outreach and education across the state.
Feed Supply and Land Availability	<p>Kansas is home to abundant poultry feedstock supplies including:</p> <ul style="list-style-type: none">• Corn and corn derived dried distiller's grain• Sorghum and sorghum derived dried distiller's grains• Soybeans and soybean meal <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>

Factor	Implications for Growth and Development Opportunities
Human Capital	<p>The existing poultry industry in Kansas is seeking to expand, creating additional investment opportunities. Immigration remains a critical component for the Kansas agriculture sector — including animal processing.</p> <p>Kansas State University’s department of animal sciences and industry houses respected research and extension faculty in poultry and egg production, feed science, animal processing and food safety.</p>
Policy Environment	<p>Notable policy movement was accomplished on March 20, 2018, when Governor Jeff Colyer signed Senate Bill 405 into law. This bill passed through the legislature and set into statute guidelines related to animal conversion units, poultry facilities and confined feeding facilities.</p> <p>Also at the state level, Kansas worked closely with the poultry community to ensure that the Kansas poultry industry is protected from overreaching federal regulation. Former Governor Sam Brownback is on record via written letter to former 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. USDA issued a statement deciding not to impose additional regulatory requirements for organic producers and handlers effective May 13, 2018.</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>
Supporting Infrastructure	<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>
Water	<p>Kansas is 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>

CHALLENGES

While Kansas is poised for major 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
Critical Infrastructure	<p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</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>
Industry Perception	<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. Consumer perception of the poultry industry can be a road block to development, thus increasing consumer outreach and education in addition to potential grower education is necessary to further develop the Kansas poultry industry.</p>
International Trade	<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>
Lack of Facilities	<p>Kansas lacks in-state poultry processing and value-added facilities. Kansas poultry farms ship broilers and spent hens out of state for processing (to Arkansas, Missouri and Mississippi).</p>
Nutrient Management	<p>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. Key stakeholders are working to define best practices for poultry litter and establish a baseline for expectation.</p>
Policy	<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, international trade and more.</p>
Supporting Organizations	<p>Kansas is a new member state of the Poultry Federation. Allocating resources and staff time to engage with this industry organization has not been activated at this time. The Poultry Federation has embraced Kansas membership and recognized Kansas' efforts to "Open Doors for Future Poultry Farms in the State" to all members, stakeholders and e-communication news subscribers.</p>

Challenge	Details of Challenge
Water	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. One additional challenge not to be overlooked is the aging infrastructure of the state's rural water district framework.
Workforce Development	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.

SUCCESSSES

Key successes in the poultry industry:

- The Governor of Kansas signed a bill passed by the state legislature in 2018 which set into statute guidelines related to animal conversion units, poultry facilities, and confined feeding facilities.
- In an effort to increase communication about the poultry industry to Kansas communities, and work to dispel misconceptions that give the industry a bad reputation, a K-State Research and Extension poultry specialist has been working with many communities across the state to better understand all aspects of the poultry industry (e.g., layers, broilers, turkey, etc.).
- Since joining The Poultry Federation in 2017, a major poultry business development opportunity has surfaced in Kansas. This poultry integrator project gained interest from 42 communities in the state, with 17 of these communities completing proposal packets for site selection consideration.
- On April 2, 2018, The Poultry Federation via organizational communications sent an update entitled "Opening Doors for Future Poultry Farms in State" to all members, stakeholders and subscribers notifying them of the Governor's signing of SB 405.
- The USDA has issued a statement deciding not to impose additional regulatory requirements for organic producers and handlers effective May 13, 2018.

Poultry

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Identify Kansas communities that express acceptance to and interest in understanding the economic benefits of the poultry (including game-bird) industry and are open to welcoming businesses into their region.

ACTION ITEMS:

- Develop a coalition of groups who can serve as ambassadors to educate communities about poultry opportunities.
- Develop simple statements to communicate about common issues that arise in the poultry industry: natural resources, animal agriculture, workforce, environment, etc.
- Work with economic development personnel in various communities to understand data and answer questions regarding poultry and poultry growth opportunities.
- Develop a toolkit with resources that provide science-based information as well as state content experts who can address community questions on a range of topics including modern poultry production, natural resource usage in poultry production, and litter application and management.
- Design positive public campaigns to share the story of the poultry industry by focusing on the benefits.
- Invite producers in surrounding states to share their story on how to integrate and work alongside the poultry industry.

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

ACTION ITEMS:

- Expand research specific to the poultry and game-bird industry to include community studies focusing on odor, water quality, litter management, etc.
- Partner with K-State Research and Extension to distribute science-based information and to educate communities on common misconceptions of the poultry industry versus modern-day poultry production.
- Encourage collaboration and research partnerships across curriculum areas to strengthen research and develop high-quality public education tools.

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.

ACTION ITEMS:

- Develop training and mentoring programs for secondary and postsecondary classrooms to share workforce opportunities in the poultry industry.
- Create apprenticeship programs designed to support a culture of workforce development in the poultry industry.
- Complete a poultry wage/benefit/alternative benefits survey that promotes the positives of working in the poultry sector.
- Design economic benefits and tax incentives focused on workforce development. One example can be expanding rural opportunity zones to include more support for general agriculture sectors.

Develop further processing and value-added infrastructure.

ACTION ITEMS:

- Increase the number of poultry processing sites available to Kansas growers.
- Position the promotion of value-added agriculture by using facts and statistics to educate communities and economic development leaders.
- Provide general information to the public regarding considerations that must be made when developing value-added opportunities within animal agriculture: water, land, transportation, utilities, workforce, etc.

Regulations based on sound science and supportive of business successes which directly affect the poultry industry.

ACTION ITEMS:

- Meet regularly with industry to stay connected on regulatory issues.
- Actively communicate real consequences to elected officials as they relate to Kansas poultry producers.
- Partner with other states to advocate against federal overreach.
- Create educational materials that define animal welfare expectations within the poultry industry.
- Clearly define common federal references used in the poultry industry —broiler, layer, hen, cage free, organic, free range, etc. — in an effort to educate Kansans about the poultry industry.
- Develop a poultry waste regulation that clearly identifies the delicate balance between industry growth and protections to the environment (including downstream water resources).

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Poultry



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SORGHUM

Kansas leads the nation in sorghum production. Sorghum is a versatile, multiuse crop well suited for Kansas agriculture. 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 gaining popularity in food products as a whole, nutritious grain, 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 to realizing sorghum's full potential. The export market is a significant part of the sorghum industry,



with the majority going to China. 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 promotes innovations for all segments of the sorghum industry and builds additional research partnerships. Statewide support for producers within the sorghum sector is 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, 480 million bushels of sorghum were harvested in 2016. In 2017, sorghum was planted on 5.6 million acres with 364 million bushels harvested. Of the 21 sorghum-producing states, Kansas ranks first in sorghum acres with 2.6 million followed by Texas, Colorado and Oklahoma. The states in the sorghum belt lie across 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 \$675.5 million and creates 1,509 jobs in the state. Through indirect and induced impacts, the industry supports a total of 4,922 jobs and creates a total economic contribution of nearly \$1.2 billion.

Globally, Kansas sorghum's top export destinations include China, Mexico, Japan, Indonesia and Nigeria (Euromonitor, 2017 trade data).

Sorghum is also gaining popularity in food products in the U.S. because of its gluten-free and non-GMO properties. Sorghum is a suitable substitute for wheat, rye and barley for those who cannot tolerate gluten. Sorghum can be milled and 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
Acreage	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. Planting trends for 2018 indicate total sorghum acreage has increased over 2017. In August, NASS reported sorghum for grain in Kansas acreage was up 8 percent or 2.65 million acres.
Industry Leadership	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 Program) 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.

Factor	Implications for Growth and Development Opportunities
Industry Research	<p>In April 2016, the United Sorghum Checkoff Program, Kansas Grain Sorghum Commission and Kansas State University announced a cooperative agreement to increase grain sorghum productivity and expand markets. This partnership created the Collaborative Sorghum Investment Program (CSIP) and provides funding for long-term research and the development of marketplaces, attributes, qualities and other factors capable of increasing demand for sorghum bushels.</p> <p>CSIP aims to increase the average national yield from 61.95 bushels per acre to 100 bushels per acre by 2025 by funding research in beneficial areas such as over-the-top grass control and yield improvements involving breeding program developments and field-level management techniques. Long-term research areas such as seed innovation and information management will also be addressed, including the development of new and novel genetic traits and application in market development.</p> <p>The program works to develop marketplaces, attributes, qualities and other factors capable of increasing demand to 1.25 billion bushels of sorghum by 2025. This includes the expansion of international markets, domestic food use, livestock feeding, ethanol production, specialty products, and more. In addition, tools, information and other factors will be developed in an effort to decrease the trading discount of sorghum to corn from 4.6 percent to 2 percent by 2025.</p>
Industry Value	Value is virtually equal to corn for ethanol and livestock feeding, both of which are robust markets in Kansas.
Marketing	<p>Developing new markets for sorghum is key to strengthening demand. Today's export market consumes a majority of sorghum followed domestically by livestock feed, ethanol production, food industry and the pet food industry.</p> <p>Sorghum has a low glycemic index and is high in antioxidants. Sorghum is also categorized as an ancient grain, it is gluten-free, and it has potential to fight cancer, high cholesterol and obesity (USCP, 2018). Sorghum is a versatile grain that is nutritious and easy to use and provides fuel a body needs (complex carbohydrates, B-complex vitamins).</p>
Value-Added Product	New uses for sorghum and sorghum coproducts include green chemicals, aquaculture, insulation, packing peanuts, millers and bakers, and even cat litter (USCP, 2018). The United Sorghum Checkoff Program invests in a market development research portfolio. Kansas producer interests also include supporting market development research specific to human food, identity preserved, and value-added product development with the potential for a Kansas-branded sorghum product.

Factor	Implications for Growth and Development Opportunities
Water	Research findings indicate sorghum is a less water-intensive crop with dryland success. In 2018, the Kansas Legislature allocated \$150,000 for water intensification research within the sorghum industry. DropXL Sorghum is a state of Kansas effort managed by the Collaborative Sorghum Investment Program to advance sorghum technology for the benefit of Kansas farmers and Kansas water resource stakeholders. The project design and adaptive management is guided by mission alignment with the Kansas Water Vision (2015) and the Kansas Ag Growth Strategy (2018).

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
Critical Infrastructure	The costs associated with transportation and logistics is a burden for producers. In-state freight rates add expenses when distributing sorghum domestically and internationally. The current transportation network prohibits the cost-effective transport of identity preserved grains harvested in Kansas destined for international markets willing to pay a premium for IP.
Industry Market	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.
International Trade	In 2017, more than \$53 million of sorghum exports were delivered into China. Current trade disruptions between the United States and China have resulted in tariffs placed on sorghum transactions.
Policy	The Natural Resources Conservation Service and Risk Management Agency programs do not always fit the needs of sorghum producers.
Value-Added Products	Human food-grade sorghum projects make up a very small percentage of overall Kansas sorghum acreage harvested. As a result, little attention and few research dollars are allocated for human food-grade product development.
Workforce	Lack of skilled agriculture workforce is a top inhibitor of growth and expansion for many Kansas agriculture entities.

SUCCESSSES

Key successes in the sorghum industry:

- The Kansas Grain Sorghum Commission, in partnership with U.S. Grains Council and the Kansas Department of Agriculture, increased the number of inbound and outbound trade missions developing and further strengthening global relationships for the state's sorghum farmers and agribusinesses.
- The Collaborative Sorghum Investment Program has led the development of a multidiscipline KSU Sorghum Crop Improvement Mission, Vision and SMART goal strategic plan during 2018.
- The Collaborative Sorghum Investment Program manages the state of Kansas \$150,000 appropriated funds. The funds are supporting DropXL Sorghum, a project aiming to deliver a sorghum trait technology package (trait donors, trait markers, trait models) for traits that increase water-limited yield in Kansas.
- Kansas farmers increased planted acres of sorghum by 8.16 percent in 2018.
- The Kansas Grain Sorghum Commission developed a pipeline to fill state leadership transitions as well as support Kansas representation with strategic placement on national sorghum leadership boards, such as the United Sorghum Checkoff.
- The Kansas Grain Sorghum Commission increased education and outreach by coordinating and hosting sessions to mitigate pest tolerance and launching an educational podcast series.
- Industry representatives and leaders actively lobby for the sorghum industry as it relates to the Farm Bill, food aid, trade/tariff and industry initiatives in Washington, D.C.
- KDA led a trade mission to the Sorghum in the 21st Century Food, Feed and Fuel in a Rapidly Changing World conference in Cape Town, South Africa, in April 2018. The conference was facilitated by the Sorghum Millet Innovation Lab, housed at K-State, and attracted more than 400 researchers and business representatives from a variety of sorghum networks.
- The Collaborative Sorghum Investment Program continues to see positive results, with ongoing research oriented around sorghum grain quality and new weed control technology.
- KDA and K-State continue to execute sorghum pet food Federal State Market Improvement Grant award aims to create high value market opportunities for the pet food sector.
- KGSC, CSIP and KDA continue to develop food-grade sorghum education and marketing opportunities by strategically placing sorghum product opportunities (flaked, popped, milled, pearled) in mainstream food service locations within K-State and the University of Kansas housing and dining food service lines as well as large-scale food ingredient companies.
- EPA announced a Notice of Proposed Rulemaking for Grain Sorghum Oil Pathways (December 27, 2017) allowing sorghum oil to be converted into biodiesel. This rule will provide another much-needed market for sorghum oil.

Sorghum

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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.

ACTION ITEMS:

- Encourage state sorghum industry to award checkoff dollar funding to include research targeting a variety of market-oriented opportunities: human food, identity preserved, value-add, feed and forage, industrial use.
- Engage in consumer-focused research that documents domestic consumption trends and preferences.
- Utilize checkoff dollars to bring companies and assets together to drive more value into the crop as well as to develop potential market outlets.
- Consider development of a "Kansas branded" sorghum product to fill niche market opportunities.

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.

ACTION ITEMS:

- Model off action steps included in the Water Vision document.
- Continue to secure research funding for sorghum water intensification research projects.

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.

ACTION ITEMS:

- Secure funding for long-term CSIP sustainability (post-ten-year mark) at Kansas State University.
- Actively support the balance of collaborative investments from the federal and state levels as well as private industry and sorghum producers.
- Continue to support DropXL Sorghum water intensification research through state of Kansas research funding allocations.
- Encourage focus on market-oriented research specific to human food, identity preservation and value added.

Livestock feed research partnerships with K-State 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.

ACTION ITEMS:

- Partner with the Kansas dairy industry to author joint research regarding usability of sorghum and sorghum silage in dairy cow rations.
- Encourage acceptability and use of published sorghum research conducted at K-State and other land-grant institutions for dairy, pork and poultry industries.
- Engage with others across the agriculture industry (beyond dairy), allowing them to be involved and add to discussions on sorghum-based products they would want to use in rations for their livestock.
- Educate and help other countries on ration creation and nutrition education.
- Educate farmers, ranchers and agribusinesses in other sectors on how to create value from sorghum.

Transportation network — including transload facilities and container load/ship — that maximizes logistical efficiencies and minimizes cost per producer to ship sorghum domestically and internationally.

ACTION ITEMS:

- Support continued development of the new transload facilities in Kansas.
- Assist in creating future options and collaborations that will allow for increased development around the transload facilities.
- Encourage increased state and federal funding for infrastructure improvements, e.g., adding passing lanes on major Kansas highways to better accommodate truck traffic.
- Develop an education module to teach Kansas farmers and agribusinesses about international trade, such as how other countries receive sorghum export shipments (and process paperwork).

———— Medium Priority Outcomes ————

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.

ACTION ITEMS:

- Participate in Kansas Department of Transportation freight studies and site selection.
- Work toward establishing container facilities in all grain-growing/shipping regions of the state.

Expansion of inbound and outbound trade missions showcasing feed and value-added market opportunities.

ACTION ITEMS:

- Leverage commodity and organizational membership resources to keep Kansas representatives engaged in outbound missions.
- Offer to organize, host, and financially contribute to offsetting costs associated with bringing inbound sorghum trade missions to Kansas.
- Expand the sorghum circle of influence when hosting inbound trade missions to improve relationships with domestic and international trading partners. The circle of influence could grow to feature not only livestock feed but also food grade, pet food, value-added, ethanol and DDGS representatives.

Expanded education and outreach opportunities that support industry strategic growth.

ACTION ITEMS:

- Address challenges, issues and opportunities for the industry through a strategic plan developed by the Kansas Grain Sorghum Commission.
- Lend resources and support to the organization to address needs and overcome existing challenges.
- Research existing capacity for on-farm storage opportunities and, if needed, increase opportunities for farmers to add storage capacity.
- Educate Kansas farmers regarding on-farm storage opportunities.
- Explore promotion of alternative uses of sorghum in the energy sector, including a sorghum ethanol plant and/or advancements in a wax product that could be produced through ethanol.

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Sorghum



SOYBEANS

& OTHER OILSEEDS

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.

Additionally, in the spring of 2018 Kansas Senate Bill 263, the Alternative Crop Research Act, was passed. The Kansas Department of Agriculture developed regulations for the industrial hemp research program which became effective in February 2019 to allow for licensing for the 2019 growing season.



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

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.

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 10th in soybean production with 189.1 million bushels and 4th in sunflower production with over 888,000 hundredweights in 2017. 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 \$1.8 billion and creates 1,958 jobs in the state. Through indirect and induced impacts, the industry supports a total of 10,784 jobs and creates a total economic contribution of approximately \$3.1 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 2.45 million cattle on feed, 1.89 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 food and bird seed.

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. 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
Big Data Use	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 the economic impact and the number of farmers interested in growing these crops. Kansas is home to leaders in the agricultural technology industry, further developing technology solutions to improve the efficiency of oilseed production.

Factor	Implications for Growth and Development Opportunities
Domestic Consumption	A strong consumer base for canola oil already exists in the U.S. Nearly 80 percent of all canola utilized in the U.S. is imported from Canada. Great demand exists for U.S.-grown product in this sector.
Double Crop	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.
Export Markets	Kansas soybeans have a relatively higher protein content than those produced in the corn belt. There is a large opportunity to increase demand for Kansas-grown soybeans with our top five exporting partners: Mexico, China, Taiwan, Thailand and Indonesia.
Genetic Advancements	Advancements in soybean and canola genetics in recent years make oilseeds a viable crop on more acres of dryland in Kansas than ever before.
Human Capital	<p>Kansas is home to strong leadership in the oilseed industry, creating additional investment opportunities.</p> <p>The Kansas State University agronomy department is a recognized leader in oilseed production and breeding.</p> <p>K-State's grain science department is recognized as the top program in the nation. Researchers across the K-State College of Agriculture are improving oilseed processing and finding more and efficient uses for oilseeds and products.</p>
Industrial Hemp Research	<p>Governor Jeff Colyer signed Senate Bill 263 in April 2018, enacting the Alternative Crop Research Act allowing KDA to oversee the cultivation of industrial hemp in a research program. KDA developed regulations to guide the Industrial Hemp Research Program, which became effective in February 2019. Applications were then made available to acquire licenses for the 2019 growing season.</p> <p>The opportunity to grow a new specialty oilseed crop in Kansas offers potential for diversification for Kansas farmers looking for an alternative crop, or for new farming enterprises interested in cultivating industrial hemp. The research generated by participants of this new industrial hemp program will be valuable data in identifying the growth potential offered in this sector.</p> <p>The 2018 Farm Bill removed federal restrictions on the establishment of commercial hemp programs and allows individual states to develop a plan to license the commercial production of hemp. In order to establish a program for the commercial production of industrial hemp, Kansas must develop a plan through KDA, in consultation with the Governor and Attorney General, and submit the plan to the U.S. Department of Agriculture for approval.</p>

Factor	Implications for Growth and Development Opportunities
Land Availability	Kansas has the second most farm land of any state, roughly 90 percent devoted to agriculture.
Livestock Feeding	<p>Kansas is a top 3 state in cattle production and top 10 in hogs. Kansas is also among the fastest growing dairy states. Livestock feed is the largest consumer of Kansas soybeans. Any advancement in the livestock industry will have a positive impact on the soybean industry.</p> <p>Canola by-products are a desirable feed stream for the dairy industry.</p>
Processing	<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>
Supporting Infrastructure	<p>Kansas is home to some of the world's leading crop genetics companies and research facilities, which could lead to the production of seed suitable to the Kansas climate.</p> <p>Existing intermodal, transload, rail and shipping container facilities provide a solid export infrastructure for oilseeds and value-added products with additional improvements planned.</p>

CHALLENGES

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

Challenge	Details of Challenge
Consumer Perception	Negative consumer perception of biotechnology threatens future advancements that have made soybean production possible in many areas of the state.
Critical Infrastructure	<p>Kansas has adequate grain and liquid rail infrastructure. However, a lack of rail access in the western portion of the state will require processors of specialty products to ship products across the state to be loaded onto the rail or use alternative transportation.</p> <p>As oilseed producers improve yields and efficiency, transportation becomes a larger issue. Aging infrastructure of highways, bridges, rail and barge also pose challenges. Investment in infrastructure could make the transportation system more reliable and cost-effective.</p> <p>A lack of in-state processing is further compounding the relatively high basis in northwest and northcentral Kansas.</p>

Challenge	Details of Challenge
Industry Adapting to New Crop	As the state adapts to growing industrial hemp, several challenges face the hemp industry, including transparency, the sale of stable seed genetics, and obtaining specialized equipment especially for processing, extraction etc. Some refineries and processing plants used for other crops could be converted rather than building a new plant, but demand and expectations are still unknown.
International Trade	In 2017, more than \$46.5 million in soybean exports were sent to China. Those products are now subject to a 25 percent tariff, which has increased basis as much as 100 percent in some parts of the state.
Policy	Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: reduced Renewable Fuel Standards mandates, Waters of the U.S., the Endangered Species Act, burdensome Occupational Safety and Health Administration regulations and more.
Water	Although not as water intensive as corn, water use in the production of soybean, sunflower and canola is greater than in crops such as sorghum, wheat and cotton, according to historical data.
Workforce Development	Growth in oilseed processing will require a skilled and a non-skilled workforce, which continues to be a significant challenge throughout the entire agricultural industry.

SUCCESSSES

Key successes in the soybean and oilseed industry:

- In 2017 Cargill announced plans to build a state-of-the-art biodiesel plant in Wichita, a \$90 million investment that will produce 60 million gallons of biodiesel annually when it opens in 2019.
- The Kansas Soybean Commission backed the passing of HB 2280 in 2018 which requires research of the potential costs of proposed rules and regulations to businesses before they are submitted to the Legislature and consultation with regulated businesses, their associations, local government and affected members.
- A new grade-school-based soybean magazine for the Kansas Foundation for Agriculture in the Classroom has been established to provide an educational message to young readers.
- The Kansas Soybean Commission participated in the Kansas Pet Food Forum to promote use of Kansas grains in pet food.
- Kansas Senate Bill 263, the Alternative Crop Research Act, was passed in 2018 concerning industrial hemp research, and removed it from being categorized as a controlled substance in Kansas.
- The Industrial Hemp Research Program developed regulations to guide the program and began taking applications in February 2019 to allow licensure in time for the spring 2019 growing season.



2019 Soybeans & Other Oilseeds

Soybeans and Other Oilseeds

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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

ACTION ITEMS:

- Analyze the costs/benefits of identity preserved grain handling systems.
- Meet with site consultants to ensure Kansas is on the list for additional processing and value-added facilities.
- Support bilateral and multilateral trade pacts that expand export potential for oilseed products.
- Conduct thorough review of countries that currently import oilseeds and products. Identify those that have already done business with Kansas and those that have not. Develop list of potential new customers based on that review.
- Support research and development of new products to increase demand for soybeans.
- Increase education about GMO facts and science-based information.
- Work to increase market access and reduction of trade barriers in a collaborative effort between Kansas Soybean Association, Kansas Soybean Commission, local economic development officials, and state and national government.
- Work to maintain relationships with past buyers for future sales.

Faster regulatory approvals for inputs imperative to oilseed production.

ACTION ITEMS:

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

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

ACTION ITEMS:

- Support increased funding to K-State Research and Extension for sunflower and canola research.
- Promote the economics of sunflower and canola production.
- Identify public/private partnerships to fund research.
- Increase biodiesel research.



Clear, factual information about genetic engineering or genetically modified organisms easily available to consumers, particularly relating to the efficiency of resources offered by GMOs.

ACTION ITEMS:

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

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

ACTION ITEMS:

- Develop a design to modernize existing processing plants to serve multiple purposes.
- Organize investors to construct a modern processing plant in the center of the state.
- Develop an "ag friendly communities" designation.

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

ACTION ITEMS:

- Partner in executing the beef growth strategy.
- Continue to encourage soybean industry involvement in livestock-focused inbound tours and discussions to promote the value of soybeans as a feedstuff.

Interested growers, distributors and processors fully participating in an Industrial Hemp Research Program in Kansas in the 2019 growing season.

ACTION ITEMS:

- Distribute information across the state about potential opportunities in industrial hemp.
- Complete approval process for regulations for the 2019 growing season.
- Approve licenses for interested growers.
- Prepare staff and resources to oversee the inspection and testing system for growers.
- Identify distributors and processors to provide opportunities for growers to sell product.
- Approve licenses for interested distributors and processors.
- Develop a plan to evaluate research reports following the 2019 growing season.
- Work with industry to develop additional markets for industrial hemp products.

Medium Priority Outcomes

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

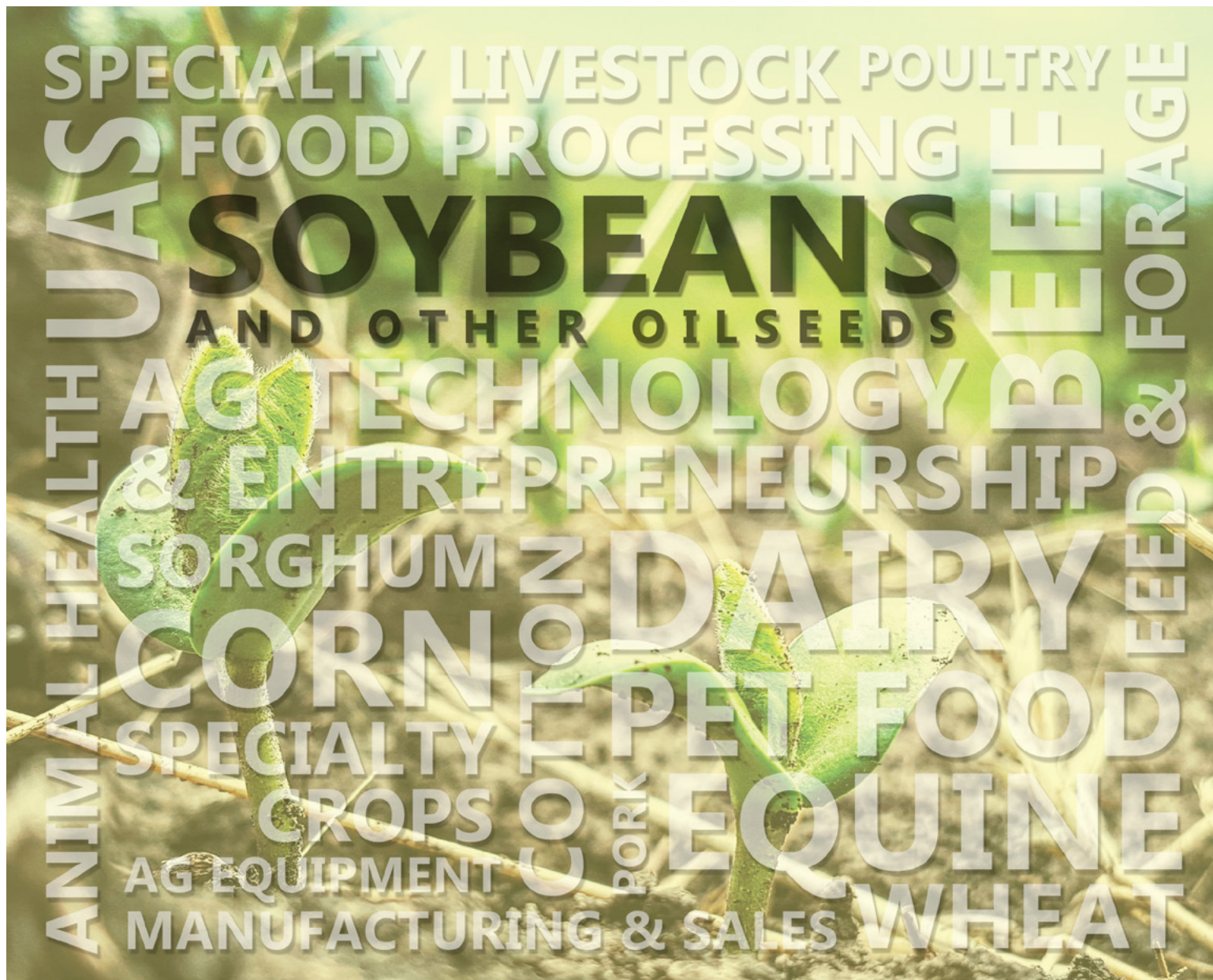
ACTION ITEMS:

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

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Soybeans & Other Oilseeds



Grow Smarter. Grow Stronger.
Grow Kansas.



SPECIALTY CROPS

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 fruits, vegetables, 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. Specialty crops offer a variety of advantages, including small acreage requirements, 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. Small-scale operations face difficulties overcoming problems with distribution, marketing, growing conditions and labor-intensive harvest methods. The small scale and lack of widespread producers 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.

The specialty crop industry offers opportunities for growth, but a successful long-term growth strategy will require input and discussion from key partners. A survey conducted in 2016 by the Kansas Department of Agriculture and K-State Research and Extension provided more information about the current producers and crops in order to better serve them. Increased involvement in the regional and national specialty crop industries will help Kansas identify ways to expand the specialty crop sector.

Collaborative efforts from all stakeholders, both public and private, are critical to the success of a strategic growth plan for the specialty crop sector in Kansas.

STATUS

The specialty crop industry in Kansas has garnered increased attention over the past few years. 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 fruits, vegetables, tree nuts, dried fruits, horticulture and nursery crops (including floriculture). As reported by the USDA National Agricultural Statistics Service, Kansas harvested with 7,800 acres of dry, edible beans in 2015, 4,100 acres of summer potatoes in 2017 and 3,400 acres of summer potatoes in 2018. Kansas is ranked 5th 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. Other groups may see the specialty crops industry as a service to the region providing fresh fruits and vegetables during specific growing seasons in food deserts and other areas across the state.

Use of high tunnels and indoor systems helps producers grow in Kansas despite the Midwest growing climate. 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 crop 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
Industry Association	<p>The Kansas Vegetable Growers Association has traditionally been the organized industry association for producers. At this time there is no known large-scale or umbrella 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, and small crop-specific organizations such as the Kansas Christmas Tree Growers Association.</p>

Factor	Implications for Growth and Development Opportunities
Industry Development	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. Specialty crop survey responses aided in identifying producers, types of specialty crops grown, and grower regions across the state.
New Products	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. As direct to consumer marketing becomes prevalent in population-dense areas, less shelf-stable crops are grown more readily such as berries, vegetables, greens and apples.

CHALLENGES

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

Challenge	Details of Challenge
Available Education and Support	There is limited land-grant university knowledge and research. Although specialty crop extension resources are located in the eastern part of the state, the need exists for more public education on specialty crop production in the central and western parts of Kansas, due to the limited extension personnel and educational programming in these regions. Additionally, Cloud County Community College added the institution's first commercial horticulture class in fall 2016.
Critical Infrastructure	There is a lack of published information regarding specialty crop transport across the state. Some of the known "bulk" growers or aggregation points are shipping commodities out of the state.
Environment	Growing conditions and distribution logistics including cold storage of growing fruits and vegetables year-round are noted producer challenges.
Industry Association & Perception	Kansas does not have an 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. In 2018, K-State Research and Extension and several producers were awarded a Specialty Crop Block Grant to aid in organizing a Kansas specialty crop association.

Challenge	Details of Challenge
Water	No research has been done in Kansas to understand the water use requirements for specialty crops on a large scale. Additionally, understanding how much water a crop takes depends on how many growing rotations are harvested on an annual basis.
Workforce Development	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. Thus it is not feasible for smaller and mid-sized growers that still require extra employees.

SUCCESSSES

Key successes in the specialty crop industry:

- A survey was conducted to investigate the economic impact of specialty crop growers in Kansas and their effect on the local food systems, to provide knowledge of the scope and needs of producers.
- Efforts have expanded to use existing partnerships to offer educational programs and develop curriculum.
 - K-State Research & Extension food safety staff provided produce safety and FSMA workshops for farmers across the state.
 - KSRE is reaching out to food councils to notify them about changing FSMA rules and available FSMA education opportunities.
 - KSRE conducted specialty crop bus tours to showcase successful specialty crop farms and specific growing practices.
 - Kansas Rural Center hosted regional specialty crop workshops in 2018 to provide education on season extension and discuss challenges in the industry.
 - KDA received a grant to provide financial support for specialty crop growers to attend the Great Lakes Expo.
- KSRE hired new staff to specifically assist with GAP certification and audits.
 - Work is underway to provide clarity and education to specialty crop brokers and farmers especially in relation to the produce safety rule (GAP certification, GAP harmonized certification, the qualified exemptions).
- A group of research and industry partners applied for and received a FY18 SCBG to start a specialty crop growers association.
- The Growing Growers program in Lawrence was established as a mentoring program for new specialty crop growers.

Specialty Crops

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).”



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Completion of a survey process 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.

ACTION ITEMS:

- Develop a survey instrument, then publicize and collect survey responses from the horticulture industry at large.
- Utilize responses to provide support personnel (primarily K-State Research and Extension) with a summary of resources needed for established growers as well as potential growers who are interested in becoming a specialty crop producer.
- Utilize responses to create a specialty crop marketing campaign to educate consumers of the options available to them for Kansas-grown specialty crops, including information about how they can best support Kansas specialty crop farmers and purchase Kansas specialty crop products. This should include recognition of farmer-to-consumer direct marketing, farmers’ market recognition, community-supported agriculture programs, roadside stands, and agritourism to raise consumer awareness of crops and seasonality of crop availability.

Additional K-State Research and Extension specialists and increased specialty crop/horticulture research and research plot placement throughout the state.

ACTION ITEMS:

- Add KSRE specialists with an emphasis on specialty crop and horticulture production.
- Increase specialty crop research including research plot placement throughout the state.
- Identify and utilize other specialists in Kansas such as current specialty crop producers to create a network of specialists to turn to with questions.
- Increase of educational resources and KSRE literature available for specialty crop growers.

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.

ACTION ITEMS:

- Identify the markets available and steps to prepare to enter larger markets.
- Provide education to growers for other markets beyond farmers' markets (provided by extension, KDA or larger growers in mentorship roles).
- Survey current Kansas food processing license holders and inventory types of specialty crops purchased and processed, including volume and Tier 2 marketing.
- Seek input from specialty crop brokers regarding opportunities and challenges for sourcing Kansas specialty crops to fulfill Tier 2 purchasing needs.
- Identify gaps in supply and demand and research options for aggregation and distribution facilities, growing season extension, and processing options.

The formation of a Specialty Crop Growers Association providing industry support and connections to its members.

ACTION ITEMS:

- Create a common definition of the crops that are included as specialty crops (i.e., fruits, vegetables, tree nuts, possibly honey? livestock feed? what else?).
- Work for coordination and cohesiveness between existing organizations such as the Kansas Fruit Growers Association, Kansas Vegetable Growers Association, Kansas Grape Growers Association, and other specialty crop groups.
- Launch opportunity for members to join in 2019.
- Host regional meetings to connect with producers across the state.
- Provide a database of growers and of resources for specialty crop growers.
- The Specialty Crop Growers Association will provide a unified voice to speak for the specialty crop industry and work towards growth in all other action items in the specialty crop sector.

Medium Priority Outcomes

Feasibility study to determine the impact and proper alignment of food hubs as a part of the specialty crop industry in Kansas.

ACTION ITEMS:

- Evaluate existing food hubs in the state and surrounding region to determine best methods and learning models.
- Complete a feasibility study to determine the impact and proper alignment of food hubs as a part of the specialty crop industry in Kansas.
- Review and publish the findings to increase knowledge regarding food hubs and their methodology.

Increased revenue for educational programs, promotion and outreach at the state and local level about current specialty crop practices and industry opportunities for the purpose of business development and economic growth to support and recruit growth to the industry.

ACTION ITEMS:

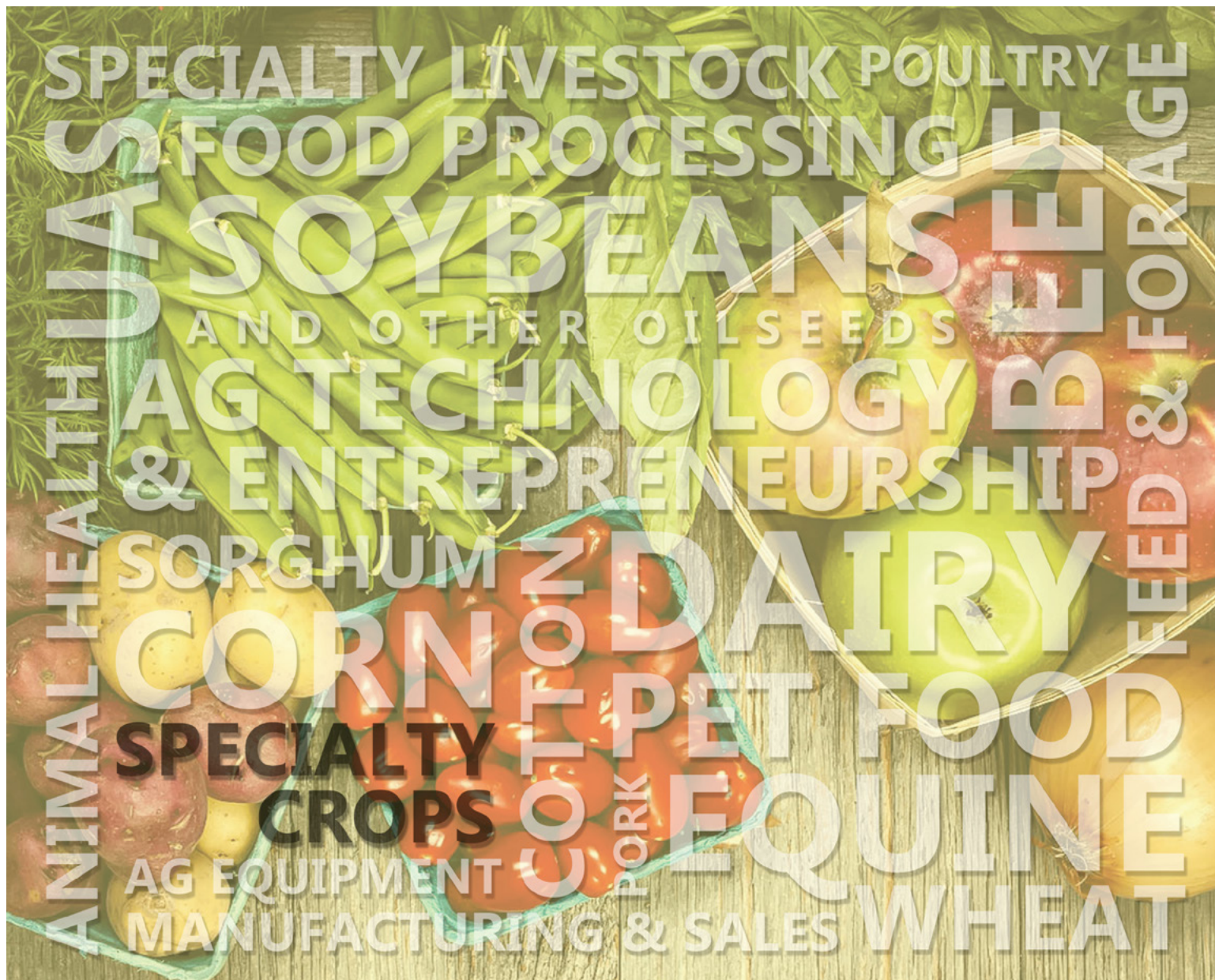
- Develop a promotional campaign educating Kansans about new and beginning specialty crop farmer programs, Kansas food safety/produce safety regulations, and educational resources located throughout the state.
- Develop inventory lists promoting the specialty crop industry and marketing outlets across the state. (e.g., harvesting equipment partnerships, registered farmers' markets, produce auctions, buyer networks, or direct to retailer relationships).
- Educate and promote Kansans and beginning specialty crop farmers by demonstrating specialty crop success and economic viability of this farming option.
- Encourage producer participation in trade organizations and industry and educational events as a cohesive effort of different agencies working together.
- Engage Kansas agriculture education programs and encourage both rural and urban agriculture programs to consider specialty crops as a supervised agriculture experience and ultimately as a career.
- Use existing food councils and community events to work with local-level extension specialists and economic development representatives to offer education programs and develop curriculum about specialty crop production.
- Replicate the Growing Growers program in other areas of Kansas.
- Provide education on crucial business aspects such as funding options and insurance and liability needs.

Low Priority Outcomes

Identification of temporary, seasonal and alternative workforce needs for Kansas specialty crop producers in relation to general workforce needs of the state.

ACTION ITEMS:

- Evaluate the needs of the industry in relation to general workforce needs of the state.
- Work with Kansas specialty crop producers to ensure that their temporary, seasonal, and alternative workforce needs are met.
- Replicate the Growing Growers program in other areas of Kansas.
- Work with youth and high school business, entrepreneurship, and agriculture students to create a workforce pool for seasonal workers, interns, and those looking for summer jobs or supervised agriculture experience programs.



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SPECIALTY LIVESTOCK

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 in Kansas is an evolving sector that typically includes bison, goats, sheep, alpaca and llamas, but is also growing to include other species. 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. In 2018, Kansas is ranked 12th and 32nd in the nation in meat goat and sheep inventory, respectively. Kansas ranks 8th in bison with just over 4 percent of the U.S. bison herd. In 2012, Kansas had 2,690 alpacas and 1,408 llamas.

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 \$11.5 million and create 75 jobs in the state. Through indirect and induced impacts, the industries support a total of 132 jobs and create a total economic contribution of approximately \$21.1 million.

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
Biosecurity	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.
Consumer Demand	Increased consumer demand for meat grown locally has increased the demand for specialty livestock meats. This has benefited many specialty livestock producers and processors.
Feed Supply and Land Availability	<p>Kansas is home to abundant feedstock supplies including corn and corn derived dried distiller's grain, sorghum and sorghum derived distiller's dried grains, 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>

Factor	Implications for Growth and Development Opportunities
Policy Environment	<p>Kansas tax law allows 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, but this high financial threshold prevents it from being applicable to most specialty livestock producers.</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.</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>
Supporting Infrastructure	<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>
Weather and Natural Resources	<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 Vision for the Future of Water Supply in Kansas with goals and specific action items to help ensure a reliable water supply while continuing to grow the economy.</p>

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
Capital	Due to the unfamiliarity of the industry, access to capital can be an issue for both producers and processors.
Cohesion of Sector	The specialty livestock sector is very diverse in type of species, size of operations, and goals of operations. Some species have well-established markets and others are still emerging. Significant differences also exist between the needs of the different species. Because of these differences, the sector struggles to work as a unified sector and the outcomes are difficult to achieve as a unit.
Critical Infrastructure	<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>
Human Capital	The Kansas State University's 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.
Industry Perception	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.
International Trade	<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 cost effectively and flooding the U.S. market.</p>

Challenge	Details of Challenge
Lack of Facilities	Kansas could benefit from additional local or regional slaughter facilities.
Lack of Markets	Many specialty livestock producers are unfamiliar with what market opportunities exist for their growing operations.
Large Customers	Big clients demand consistency, expecting all product to look and taste the same. Therefore, entering those markets is a challenge for smaller producers.
Water	Access to an abundant and reliable water supply is critical to starting a livestock operation. 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.
Workforce Development	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.

SUCCESSSES

Key successes in the specialty livestock industry:

- 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 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.
- K-State hired an extension sheep and meat goat specialist to provide support to statewide extension programs as well as teaching and applied research on campus.

Specialty Livestock

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

A specialty livestock association or network which links individual species associations to maximize awareness of available resources and existing regulations, educate consumers on the benefits of specialty livestock product consumption and availability, and provide a unified voice for the industry.

ACTION ITEMS:

- Identify a list of all livestock that fall under the specialty livestock umbrella.
- Identify benefits of raising specialty livestock such as lower investment for beginning farmers, increasing consumer demand, value-added processing opportunities. Also identify the challenges such as lack of educational support and specialists and difficulty in finding scalable markets.
- Promote the benefits of specialty livestock production to youth and beginning farmers through K-State Research and Extension, 4-H, FFA.
- Identify experts and specialists in the industry that can be consulted with production questions.

Widespread, accessible markets for specialty livestock producers. Expansion would involve promoting existing markets and pursuing opportunities for new ones.

ACTION ITEMS:

- Create a specialty livestock/meat/other product cooperative to establish volume and fulfill a higher percentage of the market demands for specialty livestock products in the state.
- Create an inventory of current market outlets across the state.
- Encourage companies to participate in trade missions and reverse trade missions.

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

ACTION ITEMS:

- Provide educational and informational resources and curriculum to producers to help them address challenges and production questions and help the industry grow by providing readily available, consumable information.
- Provide on-farm, hands-on field days to increase producer understanding of production practices, applicable regulations, and economics of specialty livestock production.
- Add additional extension personnel to focus on specialty livestock
- Provide training to current KSRE personnel to expand their knowledge on specialty livestock and resources they can provide to producers. Topics may include rangeland management, species-specific animal health, common production practices, and processing regulations.
- Develop and disseminate a needs assessment for producers.

State-sponsored economic development incentives which meet the needs of specialty livestock processors. Economic development incentives for specialty livestock processors. The scope of specialty processors does not match the incentives that currently exist.

ACTION ITEMS:

- Share success stories of specialty livestock production to promote the sector to beginning producers and to promote the industry to communities.
- Complete an economic impact study for specialty livestock production in the state.
- Obtain feedback from industry and incentives experts and other states that have specialty livestock incentive programs and draft a white paper outlining challenges with current incentives for specialty livestock.
- Work with the Kansas Department of Commerce to explore tax incentive options.
- Draft a bill outlining an incentive program for consideration in the Kansas Legislature.

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.

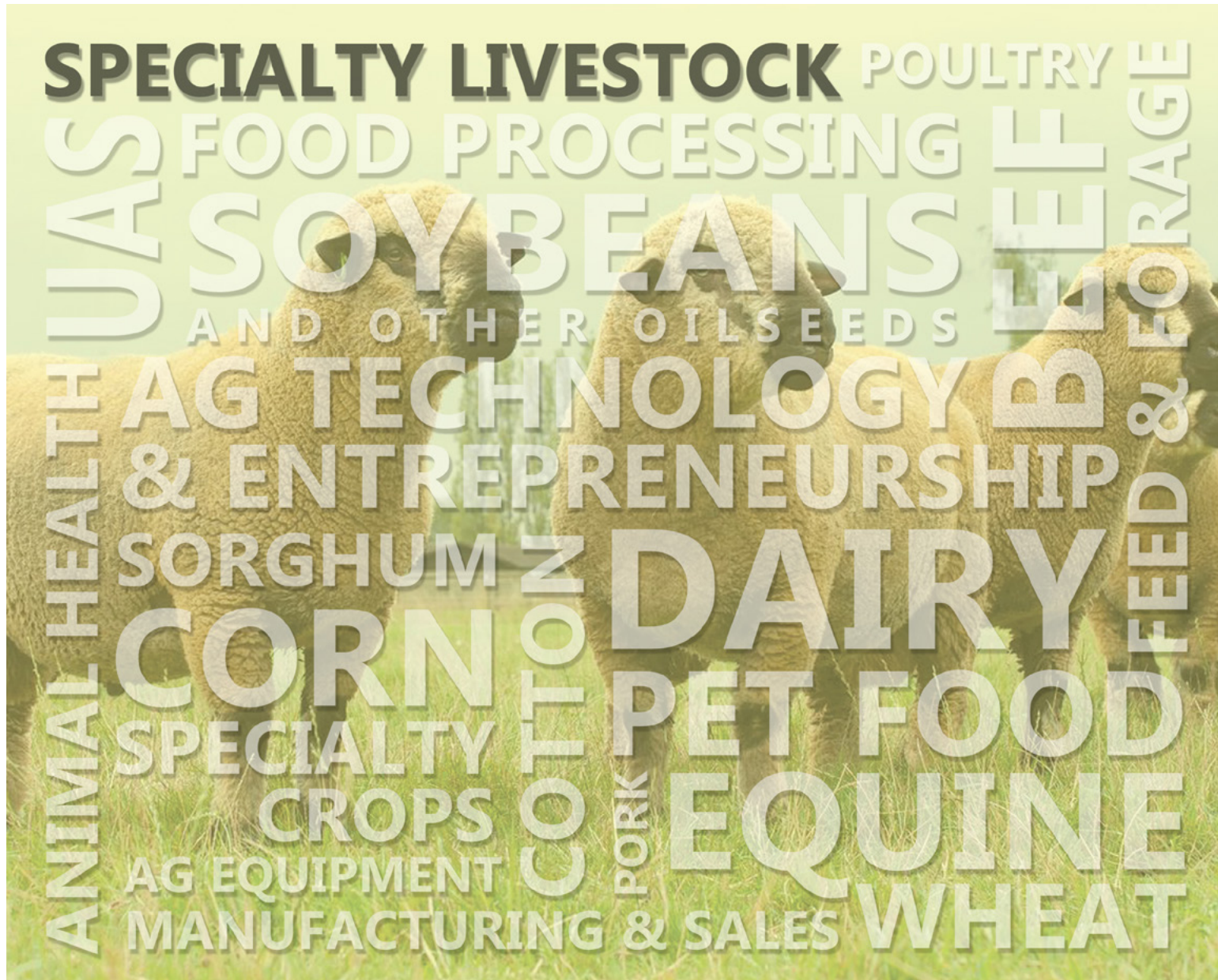
ACTION ITEMS:

- Connect specialty livestock producers with county-level food and farm councils and local agriculture organizations to work towards more uniform regulations.

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Specialty Livestock



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UNMANNED AERIAL SYSTEMS

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 emerging field. UAS technology is increasingly important 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. Additionally, 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 several unique challenges which can serve as barriers to growth. Expertise is still needed from people with a background in UAS, a rare qualification, making it difficult



to find 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 a streamlined approach to fully utilize the data produced by UAS technology.

The UAS industry offers significant opportunities 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. Trend analysis from the Association for Unmanned Vehicle Systems International estimates the economic impact of UAS integration to reach a cumulative \$2.941 billion by 2025 and to create 3,716 additional jobs in Kansas.

Agriculture is anticipated to be the largest benefactor from UAS use. UAS technology is increasingly important in agriculture as farmers and ranchers work to implement precision technologies into their management practices. The skills, knowledge and expertise in the UAS field will play a role in many careers across the agriculture industry. 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 the unmanned aerial systems 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
Existing Customer Base	<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>
Human Capital	<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>
Industry Relations	<p>"Unmanned aerial systems" and "drone technology" are now common interchangeable terms. This is a positive for the industry, as the technology is no longer viewed as a threat, but as a tool in agriculture. In fact, management decisions now consider UAS as a key factor related to economic growth.</p>

Factor	Implications for Growth and Development Opportunities
Policy Environment	<p>Future policy changes that may result from research in the FAA's UAS Integration Pilot Program may give Kansas a comparative advantage over other agriculture states.</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>
Supporting Infrastructure	<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>
Weather and Natural Resources	<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>

CHALLENGES

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

Challenge	Details of Challenge
Critical Infrastructure	<p>A lack of affordable, livable housing in rural areas compounds the issue of a shortage of agricultural workers.</p> <p>The lack of consistent, reliable broadband access limits the ability of some farmers and ranchers to utilize UAS technological advancements fully.</p>
International Trade	<p>Access to international markets for technology products is a great potential revenue stream, but resistance to free trade agreements at the federal level can hinder this access.</p> <p>Trade tariffs can serve as a barrier for UAS hardware in production.</p>

Challenge	Details of Challenge
Policy	<p>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.</p> <p>Current FAA restrictions limit use of UAVs and create challenges.</p>
Research and Information	<p>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 producer looking to make management decisions.</p> <p>There is a lack of user-friendly systems in place to leverage the data created through UAS technology.</p>
Small Entrepreneurs	<p>It is difficult for small entrepreneurs to have ready access to additional capital as a new company grows.</p> <p>The speed at which technology research and development grows can make business development difficult for tech companies.</p> <p>Marketing assistance is valued and will assist in the growth of this sector.</p>
Workforce Development	<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 Ph.D. 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> <p>Community and technical colleges should be forward-thinking about working with industry to design appropriate associate degrees and certificates to meet future industry demand, to include data collection and interpretation.</p> <p>In addition to the technology workforce, the UAS industry needs engineers, operators and data interpreters.</p> <p>High-tech graduates do not think of Kansas as a place to go for high-tech jobs.</p>

SUCCESSSES

Key successes in the UAS industry:

- In 2018, Kansas was selected as one of 10 partners in the UAS Integration Pilot Program, with a proposal that seeks to leverage a statewide unmanned traffic management system to facilitate precision agriculture operations.
- Kansas has increased our national presence in the UAS industry by annual participation in Xponential, the annual trade show of the Association for Unmanned Vehicle Systems International.
- Northwest Kansas Technical College is actively engaged with local schools in recruiting as well as promoting UAS/precision agriculture as an academic and career option to students from K-12 through postsecondary.
- Partnerships have been developed between several interested companies and either Kansas State Polytechnic and/or Northwest Kansas Technical College during 2018 in order to complete testing of UAS equipment.
- Kansas State Polytechnic became the first entity in the nation to achieve statewide access during flight operations. It has received a “beyond visual line of sight” waiver from the FAA.
- The Kansas Department of Transportation has named a director of UAS.

Unmanned Aerial Systems

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

Seamless connectivity from mobile networks across all of Kansas. This is critical to adoption and implementation of UAS technology statewide.

ACTION ITEMS:

- Work with mobile companies to highlight potential for collaboration in expanding seamless connectivity statewide.
- Explore connection between existing cell infrastructure as well as nontraditional structures to serve as "towers."

Rules and regulations for the UAS industry that are based on sound science and data and that support business growth. The state's involvement in the Integrated Pilot Program offers opportunities for private and public collaboration in development of rules and regulations for the future of the industry.

ACTION ITEMS:

- Encourage participation of private entities to collaborate with the Kansas Department of Transportation in the IPP with appropriate applications and practices.
- Highlight the positive benefits of UAS through social media and other marketing outlets.
- Host yearly legislative day to promote the benefits of the technology.
- Monitor legislative initiatives at the state and local level that may inhibit growth.
- Work with appropriate agencies to ensure current regulations are available to the public and that they are enforced.

Imagery interpretation systems and algorithms in use with UAS systems that provide useful recommendations to farmers. With current UAS technology farmers and ranchers are not able to effectively use the data generated by UAS, nor create solutions and management decisions, such as fertilizer application plans.

ACTION ITEMS:

- Advocate for and secure funding for advanced research in algorithm development.
- Develop methods for best development of algorithms.
- Disseminate information to agriculture technology companies.
- Determine what applications are currently needed.

Partnerships among agricultural equipment enterprises that may find mutually beneficial results from incorporating UAS technology into the menu of features provided by their products.

ACTION ITEMS:

- Identify agricultural equipment companies that have a desire to or could benefit from incorporating UAS into products.
- Invite agricultural equipment companies to participate in IPP activities.
- Work to standardize the sharing and transfer of data between partners in production as well as the specific equipment used.

Increased UAS study and degree options at secondary and postsecondary educational institutions in Kansas

ACTION ITEMS:

- Evaluate which agricultural degree programs at Regents institutions complement the UAS industry, such as agronomy or biological and agricultural engineering.
- Expand support for a UAS minor in applicable departments.
- Strengthen the study options of UAS at Kansas State Polytechnic and Regents institutions.
- Promote UAS/precision agriculture as an academic option and a career to students from K-12 through postsecondary.

Kansas presence at regional and national UAS events in an effort to attract and establish unmanned aerial vehicle manufacturing, assembly operations, flight testing infrastructure and flight spaces to Kansas.

ACTION ITEMS:

- Continue participation at national UAS Summit & Expo.
- Continue participation at UAS Cluster Initiative events.
- Continue active participation and leadership at UAS Summit in Kansas.

Information showing a demonstrated return on investment from incorporating UAS technology into farm management decisions. Evidence of return on investment would promote farmer adoption of UAS, assist farmers in becoming more comfortable in utilizing the technology, and result in greater farm profitability.

ACTION ITEMS:

- Quantify return on investment based upon research and extension activities.

—— Medium Priority Outcomes ——

Partnerships between Kansas' existing military bases and the aviation industry to enhance the research, development and expertise of the UAS industry in Kansas.

ACTION ITEMS:

- Schedule quarterly meetings between Fort Riley and other military bases with Kansas UAS and aviation industry in order to share ideas on current efforts and identify methods for collaboration.
- Develop partnerships with interested companies in aviation/aerospace/UAS in Wichita area specific to agriculture systems for spraying and harvesting.
- Investigate repurposing Department of Defense training facilities and personnel for civilian agriculture purposes.

Research on applications in animal agriculture through collaborations between Regents institutions and industry, an area that remains largely untapped.

ACTION ITEMS:

- Research and create animal herd tracking systems that would track health and nutrients.

Business-friendly environment that attracts further expertise and innovation to the state.

ACTION ITEMS:

- Promote the Strategic Growth Initiative process, a pilot program to help counties and communities proactively seek potential business growth opportunities, working with KDA, the Kansas Department of Commerce and the Kansas Department of Transportation.
- Market the benefits of Kansas' business-friendly environment.
- Educate lawmakers on current infrastructure and policies that successfully create a business-friendly environment.
- Engage with legislators when proposed legislation threatens a pro-growth business environment in order to rectify negative results that may occur.

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Unmanned Aerial Systems (UAS)



WHEAT

Kansas is the nation's leading wheat producer with records of wheat production predating statehood. Currently, Kansas is the world's best source for hard red winter 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 world. 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 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 increase additional global opportunities and spur demand for Kansas wheat. Finally, consumer shifts away from gluten and carbohydrates may 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 predating statehood. There are indications that wheat was produced in the region as early as 1839. In 2017, 7.6 million acres of wheat were planted, and 6.95 million acres were harvested with an average yield of 48 bushels per acre. This accounts for 8.6 percent of the state's total agricultural receipts and 19.2 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 \$1.44 billion and creates 3,215 jobs in the state.

Through indirect and induced impacts, the industry supports a total of 10,487 jobs and creates a total economic contribution of approximately \$2.57 billion.

Currently, Kansas is the world's best source for hard red winter wheat and is identifying new hard white varieties. The hard white varieties account for more than three percent of the wheat grown in the state. The overall hard white 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 and international 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
Big Data	As data becomes more readily 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. Additionally, there are opportunities to utilize new and novel data approaches, such as blockchain technology, to add value throughout the supply chain.
Breeding	<p>Wheat breeders are learning more about wheat genetics every day and working to use that information to build better varieties. By using gene-editing technology such as CRISPR-Cas9 technology, Kansas State University researchers can accelerate the rate of improvement in wheat variety traits. With the recent completion of the sequencing of the wheat genome, wheat breeding is entering a "golden age" of exponential growth.</p> <p>The Kansas wheat breeding 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.</p>
Central Location	Kansas is a great central hub location for enterprises looking to serve the entire United States.

Factor	Implications for Growth and Development Opportunities
Consumer Demand	Opportunities exist to expand the frozen dough market based on preference for convenience products and overall consumer demand.
Dietary Trends	The Kansas Wheat Commission is an active member in the Wheat Foods Council, which promotes the use of wheat in the diet, including whole grain hard white and whole grain red. Research continues to show the importance of including whole grain foods in a healthful diet. Some consumers are pushing for healthier food with cleaner labels and fewer additives — wheat can help fill this demand.
Feed Stuffs	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 or is needed in a crop rotation.
Hard White Wheat	New varieties of hard white wheat are being released and offer an opportunity to expand Kansas' production diversity in the state. These new offerings not only allow for unique marketing opportunities, but also feature enhanced genetic traits and disease resistance. High Plains Platinum is an excellent example of the opportunities available in this realm.
Leadership	Kansas is home to world-renowned leaders in the wheat industry, including leaders at K-State's agronomy department, the Wheat Genetics Resource Center, Kansas Wheat, etc., with many active grower leaders across the state serving or having served nationally.
Policy Environment	<p>Kansas tax law allows 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> <p>The Farm Storage Facility Loan (FSFL) program provides low-interest financing to producers that wish to build or upgrade facilities to store commodities on farm. Additionally, in Kansas there are 8-year property tax waivers available for on-farm grain storage.</p>
Reputation	Kansas is known around the world for high quality hard red winter wheat.
Supporting Institutional Infrastructure	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.

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
Consumer Demand	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.
Critical Infrastructure	<p>There is a need for more unit train loading and container loading facilities, especially in the western half of the state. 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. Container loading facilities would allow Kansas wheat producers the ability to market identity preserved wheat.</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 and on-farm storage needs to exist and handlers must understand its importance. Additionally, education must be provided on the potential economic impact and price advantage of a shift in wheat varieties and this information must be shared.</p> <p>A great way to add value to Kansas wheat is by 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>
Dietary Trends	<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>
Education of the Scope of the Industry	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 the belief that all wheat, particularly hard red winter, is equal and its single use is flour for baked goods. It is a current challenge to share bake and research trial data and provide information to the appropriate parties, taking into account all of the steps in the supply chain.

Challenge	Details of Challenge
Global Opportunities	<p>Increasing global demand for white wheat should be addressed through the development and adaptation of new high performing varieties.</p> <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, while 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>
Identity Preservation	<p>Farmers and grain handling firms need the ability to keep classes separate (i.e., 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>
Policy	<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>

Challenge	Details of Challenge
Talent Development and Quality of Life	<p>Growth in the wheat sector, particularly in seed technology, flour milling, and irrigation research and technology, will require a skilled workforce, which continues to be a significant challenge through the entire agricultural industry. In addition, low unemployment rates in some parts of the state can make it difficult to find a reliable, year-round workforce.</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 agriculture industry, strong schools, access to health care services, affordable and quality housing, and more.</p>
Water	<p>Wheat farmers rely on ever-depleting sources of groundwater for irrigation, especially in the heavy wheat-producing region of western Kansas.</p>
Yield vs. Quality	<p>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. Wheat breeders currently lack the ability to quickly test for protein functionality. If we could rapidly identify the protein our customers need, breeders may be able to develop a high-performing wheat variety that can realize both yield and quality.</p>

SUCCESSES

Key successes in the wheat industry:

- The Kansas Wheat Innovation Center (KWIC) is a farmer-owned center that brings together all facets of wheat production and research located on the Kansas State University campus. The KWIC expanded in March 2018 to increase its capability to house critical wheat research dedicated to cutting edge wheat genetic improvement for wheat farmers.
- The Wheat Genetics Resource Center at the KWIC provides a world-renowned gene bank and completes 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 the WGRC.
- Progress is underway to identify potential veteran farmers and farmers looking for the next owner/operator, offering succession possibilities.
- K-State, as a member of the International Wheat Genome Sequencing Consortium, published a detailed, high-quality description on August 16, 2018, of the complete genome of wheat in the journal Science, paving the way for improved varieties of wheat. This project was funded by USDA-NIFA and NSF, as well as additional work from USAID and the Kansas Wheat Commission.
- A Federal State Marketing Improvement Program (FSMIP) 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 through the High Plains Platinum marketing platform.
- 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.

Wheat

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.

OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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.

ACTION ITEMS:

- Research existing relationships with other grain companies (ADM, Skyline, etc.).
- Focus on needs of the demand side, not just industry supply.
- Support a K-State-led initiative to reach out and solicit help.
- Set up a "Strategy Summit" to align a plan, timeline, funding needs/resources, then expand outreach and alignment of resources.
- Maintain the state and nationally funded university research commitments.
- Maintain the checkoff funded research commitment.
- Grow the WGRC with the National Science Foundation private investment strategy.
- Leverage commodity funding with federal funding such as NSF and USDA-NIFA to increase overall funding for research.
- Increase partnerships with public companies (food processing) and health companies to advance research that identifies the allergen for celiac disease and remove it from wheat genetics to create a new variety that is celiac allergen-free.
- Partner in projects such as organic wheat and identity-preserved, share existing work, and build from it.

Regulations which are based on sound science and are supportive of business success, particularly in regard to genetically modified organisms (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.

ACTION ITEMS:

- Provide support for additional research and sustained education, especially related to GMO labeling and gene editing.
- Engage Governor, Attorney General and congressional delegation to further the Kansas position as needed.
- Meet with federal EPA leadership and engage on issues important to the wheat sector.
- Don't work against other commodities that may or may not be GMO.
- Educate regulators and legislators at the federal level about the importance of science and GMOs to production agriculture and the nation's and world's food supply.
- Remain in contact with state and federal government on importance of not over-regulating.
- Build a contact network of those open and willing to foster sound science practices at the state and federal level.

Identity preserved wheat for customers around the world.

ACTION ITEMS:

- Work toward establishing container loading facilities in major wheat growing regions.
- Support financial and economic work that highlights the benefits of on-farm storage and the segregation of grain.
- Continue Wheat Quality Council work of surveying and reporting wheat conditions.
- Continue K-State Wheat Quality Lab work of testing milling and baking characteristics of Kansas wheat varieties.
- Determine customer needs and develop marketing avenues to deliver to their specific markets.
- Increase the number of acres grown under contract, thus increasing the amount of IP wheat grown.

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.

ACTION ITEMS:

- Define value to end-use clients by identifying customer value chains and quantifying data points.
- Develop economics to support value-added processing.
- Interview farmers, breeders, aggregators (co-ops), mills, bakeries, and bakery supply companies to understand characteristics and qualities desired in value-added products. Additional information should be obtained from K-State Research and Extension, Wheat Quality Council, and Kansas Wheat on best practices.
- Research a value-added wheat program that capitalizes on improved nutrient density from soil health and sustainable practices.
- Seek to find a price discovery mechanism that follows current industry trends (e.g., KC Board of Trade).
- Put a flour mill in southwest Kansas that is focused on wheat middlings production to supplement feedlots and livestock production.
- Explore increasing production of certified organic wheat and opportunities to make Kansas a leader in organic wheat.
- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.
- Seek opportunities for fractionation of high-value bran components as human/animal feed additives.
- Develop a focused white wheat milling site.
- Establish a feed mill in southwest Kansas to grind feed wheat to supplement feedlots and livestock production.

Grain storage in Kansas using current technology and with adequate capacity for increased production from Kansas farms.

ACTION ITEMS:

- Work toward an increased amount of on-farm storage.
- Increase access to protein testers.
- Increase commercial infrastructure for white wheat handling and storage.
- Develop commercial infrastructure for separated storage that allows for a premium to be paid on higher protein wheat.
- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.

Medium Priority Outcomes

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.

ACTION ITEMS:

- Meet with USDA FGIS to understand options for adjusting grading standards.
- Work with USDA to make red and white subclasses of hard winter 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.

ACTION ITEMS:

- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.
- Partner in the execution of the agriculture technology and entrepreneurship growth strategy.
- Promote and talk about the Wheat Innovation Center, WGRC, double haploid, CRISPR method of gene editing, etc.
- Target business recruitment to crop technology.
- Recruit businesses to fill the gap between research and application.

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 northern plains region of the United States.

ACTION ITEMS:

- Continue to use checkoff dollars to fund durum research in the K-State breeding program.
- Develop a spring plant durum with heat tolerance and support the use of industry and government resources devoted to research.

Significant tools available and in use by farmers to demonstrate the sustainability of wheat farming in Kansas.

ACTION ITEMS:

- Identify the industry group to take the lead on working with producers.
- Evaluate record keeping and sustainability reporting software available on the market.
- Determine best way to report sustainability data and to whom.
- Find money for sustainable production, practices, education and extension.
- Develop an online tool that defines sustainability and can then be used to measure and report sustainability.

Military veterans looking for a foothold in farming matched with established farms looking for new owners and/or operators.

ACTION ITEMS:

- Identify potential veteran farmers and their regional location preferences.
- Identify farmers looking for the next owner/operator.
- Match veterans to farms.
- Engage with potential mentors to help veterans experience hands-on learning in exchange for farm labor activities.

Policies in this document are a reflection of industry discussion and not a representation of state government.



2019 Wheat

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GROWTH STRATEGY PROJECT

This document is a part of the Kansas Agricultural Growth Strategy project and has been compiled by the Growth Team in the Kansas Department of Agriculture.

The project was a direct result of a 2015 Governor's Economic Council discussion focused on the agricultural industry and the development of a state strategic growth plan. The Council discussion led to the development of the growth strategy effort.

In 2016, more than 300 meetings were held with agriculture industry leaders and nearly 400 leaders attended the first Governor's Summit on Agricultural Growth. That work led to the initial Kansas Ag Growth Strategy document in early 2017, which included desired outcomes for each of the agricultural sectors. Subsequent meetings and the 2017 and 2018 Governor's Summit on Agricultural Growth led to the addition of the action items in this updated document.

This is a guidance document for how private and public partners can work together to grow the agricultural industry. The action items are dynamic plans that will be updated continuously and used to hold team members accountable when appropriate and to track industry activity when needed.

This strategic growth document is the compilation of feedback from agricultural stakeholders at the annual

Summits and at related meetings. It is not intended to represent the opinions and priorities of the executive branch. Many of the desired outcomes identified have no role for state government in implementation.

The assistance and support of more than 600 Kansas agriculture leaders in providing input and feedback is especially appreciated. If they had not been willing to answer a call from "government" and participate in the development of this collaborative document, the direction this document provides and the partnerships to get it done would not exist.

The KDA Vision, **Kansas will provide an ideal environment for long-term, sustainable agricultural prosperity and statewide economic growth**, is something that can only be achieved through private-public partnerships. KDA looks forward to continuing to work with private industry partners to grow Kansas agriculture.

For additional information, visit
agriculture.ks.gov/GrowAg

**Join the team at the 2019 Kansas Governor's Summit
on Agricultural Growth to be held in
Manhattan, Kansas, on August 29, 2019**

**GROW SMARTER. GROW STRONGER.
GROW KANSAS.**



Grow Smarter. Grow Stronger.
Grow Kansas.