Kansas AGGROWTH

GROW SMARTER. GROW STRONGER. GROW KANSAS.

Growing Kansas agriculture...together

2018 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 $68 billion in total economic contribution to the state, approximately 45 percent of the total economy. The industry employs nearly 247,000 people, or 13 percent of the Kansas workforce. If food retail and ethanol production are included, the economic contribution rises to over $81 billion, nearly 54 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 nearly $3.5 billion in agricultural products. The top five exports include wheat, beef and veal, soybeans, feed and forage, 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 2017, the second Governor's Summit on Agricultural Growth was held in Manhattan, Kansas, bringing together nearly 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 ADVANTAGE

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

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

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

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

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

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

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

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

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

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

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

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 agricultural growth.

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

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

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

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

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

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

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

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

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

KANSAS AGRICULTURAL GROWTH

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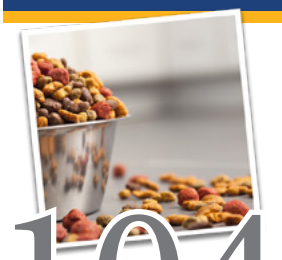

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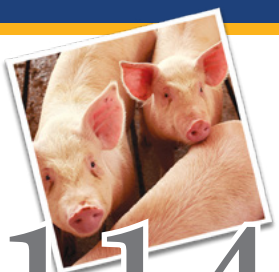

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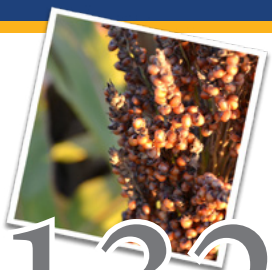

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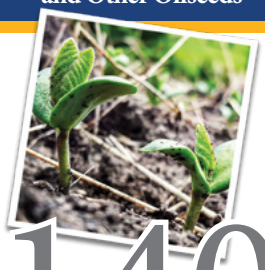

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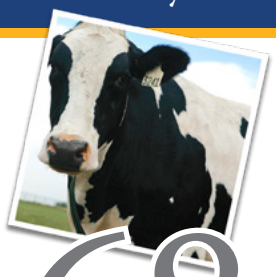

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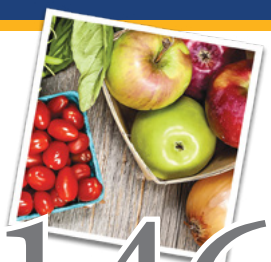

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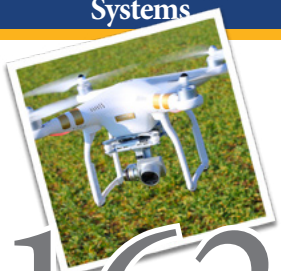

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AG EQUIPMENT

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 equipment manufacturing and sales sector.

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

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

STATUS

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

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

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the farm machinery industry in Kansas has a total direct output of approximately $3.2 billion and creates 5,760 jobs. The industry supports a total of 14,457 jobs and provides a total economic contribution of $4.6 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 $3.8 billion with an employment of 7,819. These sectors have a total economic impact of $5.5 billion and support 18,504 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
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.
Policy Environment	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. 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. Also at the state level, Kansas works closely with the agricultural industry to ensure its protection from overreaching federal regulation. 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.

Factor	Implications for Growth and Development Opportunities
Workforce Development	Kansas is home to a strong community college and technical college network that can provide training for manufacturers. There is potential to develop an apprenticeship program that could be piloted with agricultural equipment manufacturers already in Kansas. Additionally, an opportunity to consider is bridging Farmer Veteran Coalition resources (Fort Riley, Fort Leavenworth and McConnell AFB) with the U.S. Army's exit counseling centers to place Army veterans in open workforce positions across the state.

SUCCESS STORIES

Key successes in the industry:

- Several highly successful agricultural equipment companies already manufacture in Kansas.
- A variety of national agriculture implement companies exist across the state via local dealerships.
- The current tax structure provides incentives for business development and expansion in the state.
- The KDA ag marketing division secured a STEP grant to include a trade mission to AGRO 2018 in Kiev, Ukraine.

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.
Industry Association	There is no real connection within the industry. Kansas does not have a sector association, rather AEM (Association of Equipment Manufacturers) is a national organization that hosts an industry sector for agriculture.
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.

Challenge	Details of Challenge
Policy	Federal laws and regulations impacting the agricultural community as a whole include Waters of the U.S., the Endangered Species Act and more. These laws threaten the profitability of farmers and ranchers which decreases their ability to purchase inputs such as planters, plows and other farming equipment. State laws outlining trailer title requirements, intellectual property (precision agriculture), transport limits and even minimum wage changes can be inhibitors to business success.
Small Businesses	It is difficult for small companies to get their products in stores to make them accessible to consumers. 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. 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.
Workforce Development	Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of this industry.

Ag Equipment Manufacturing and 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, 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 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:

- Encourage high schools to offer education in technology.
- Reach out to nonagricultural students interested in technology to consider a program of study focusing on agricultural technology.
- Establish exact needs of technology companies and communicate 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.

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 financers) 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 threatens Kansas' pro-growth business environment.
- Engage KARL as an avenue for soft-incentive development, internships, interactions with financers 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.

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

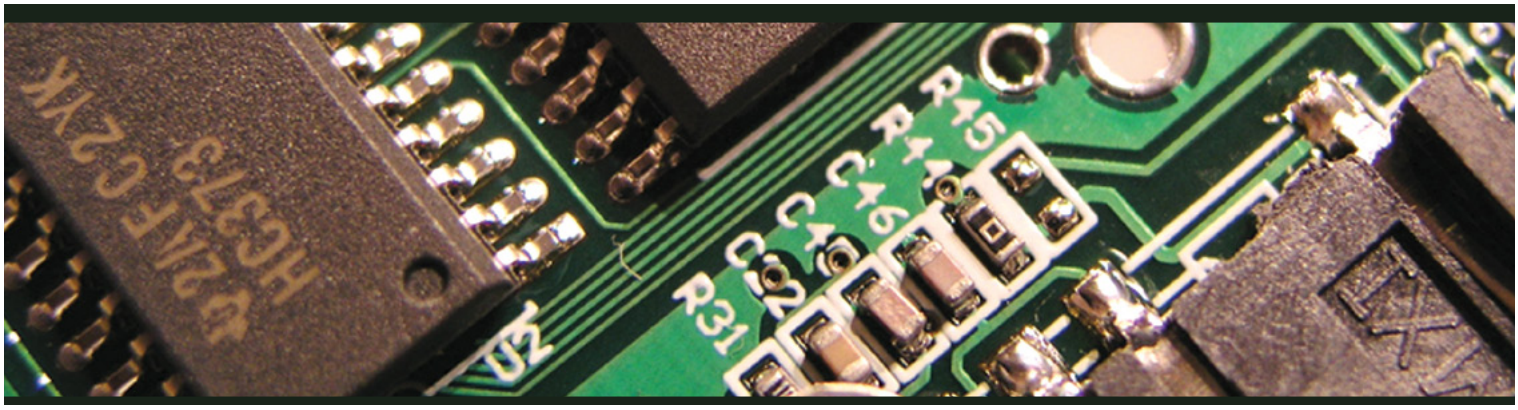
- Convene a meeting of agricultural equipment manufacturers to discuss the framework.
- Act upon recommendations of the manufacturers interested in joining the coalition.
- Work with Kansas Agribusiness Retailers Association to target small dealers in manufacturing and personally invite them to join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

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.
- Promote innovation labs for opportunities to collaborate on technology expansion to international markets.
- Greater education/promotion of Kansas International Trade Show Assistance Program (KITSAP).

Increase in agricultural manufacturing and sales companies in the state of Kansas.
ACTION ITEMS:

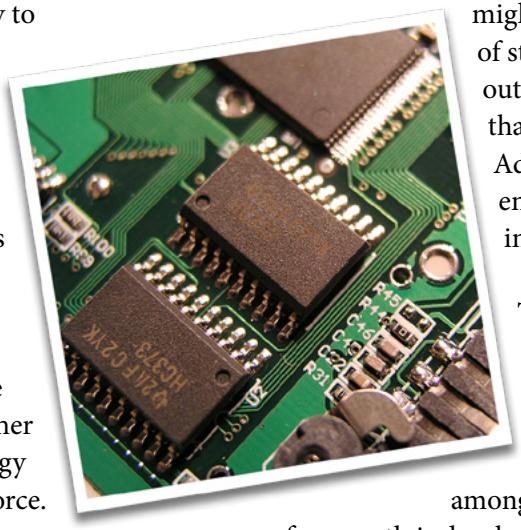
- Gather company contact information to set up meetings.
- Meet with site consultants to introduce them to Kansas.
- Establish potential workforce pipeline to include graduating/credentialed students, Transition Assistance Program (TAP), Kansas Industrial Training (KIT), Kansas Industrial Retraining (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 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.



AG TECHNOLOGY

AND 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. Technological innovations are an important element of the KC Animal Health corridor, with improved potential for investment and workforce due to the concentration of animal health companies that currently exists from Manhattan to Kansas City. The state's commitment to water conservation creates a need for new water-saving technologies to increase efficiency in the region.Institutions of higher education in Kansas offer strong technology and aviation programs to grow the workforce. The strong customer base of farmers and ranchers makes Kansas a prime location for advancements in agricultural technology.



Alongside the vast potential for this industry there exist some challenges which could present barriers to growth. Establishing a reliable workforce can be challenging in an industry that requires specific technical knowledge. Engaging the agricultural industry in new technologies or new innovative ideas can be difficult, especially when data does not yet exist to prove a return on investment for the producers. Similarly, new products and technologies face uncertainty in regard to policies and regulations which might limit their acceptance. The financing of start-up companies generally occurs outside the traditional finance arena that much of agriculture operates in. 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's land mass is devoted to farming and ranching, providing ample customers for agricultural technology applications.

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

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

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

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

OPPORTUNITIES

In order to develop a strategic growth plan for agricultural technology and entrepreneurship, it is important to understand the areas where Kansas has a comparative advantage and the best opportunities for growth or expansion.

Factor	Implications for Growth and Development Opportunities
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, research facilities, technical training programs and transportation capabilities make the Kansas City region an attractive location for animal health businesses — from initial start-ups to relocations or expansions. The discovery of new technologies in the animal health sector can include therapeutics, diagnostics, biologics, and nutrition and feed products. Since 2009, bioscience firms in Kansas have received $110 million in venture capital investments, with the majority directed toward animal biotechnologies. The Kansas State University Institute for Commercialization is dedicated to the start-up and expansion of technology-based, high-growth enterprises. Other key communities and regions within the Corridor have also taken proactive steps to recruit and support animal health and high-tech enterprises to the region, including Knowledge Based Economic Development partnership in Manhattan and the Bioscience & Technology Business Center in Lawrence.
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 technology companies. 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.

Factor	Implications for Growth and Development Opportunities
Human Capital	Kansas State Polytechnic boasts a strong aviation and technology component and now offers one of the nation's first bachelor's degree programs in unmanned aircraft systems. Additionally, departments within the K-State College of Agriculture are developing new technologies and tools on leading edge of agricultural technology.
Natural Resources	Kansas is recognized nationwide for its proactive practices of conserving water for future generations. Kansas is implementing proactive water conservation practices allowing farmers and ranchers to manage their own water while still preserving the aquifer for generations to come. Water-saving irrigation technologies can assist in addressing key challenges in other agriculture sectors, such as reducing water usage by increasing efficiency of water application consistent with the *Vision for the Future of Water Supply in Kansas*.
Policy Environment	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. 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. Also at the state level, Kansas works closely with the agricultural industry to ensure its protection from overreaching federal regulation. 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.
Supporting Infrastructure	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. Kansas is home to an intermodal freight facility in Edgerton with full federal customs along with adjoining Smart Warehouses, providing great support for importing and exporting components of all sizes.

SUCCESS STORIES

Key successes in the industry:

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

CHALLENGES

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

Challenge	Details of Challenge
Access to Capital	The financing of startup 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 startup financing environments.
Critical Infrastructure	A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.
International Trade	Access to international markets for technology products is a great potential revenue stream. Resistance to free trade agreements at the federal level can hinder this access.
Policy	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 include Waters of the U.S., the Endangered Species Act and more.
Retention of Entrepreneurs	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.
Small Entrepreneurs	It is difficult for small food entrepreneurs to get their products in stores to make them accessible to consumers. 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.
Uncertainties of Industry	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.
Workforce Development	Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of the technology industry.

Ag Technology and 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, 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 agricultural technology and entrepreneurship sector desired outcomes.

High Priority Outcomes

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:

- Research investment forums (such as the Angel Network) and mentoring programs conducted in other states.
- Research investment forums conducted in specific industries such as animal health.
- Speak with potential investors and entrepreneurs on their suggestions to get the most out of a forum.
- Convene a meeting of select investors and entrepreneurs to recommend timing and format of forum(s).
- Follow committee recommendations and plan forum(s).
- Support development of a "1 Million Cups" program in Manhattan geared toward agricultural entrepreneurs.
- Support "RedTire" program for business transition.
- Support the creation and promotion of agricultural incubation networks to promote faster company timelines.

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 financers) 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.
- Pursue legislation to alter existing programs and/or create new programs as appropriate.
- Develop economic impact studies of agricultural technology companies to show the importance of funding incentive programs.
- More partnerships between state and local entities to increase available incentives.

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

- Link traditional lenders with other private investors to encourage investment.
- Form government/private partnerships to provide capital.
- Form incubator sites (possibly on college campuses).
- Form network for ag technology companies to get exposure with investors outside of the traditional agricultural sector.

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

- Increase communications between companies and Kansas Board of Regents institutions.
- Find out what potential graduates/employees look for in a career, the company, incentives, pay scale, benefits, etc.
- Increase the number of credentialed graduates.
- Develop database of companies and producers who wish to hire interns.
- Open up channel between companies and retiring veterans.

Medium 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:

- Encourage high schools to offer education in technology and entrepreneurship.
- Reach out to nonagricultural students interested in technology and entrepreneurship to consider a program of study/major focusing on agricultural technology and entrepreneurship.
- 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).
- Reach out to agricultural academic programs at K-State College of Agriculture to discuss feasibility.
- Connect agricultural technology companies with appropriate departments to ensure company needs are met.
- Identify agricultural companies willing to partner with educational institutions.
- Encourage more hands-on training at the high school level.

ANIMAL HEALTH INDUSTRY

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

Identifying the barriers and challenges that exist in the animal health sector will be key to future growth in Kansas. Policy issues on the state and federal level will have a significant impact at all levels of animal health, from the use of antibiotics in food-producing animals to animal disease vaccines. Developing facilities and the workforce to expand research and development in animal health will continue to be a challenge. In addition, in order to continue growing animal agriculture in Kansas, there is an increasing need for mixed and large animal veterinarians willing to work in rural America. Amid these challenges, the industry also faces increased pressure from consumers which is often influenced by misleading information.

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

STATUS

Kansas is not only among the nation's top states for raising livestock, it is also home to a large concentration of public and private entities in the animal health and nutrition sectors including research and production of therapeutics, diagnostics, biologics, and nutrition and feed products to support the industry. In fact, Kansas is located within the KC Animal Health Corridor, which is home to more than 300 animal health companies that account for 56 percent of total worldwide animal health, diagnostics and pet food sales. According to the Biotechnology Industry Organization (BIO), the Kansas bioscience industry employs more than 14,000 people across approximately 836 establishments, with a heavy concentration of agricultural feedstock and chemicals, and in research, testing and medical labs.

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

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

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

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

OPPORTUNITIES

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

Factor	Implications for Growth and Development Opportunities
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	Whether by highway, rail or air, Kansas offers excellent transportation and marketing advantages. Kansas' strategic location, at the convergence of I-35 and I-70, places it at the crossroads of America. Our central location and excellent transportation network with access to interstate rail, trucking and air corridors put businesses within next-day freight service of 70 percent of the U.S. **Highways** Kansas ranks sixth for quality and access to transportation, and third nationally in total road mileage with approximately 140,000 total road and street miles and over 10,000 highway miles. **Rail Service** Kansas ranks in the top 10 in the United States in railroad mileage with almost 4,800 miles of track. The Kansas City area ranks as the third leading rail center in the nation. **Air Service** Kansas City International Airport, the Wichita Eisenhower National Airport and the Manhattan Regional Airport are the largest airports serving the state, providing businesses with immediate access to major markets nationwide. KCI and Wichita contain state-of-the-art cargo handling facilities, with main-deck loaders capable of handling the world's largest freighter aircraft. Garden City Regional Airport offers service to Dallas/Fort Worth and Dodge City Regional Airport offers service to Denver. Salina Regional Airport offers service to Denver.
Education Resources	The College of Veterinary Medicine at Kansas State University is ranked among the nation's top veterinary medicine schools. In addition, the College of Agriculture's Department of Animal Science and Industry is one of the largest in the country. The department maintains research facilities for beef cattle, dairy cattle, swine, poultry, horses and sheep which are located in close proximity to campus. The department manages about 6,500 acres of land for research purposes. In a typical year, departmental research and teaching facilities accommodate about 2,000 to 3,000 cattle, 3,500 swine, 1,500 laying hens, 250 sheep and 45 horses. 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.

Factor	Implications for Growth and Development Opportunities
Established Animal Health Industry	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. Significant to a thriving animal health sector is discovery of new technologies, including therapeutics, diagnostics, biologics, and nutrition and feed products, a process which requires funding for research and development and more. Since 2012, bioscience firms in Kansas have received $118 million in venture capital investments, with the majority directed toward animal biotechnologies. 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. 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.

Factor	Implications for Growth and Development Opportunities
Established Research Capabilities	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. 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. 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. 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.
Leader in Livestock Production	The beef cattle sector has been and continues to be the single largest sector in the Kansas agriculture industry, with cattle and calves generating $7.86 billion in cash receipts in 2016, which account for more than 52 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 6.4 million on Jan. 1, 2017. Kansas is also home to 152,000 dairy cows on 290 dairy farms, 1.9 million head of pigs, and is ranked 9th in the United States in meat goat production, and 14th nationally in sheep and lamb production. Kansas is also home to innovative and high value egg laying and poultry genetic companies. The state is also recognized for its strength in meat processing, ranking third nationally in red meat production with production capacity of more than 5.4 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.
Policy Environment	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. There also exists a strong commitment among state leaders to support and provide an environment that encourages growth in the animal health sector.

Factor	Implications for Growth and Development Opportunities
Qualified Workforce	The animal health industry is known for creating high-wage, family-sustaining jobs with average wages 80 percent greater than the overall private sector and growing at a faster rate. In 2014, the average annual bioscience wage was $66,055, compared to $43,528 as the average Kansas wage. These jobs often require college-level education and, potentially, specific training. In Kansas there are more than 14,000 individuals employed in 836 bioscience-related firms. Additionally, the percentage of Kansans who have a high school diploma or higher exceeds the national average, and 571,000 Kansans hold a bachelor's degree or higher.

SUCCESS STORIES

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

- The KC Animal Health Corridor is home to more than 300 animal health companies, representing the largest concentration in the world. Since 2006 when the Corridor was officially launched, 31 animal health companies have located in the Corridor. Companies with a business location within the Corridor represent 75 percent of the worldwide sales of animal health products and diagnostics, which represents just over $19 billion.
- KDA, in coordination with industry and academic partners, continues putting a strong focus on continuous improvement of emergency preparedness efforts throughout the state in order to be the best prepared state in the nation when it comes to foreign animal disease preparedness through leadership within the development and implementation of the Secure Beef Supply plan, coordinating with industry to assist feedlots in updating and adopting biosecurity plans, hosting annual multi-day functional foreign animal disease exercises and more.
- After a three-year site selection process, the U.S. Department of Homeland Security selected Manhattan, Kansas, to be the home for NBAF, which will strengthen the nation's ability to conduct research, develop vaccines, diagnose emerging diseases and train veterinarians.
- A significant number of well-respected public and private education and research centers are already located in northeast Kansas.
- Millions of dollars have been invested in Kansas by private animal health and bioscience companies that have chosen to locate or expand operations.

CHALLENGES

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

Challenge	Details of Challenge
Consumer Perception	The foundation of a safe food supply is healthy animals, but some individuals and organizations provide misleading information, and oftentimes non-science-based, regarding tools and technologies used to prevent and treat animal diseases. Terms like organic, natural, antibiotic-free and hormone-free are often used to imply food safety and quality claims that are scientifically unfounded and are misleading to consumers. This presents a tremendous challenge to the ability of farmers and ranchers to safely and judiciously use animal health products in their efforts to raise healthy animals.

Challenge	Details of Challenge
Critical Infrastructure	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. 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. In the past, according to a 2014 report by the Brookings Institute, some federal laboratories have been managed in a manner that does not fully integrate with the regional economy or capitalize fully on the potential to partner with private industry, especially small- and medium-sized enterprises, on research initiatives. It will be critical to work alongside the Department of Homeland Security and the U.S. Department of Agriculture in the development of strong partnerships with state government, private industry and universities to maximize potential of the lab.
Evolving and Emerging Diseases	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. According to the World Health Organization, about 75 percent of emerging diseases are zoonotic. Currently, there is not a laboratory in the United States that can research and work on zoonotic diseases, and also develop vaccines and countermeasures to those zoonotic diseases, which affect livestock.
Growing Global Population	As the global population climbs and is expected to surpass 10 billion within the next 50 years, farmers and ranchers will be faced with the challenge of producing food for nearly 3 billion additional people without using additional land. Further, as incomes increase and the global middle class grows, the demand for animal production will also increase. 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.
International Trade	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.

Challenge	Details of Challenge
Policy	Antibiotics are an important tool to prevent, treat and control disease in animals. Multiple federal agencies, including the Centers for Disease Control and Prevention, Food and Drug Administration and USDA along with veterinarians, animal health companies and livestock producers, work together to ensure antibiotics, vaccines and other animal health tools are used safely and judiciously in order to protect human health. Despite efforts to ensure that animal antibiotics do not affect public health, there are some lawmakers who continue to call for increased scrutiny and regulation on the use of antibiotics in food-producing animals. The federal government has in recent years increased the regulatory environment surrounding the use of antibiotics and other animal health products in food producing animals. Most recently, the FDA has updated rules related to the use of certain antibiotics in food-producing animals, including amending its Veterinary Feed Directive (VFD) regulations to bring them in line with the other rule changes, bringing all medically important antibiotics used in feed and water from an over-the-counter status to VFD status. Funding for animal health and bioscience-related research will continue to be a challenge. Concern regarding the availability of vaccines for FMD and avian influence (AI) were raised during the NBAF summits with industry held in 2015 and 2016. In addition, the research and development of response and recovery strategies, which include vaccination protocols, for foreign animal diseases, including FMD, is and will continue to be a challenge for industry, government and academic partners to address. Elected officials and regulators will continue to have considerable influence over the ability to use animal health products, and there will continue to be challenges when politics and personal agendas are the basis for statutory or regulatory changes rather than sound science. Further there seems to be a lack of understanding of the role NBAF will have in the safety and security of animal health, human health and the global food supply.
Workforce Development	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. In addition, a decline in the number of graduates from the K-State College of Veterinary Medicine with a focus on mixed or large animal medicine who are interested in practicing in rural Kansas presents a challenge throughout the livestock industry.

Animal Health Industry 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, 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 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:

- Conduct outreach with veterinarians and producers throughout the state to discuss the future of veterinary medicine coverage in Kansas.
- Coordinate with K-State College of Veterinary Medicine to identify key strengths and weaknesses of the program.
- Develop recommendations for Veterinary Training Program for Rural Kansas (VTPRK), which may include but not be limited to an increase in the number of seats prioritized in each class for Kansas residents, an increase in the number of students who can receive the scholarship and to award scholarships prior to admission to College of Veterinary Medicine (seek legislative changes during 2018 session).
- Consider development of a VTPRK advisory board composed of practicing veterinarians. The board could provide regular guidance and feedback to the College of Veterinary Medicine about needs within the industry and also take an active role in the selection of VTPRK recipients.
- Explore feasibility of fellowship/internship program specifically for vet students in large and mixed animal practices.
- Focus and prioritize recruitment on in-state students who want to return to rural communities to practice in large and mixed animal practices.
- Explore economic development incentive options to encourage mixed and large animal veterinarians to establish or expand practices in rural communities.
- Establish an apprenticeship program to prepare young veterinarians to take over established veterinary practices in rural communities as one generation prepares to retire.

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 working with Kansas feedlots to develop and adopt foreign animal disease preparedness plans.
- Provide outreach and technical assistance to Kansas feedlots in adoption of biosecurity plans.
- Assist other segments of Kansas beef cattle industry and with other species — including dairy, pork and poultry — in adoption of biosecurity plans and continuity of business plans.
- Launch Kansas Agricultural Emergency Response Corps and begin recruitment of volunteers.
- Develop and implement training strategy for KAERC volunteers and local community responders.
- Develop "pocket guide" with checklists for case management specialists to use when working with producers at infected premises.
- Conduct three-day functional exercise in December 2017 to practice the state's ability to respond to a foreign animal disease.
- Meet with packers that have a presence in Kansas to determine how they will function in a response and encourage packers to participate in FAD exercises.
- Meet with 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.
- Coordinate meeting 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.
- Develop college-level curriculum for students to learn the basics of a disease outbreak and response roles.
- 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 tabletop exercises and other training opportunities 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:

- Host ADT forum in Kansas and submit comments to USDA regarding future of ADT system and how it should work to complement a voluntary individual animal traceability system.
- Coordinate meeting between industry groups to develop individual animal traceability framework to pilot in Kansas that minimizes costs to producers and protects the confidentiality of individual animal owner records.

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:

- Coordinate with agricultural industry organizations to continue social and traditional media outreach about the use of animal health technologies and tools in livestock production.
- Coordinate with agricultural industry organizations to provide more frequent training for farmers and ranchers about how to engage with consumers.
- Coordinate with 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.

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

- Document the current regulatory approval process in the order that it must occur and the time associated with each step in the process.
- Collaborate with industry to make identify potential changes to the regulatory approval process and communicate those with congressional delegation, USDA and FDA.

Medium Priority Outcomes

Collaborative and coordinated economic development plan surrounding NBAF. The State will continue to provide a presence on the NBAF Economic Strategies Task Force and help lead the strategic focus on making NBAF an economic development attraction asset.
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.

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.

Strong public-private partnerships to recruit to Kansas animal health enterprises that will complement and enhance the research being conducted at NBAF.
ACTION ITEMS:

- Coordinate with the KC Animal Health Corridor as well as local and regional economic development programs to promote Kansas as the knowledge base for animal health and bioscience.
- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.

Outreach with animal health companies that don't currently have a presence in the United States about opportunities to relocate or expand to do business in close proximity to NBAF.
ACTION ITEMS:

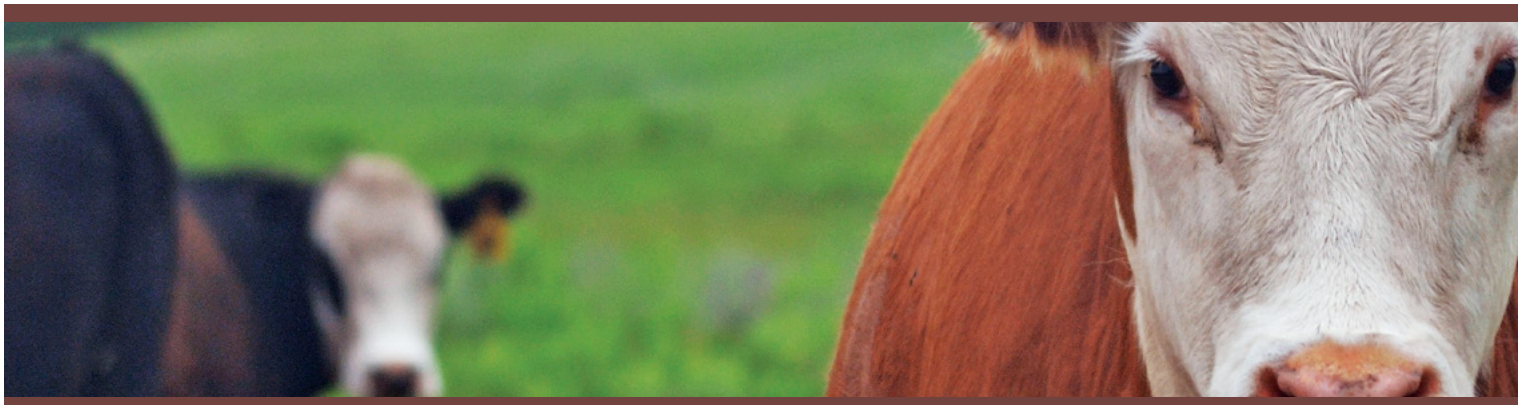
- Coordinate with KC Animal Health Corridor to identify companies.
- Develop education/information to establish initial outreach.

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.

Grow Smarter. Grow Stronger.

Grow Kansas.



BEEF

I N D U S T R Y

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

As the beef industry adapts to meet ever-changing consumer demands, we 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 $7.86 billion in cash receipts in 2016, which accounted for more than 52 percent of Kansas agricultural cash receipts that year. Not only does Kansas have the third largest number of cattle on ranches and feedyards (accounting for nearly 18 percent of fed cattle in the United States), at 6.4 million on Jan. 1, 2017, the state also has a significant footprint in the cattle processing sector. In 2016, Kansas produced nearly 5.418 billion pounds of red meat, or 10.8 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 $6.9 billion and employs more than 32,940 Kansans. In addition, animal slaughtering and meat processed from carcasses, except poultry, has a direct output of $10.2 billion and supports a total of 18,099 jobs.

The beef industry is also recognized nationally and globally for raising healthy cattle and producing the beef which consumers demand. In 2016, Kansas exported nearly $782 million in beef products globally. As the global middle class continues to grow, it is expected that global demand for protein will also increase, adding more value to cattle raised in Kansas. Through October 2017, the U.S. Meat Export Federation estimates that exports have added nearly $280 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, including wildfire, drought, blizzards in 2017 alone; and a growing number of anti-agriculture and anti-meat activists spreading false information regarding cattle production practices and beef nutritional 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 state-level foreign animal disease exercises, the feedyard operators throughout the state are working with KDA to update or develop biosecurity plans. It should be noted that many feedyards have existing biosecurity plans.
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 cutting-edge education and a tremendous provider of qualified employees but also as a hub for cutting-edge research. As the Kansas beef industry looks to the future, the role of K-State as the knowledge base for the industry will be critical.
Global Consumer Demand	In 2016, exports of beef and veal products were $782 million and exports of hides and skins were $193 million, according to the U.S. Department of Agriculture. Through October 2017, the U.S. Meat Export Federation estimates that exports have added nearly $280 per head in value. Beef produced from cattle raised, fed and processed in Kansas will be critical in meeting the rapidly growing demand from the growing global middle class.

Factor	Implications for Growth and Development Opportunities
Human Capital	Kansas is not only one of the top beef producing states in the United States, it is also home to world renowned leaders throughout each step in the production chain. There is a wealth of knowledge driving the continual improvement in the beef cattle industry, including research 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 — resource management and utilization, reproduction and genetic improvements and technologies, feed efficiency, cattle health management, animal husbandry, economics and marketing, and more — it will be critical to work alongside these well-recognized industry leaders. Today's consumers are increasingly interested in knowing how and where their food is grown, raised and processed. Throughout each chain of the beef industry, private operations have opened their doors to welcome consumers and influencers for learning opportunities. In addition, established programs, like the Beef Checkoff Program's Masters of Beef Advocacy and beef operation tours for influencers and reporters, have provided training opportunities to help "tell our story." These initiatives together have helped the Kansas beef industry become a recognized and trusted source of high-integrity, wholesome producers of high-quality beef products, and they will be increasingly important as domestic and international consumers continue to seek more information about their food choices.
Policy Environment	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. 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. 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. 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. With appointments to federal agencies still being confirmed, there is an opportunity to engage with federal leaders as well to ensure they fully understand the implications of policy proposals on Kansas agriculture.

Factor	Implications for Growth and Development Opportunities
Supporting Institutional Infrastructure	Kansas has a solid foundation throughout the entire beef production community. With cow-calf production and stocker operations, a robust feeding sector, and a strong beef processing presence, Kansas has a well-established beef production network that results in efficiency benefits to all steps in the production chain. 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, 2017, Kansas has 2.3 million cattle on feed. As one of the top grain producing states (including corn, beans, milo, wheat and barley), the Kansas beef cattle industry benefits from having a readily available supply of feed. There are also abundant supplies of roughages, including silage, alfalfa and other hays. In order to sustain and grow the cattle industry, especially the cattle feeding sector, maintaining the abundant feed supply is critical. Kansas is also among the top states for beef processing, with three of the four major beef processors operating in Kansas. Kansas is recognized as one of the best exercised states in foreign animal disease. The construction of the National Bio and Agro-Defense Facility and the existing Biosecurity Research Institute enhance the research capabilities for animal health and biosecurity for the state, U.S. and global beef cattle community. 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.
Verification/ Certification Programs and Quality Assurance	Beef producers have shown a strong willingness to participate in voluntary certification or verification programs, including the Beef Quality Assurance program, Age and Source Verification, and multiple third-party programs. In addition to providing education and training on animal handling, management and production practices, some of these programs can result in earning a premium at the marketplace while also potentially providing information 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. 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 certification/verification programs to meet specific consumer demands for increased transparency as well as packer and retailer demand for specific traits and qualities.

Factor	Implications for Growth and Development Opportunities
Weather and Natural Resources	The semi-arid climate is Kansas is suitable for cattle production year-round. 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. 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. 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 *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.

SUCCESS STORIES

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

- Kansas is among the top three states in the nation in the number of cattle in feedyards and on ranches and in red meat production.
- More than 90 percent of fed cattle in Kansas are handled by Beef Quality Assurance certified handlers.
- Kansas cattlemen have and continue to be elected by peers to serve in leadership roles within national organizations, including the National Cattlemen's Beef Association and the U.S. Meat Export Federation.
- As Governor Sam Brownback has led efforts to extend and conserve the usable life of the Ogallala Aquifer, Kansas feedyards and dairies have completed or are working toward establishing Water Conservation Areas in support of water conservation in Kansas.
- Changes in the tax code (see above) in 2014, including the Livestock Facility Sales Tax Exemption, make it easier for industry to utilize.
- Exports add more than $270 per head in value through September 2017.
- In partnership with K-State Research and Extension, KDA jointly leads the Sunflower Supreme Heifer Program to provide southeast Kansas cattlemen with reproductive and genetic improvement tools to enhance the quality of their cattle.
- KDA, in coordination with industry and academic partners, continues putting a strong focus on continuous improvement of emergency preparedness efforts throughout the state in order to be the best prepared state in the nation when it comes to foreign animal disease preparedness through leadership within the development and implementation of the Secure Beef Supply plan, coordinating with industry to assist feedlots in updating and adopting biosecurity plans, hosting annual multi-day functional FAD exercises and more.

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	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.
Critical Infrastructure	As beef packers and processers 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. 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. One of the key comparative advantages the Kansas beef industry has benefited from for generations is access to land for grazing and feeding cattle. With high land prices in recent years and an increase of urban and suburban absentee landlords, it is becoming an increasing challenge to find land necessary for cow-calf and stocker operations to expand in the future. 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. 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.
Generation Transfer	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.

Challenge	Details of Challenge
Industry Capacity and Competition	Historically and even still today, Kansas, Nebraska and Texas have been the top three beef producing states nationwide. In recent years, there has been more growth in areas more closely located to ample feed supplies, including Nebraska, South Dakota and Iowa. Industry growth and expansion in other states may present a challenge for growth in Kansas. Kansas beef producers, much like producers across the nation, have been in expansion mode in the past two years. From Jan. 1, 2016, through Jan. 1, 2017, the total number of cattle and calves on ranches increased by 2 percent. Even more telling, the calf crop in Kansas was up by 11 percent in 2016, and the number of females retained increased from 290,000 in 2016 to 310,000 in 2017. As these animals grow, it will be important for each segment of the industry to determine if it is at the maximum capacity.
Industry Fragmentation	Unlike the vertically integrated pork and poultry industries, the U.S. beef industry remains composed of multiple independent segments working together to comprise the beef production chain. This independent organization of the industry can be a challenge when producers within the sectors fail to recognize the importance of working cooperatively with each segment up and down the production chain.
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.
International Trade	A key area for growth will result from increasing global demand for beef. Kansas has the opportunity to not only increase exports of beef but also of live cattle to countries wanting to expand their own domestic herd. Since implementation, NAFTA has given duty free access for U.S. beef into Canada and Mexico. As NAFTA is renegotiated, maintaining this market access is critical for the U.S. beef industry. Further, choosing not to take part in the Trans-Pacific Partnership made it even more critical for the U.S. to proactively negotiate trade opportunities to increase market access into the Asia Pacific region, especially to Japan. With the opening of the China market, there is tremendous potential for Kansas beef, but requirements related to traceability continue to present a challenge.
Market Volatility	Market volatility in the beef marketplace continues to be a challenge for all segments of the beef industry.

Challenge	Details of Challenge
Policy	Kansas is one of fewer than ten states in the nation that has laws restricting corporations from engaging in farming and ranching. The Kansas law has been amended throughout the past to provide 18 specific exemptions from the law, but the law still restricts who can do business in Kansas. This unfair restriction has resulted in potential agricultural operations choosing to relocate, grow or expand in states other than Kansas. 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. While the 90-day waiver on the use of Electronic Logging Devices (ELDs), established in late November 2017, provided short-term relief to this onerous regulatory hurdle, confusion related to the agricultural exemption on hours of service must be resolved. 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. Research by K-State suggests many land managers in the Flint Hills need to increase burning frequency to more than once every three years in order to prevent the landscape from being taken over by invasive plant species. Kansas has worked with industry stakeholders, local government and environmental partners to develop and implement the Flint Hills Smoke Management Plan to address concerns raised by downwind communities regarding air quality during the annual burning season. Despite this plan, there is concern that the federal government may propose regulations that may result in challenges to the ability of Flint Hills ranchers to burn rangeland. 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. In addition, as the Farm Bill is debated and crafted in 2018, there is a need to address challenges with the disaster program identified as a result of the wildfires in 2017. 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.

Challenge	Details of Challenge
Talent Development and Quality of Life	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 agricultural 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 mixed or large animal practice in rural Kansas presents a challenge throughout the production community. 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. 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.
Traceability	The lack of traceability system inhibits export growth potential and could potentially create animal health threats.
Water and Natural Resources	Critical to growing any livestock operation is access to an abundant and reliable water supply. This can prove challenging in many areas of western Kansas that are closed to new water appropriations. New or expanding beef operations in these regions will have to purchase land with sufficient water rights. Also related to water are challenges with the amount of time it can take for approval of certain Kansas Department of Health and Environment permits, which delays beef industry operations from expanding in a timely manner.

Beef Industry 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, 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 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:

- Host ADT forum in Kansas and submit comments to USDA regarding future of ADT system and how it should work to complement a voluntary individual animal traceability system.
- Partner with Kansas State University in development of a platform to trace beef from farm to final end user to provide transparency and trace specific attributes of the production cycle.
- Coordinate meeting between industry groups to develop individual animal traceability framework to pilot in Kansas that minimizes costs to producers and protects the confidentiality of individual animal owner records.
- Work with producers, economists and software developers to design a traceability pilot program to capture data and add value by enhancing market access, meeting international trade demands, incentivizing technology adoption, and providing critical animal health and disease control protections.
- Collaborate with industry and university experts in development of economic analysis to showcase the potential benefits and costs for an enhanced traceability system.
- Explore opportunities to limit animal owners' liability exposure that may result from an individual animal identification or disease traceability system.

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

- Conduct survey to document industry challenges and needs for an adequate legal workforce.
- Compile resources to aid employers to work within current federal immigration system.
- Compile educational resources about the importance of migrant labor to Kansas economy.
- Compile list of immigration reform bills introduced in Congress and monitor legislation for any movement. Provide written testimony if hearings are held about reform priorities to Kansas agriculture.
- Work with industry and the Kansas congressional delegation to develop an immigration workforce program to be piloted in Kansas.
- Work with industry partners to draft a workable solution to address migrant workforce challenges in the beef industry.
- Collaborate with other major agricultural states to understand what works and what doesn't with regard to federal immigration laws. Develop platform to address needs.
- Encourage changes to federal immigration programs, including the H-2A program, that provide flexibility for the employer with regard to housing, transportation and time commitment requirements while also reducing financial burdens associated with the program and other regulatory barriers.

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.

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

ACTION ITEMS:

- Coordinate with agricultural industry organizations to continue social and traditional media outreach about beef production, 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:

- Understand federal and state rules regarding CDLs and form a coalition to consider an in-state option for lowering the age requirements if federal rules stand in the way.
- Evaluate ways in which permitting can be simplified for farm vehicles.
- Create list of military discharge placement services in Kansas and connect Kansas truck driving schools to placement services. Encourage industry partners to direct trucking partners to the military placement service for potential drivers.

Kansas established as a top choice for high-quality cattle for export opportunities, especially as countries around the world work to rebuild domestic cattle herds after drought and other losses.
ACTION ITEMS:

- Support bilateral and multilateral trade pacts that expand export potential for beef and beef products.
- Conduct thorough review of countries that currently import beef, beef products, live cattle and cattle genetics. Identify those that have already done business with Kansas and those that have not. Develop list of potential new customers based on that review.
- 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.
- Explore enhancing FMD and MAP funding at USDA.
- 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.
- Create list of import requirements in potential new markets.

Rural broadband access throughout Kansas.
ACTION ITEMS:

- Identify areas in Kansas without broadband access.
- Support continuation of USDA Rural Development Telecom and Rural Utility Service grant, loan and loan guarantee programs in the 2018 Farm Bill.
- Understand challenges related to FCC Universal Service Fund and support necessary reforms to encourage increased broadband service in rural areas.
- Understand current availability of telecommunications training courses or certifications available in Kansas and encourage additional training programs at technical schools in the state.
- Encourage public-private partnerships to incentivize rural broadband development.
- Identify success stories with broadband access and re-investment in rural communities.
- Identify technology deserts to prioritize broadband accessibility.

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 state of Nebraska to protect the ability to conduct prescribed burns in Kansas.
- Assist landowners to prepare land management plans.
- Encourage university research related to alternative burning strategies, integrated approaches to invasive control, and multi-species grazing.
- Encourage voluntary incentives/assistance for producers to try new range management strategies.
- Encourage practices that improve soil health.
- Create awareness to address at scales larger than the individual landowner.
- Develop wildfire resources for livestock/rural landowners.
- Assist volunteer fire departments with training and recruitment to handle ag fires.
- Increase education and outreach about prescribed burns and provide opportunities to see fire and what happens when prescribed burns are not conducted (burned and unburned demonstration sites).

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.

Desired Outcome: 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.

Medium Priority Outcomes

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.

State tax policies 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 threatens Kansas' pro-growth business environment.

Industry-led assessment of current fed cattle marketing and risk management methods that will explore alternative and innovative tools to improve the effectiveness of the tools and maintain the ability of producers to market cattle as they see fit.
ACTION ITEMS:

- Industry-led subgroup will conduct an assessment that will explore alternative and innovative tools to improve the effectiveness of the tools and maintain the ability of producers to market cattle as they see fit.
- Encourage more producer education opportunities related to risk management methods and cattle marketing.

Cooperation and information sharing among the different sectors in the beef production community that creates opportunity to foster trust, speak with one voice and add value throughout the production chain.
ACTION ITEMS:

- Facilitate interaction among producers in different segments of the beef production chain.
- Identify priorities within individual sectors of the beef production chain and identify opportunities where multiple sectors can work together.
- Explore opportunities to incentivize sharing of data from packer to feeder to stocker to cow-calf to seedstock.
- Explore opportunities to coordinate with K-State to improve communication linkage between practitioners and producers throughout Kansas.

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

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

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.**
ACTION ITEMS:

- Establish new benefits for the *From the Land of Kansas* program for beef producers.
- Increase marketing opportunities for companies through program promotional venues.
- Establish networking opportunities among companies.
- Develop informational materials to assist producers who want to direct market their beef products.
- Establish guidelines for direct marketing beef products and assist producers in developing a marketing plan for their products.

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.
- Encourage 0% loan program for infrastructure expansion.

Expanded Sunflower Supreme Replacement Heifer program designed to help add value to the Kansas beef industry by providing producers who want to improve their management techniques and marketability of heifers with research-based best management protocols.

ACTION ITEMS:

- Explore feasibility of transitioning Sunflower Supreme oversight to K-State Research and Extension beef extension specialist and identify regional KSRE leaders for sites throughout the state to better position the program for statewide growth.
- Enroll heifers in the southeast Kansas program for the fourth sale in that region.
- Conduct outreach and education about the benefits of the program with producers in central Kansas.
- Enroll heifers in central Kansas region and host sale in second location in spring 2018.
- Explore opportunities for easier access to genetic testing at the commercial female level.
- Develop education and outreach materials highlighting the value-added opportunities from participating in the Sunflower Supreme Program through the adoption of best management practices, marketing opportunities and more.

Partnerships to place military veterans in positions of employment on cow-calf and stocker operations.

ACTION ITEMS:

- Identify potential veteran farmers and their regional location preferences and identify farmers looking for employees. Match veterans to farms.
- Engage with potential mentors of succession possibilities for veterans to experience hands-on learning in exchange for farm labor activities.

Low Priority Outcomes

Expanded value-added beef processing in Kansas and concentrated recruitment in that sector of the industry.

Educational programs related to beef nutrition for pre-health, pre-medicine, nutrition and other human health related fields of study at Regents schools.

Housing development programs to address housing shortages in areas with concentrated beef processing and feeding sectors.

Research and innovation at the retail level in an effort to capitalize on consumer interest in beef products.

Successfully Achieved Outcomes

Consumptive use regulations using simple, science-based methodology when converting from irrigation to stock watering.

This outcome was successfully achieved with the changes to K.A.R. 5-5-9, as published in the September 22, 2017, Kansas Register.

Grow Smarter. Grow Stronger.

Grow Kansas.

CORN

I N D U S T R Y

The Kansas corn industry fills a significant role in the agriculture economy, and corn is the largest crop grown in Kansas, both in bushels produced and in economic contribution. The corn sector supplies grain and silage to the cattle sector as well as supplying feedstock for ethanol and, thus, ethanol 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 major livestock producer, Kansas is a major customer for corn as a feed source, especially within the beef production chain. Continued advancement in bioscience is creating more potential for corn to contribute to additional products and bring additional manufacturing options to the state.

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

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

STATUS

The corn sector of the Kansas agriculture economy includes the production of corn and the first purchaser uses of that corn such as livestock feeders, ethanol plants and exporters. Kansas corn production was 699 million bushels in 2015 that contributed to a total economic output for the corn sector of $3.75 billion and 13,538 jobs. The corn sector of the Kansas agriculture economy is built on supplying grain and silage to the cattle feeding sector as well as serving as feedstock for Kansas ethanol plants, and 82 million bushels were exported from Kansas in 2015. 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 $2.3 billion and creates 4,705 jobs in the state. Through indirect and induced impacts, the industry supports a total of 14,303 jobs and provides a total economic contribution of $3.96 billion. The ethanol industry, a primary supporter of the corn industry in Kansas, provides an added 1,890 in total jobs, as well as a total economic contribution of over $1 billion.

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

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

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

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

OPPORTUNITIES

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

Factor	Implications for Growth and Development Opportunities
Alternative Uses and Bioscience Business Development	Corn is used in the production of a wide variety of products from those that are very familiar such as livestock feed, ethanol, high fructose corn syrup and food products such as corn flakes and tortilla chips to less known products like resins, plastics and pharmaceuticals. With continued advancements in bioscience, corn has the potential to contribute to even more products and Kansas can be home to the next major efforts in manufacturing operations and cutting-edge product developments. The state of Kansas offers a variety of incentive programs for qualified companies involved in many local economic development programs throughout the state. These incentives, which may be subject to approval by the Kansas Department of Commerce, range from specific tax exemptions and credits, workforce assistance, and more.
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 corn, thereby increasing its economic impact and the number of acres used for corn production.
Ethanol	Expansion of ethanol capacity will create additional demand for Kansas corn in addition to the economic impact in rural Kansas of more capital investment and job creation. Making sure corn ethanol is strongly included in the Renewable Fuel Standard and initiatives such as Prime the Pump and the U.S. Department of Agriculture's biofuel availability grant will build demand for ethanol by increasing consumer access to E15 and E85.
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. The amount of resources invested in corn research is extraordinary and has led to great advancements in corn yield. Continuing to push yields up and expanding the growing conditions in which those increased yields can be achieved is a big opportunity for the sector. Specializing corn genes and hybrids for end uses would allow greater efficiency for end users and potentially increase demand for corn. For example, certain varieties are better suited to silage production than others. Would the market support varieties suited for specific livestock such as beef, swine or poultry? Could specific varieties increase yield in ethanol plants?

Factor	Implications for Growth and Development Opportunities
Irrigation Technology	Some of the highest corn yields in Kansas are achieved under irrigation. As available groundwater for irrigation is reduced it is important to find ways of achieving the same economic return with less water. Being more efficient with irrigation system in terms of water use will help reduce water use and potentially pumping costs while maintaining good yields.
Land Availability	Kansas has the second most farm land of any state, roughly 90 percent devoted to agriculture.
Leadership	Kansas is home to strong leadership in the corn sector, creating additional investment opportunities.
Livestock Feeding	Kansas is a top 3 state in cattle production, top 10 in hogs, a fast-growing dairy sector and 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. 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.
Policy Environment	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. 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. Support for policies removing barriers for ethanol competition with petroleum and higher inclusion of ethanol in regular gasoline blends is a priority.
Supporting Institutional Infrastructure	Kansas has a solid foundation throughout the entire corn production community. With cow-calf production and stocker operations throughout eastern and central Kansas and a robust feeding sector throughout central and western Kansas, and a strong beef processing presence, Kansas has a well-established beef production network that results in efficiency benefits to all steps in the production chain and strong demand for corn. Hogs provide a smaller but important level of demand and the growing poultry industry will provide more demand. There are 12 dry mill ethanol plants currently in operation in Kansas, creating a market for approximately 183 million bushels of corn and sorghum. Kansas is also home to more than 1 billion bushels of commercial grain storage capacity to accommodate the Kansas corn crop.

SUCCESS STORIES

Key successes in the industry include:

- An irrigation efficiency study that looks at combining the principles of center pivot irrigation with drip irrigation to reduce the amount of irrigation water required with a typical center pivot system.
- A biofuels infrastructure grant to Kansas for $1.3 million that is being used to improve consumer access to E15 by partnering with gas stations across the state to install pumps that can supply E15.
- The intermodal facility is taking advantage of the significantly reduced freight cost of shipping containers returning to China and other Asian markets by shipping distiller's grains from Kansas into those markets in containers.
- Innovation to produce diesel from corn oil.
- The Kansas Legislature, along with Governor Sam Brownback, approved a special permit for non-divisible loads of up to 90,000 pounds gross vehicle weight on non-interstate roads if the vehicle has six or more axles.

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	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. A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers. 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.
Demand	Need to better understand the dynamics of corn demand in Kansas particularly in the cattle feeding sector. Does Kansas have the capacity to meet all the needs for grain, silage, high moisture corn, DDGS? If not and production was increased does that prevent the need for other states' product?
Industry Competition	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.

Challenge	Details of Challenge
Industry Opponents	There are increasing attacks on the use of genetic technology in corn production and a great debate on whether that corn is suitable for use in food both in the United States and around the world. Another debate centers on whether corn should be used for fuel, ethanol in particular, as opposed to food and feed. This debate intensifies in times of high corn prices such as those seen in recent years. There is also a negative perception of corn syrup in foods from some consumer groups and debate about whether high fructose corn syrup (sugar) affects humans differently than sugar extracted from sugar cane.
International Trade	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. 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. 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.

Challenge	Details of Challenge
Policy	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. 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. 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. Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including Waters of the US, the Endangered Species Act, burdensome OSHA regulations and more. The focus on atrazine by the EPA is also concerning. 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. 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. 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.
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.

Corn Industry 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, 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 corn sector desired outcomes.

High Priority Outcomes

50% of Kansas fuel stations with readily available E15 by 2020. Utilizing the U.S. Department of Agriculture Biofuels Infrastructure 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.
- 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 using E15 (e.g., What vehicles can use it? Where can you get it?).
- Encourage petroleum marketers to use E15 availability as a customer draw.
- Adjust the Reid Vapor Pressure standards so that retailers can comply when selling E15 year-round.
- Continue working with USDA and Prime The Pump programs for additional funding to make necessary conversions at retail locations.
- Work with wholesale terminals to offer E15 rather than all the blending being done at the station.

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:

- Emphasize DDGS during inbound and outbound state trade missions.
- Educate on the international level to encourage continued adoption of DDGS as a feed ingredient.
- Develop a plan for targeting those countries around the world with growth potential in the use of DDGS in feed rations.
- Help with new technology adoption for DDGS-based products.
- Align DDGS educational and promotional efforts with U.S. Grains Council and U.S. Livestock Genetics Export country markets to go to market together.
- Support feeding trials across commodities.

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

- Partner in executing the beef growth strategy.
- Partner in executing the dairy growth strategy.
- Partner in executing the pork growth strategy.
- Partner in executing the poultry growth strategy.
- Support livestock sector sales into international markets.
- Support growth and use commodity associations to pave the way with local governments and decision makers prior to business contact.

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.
- Renew efforts focused on getting grains in pet food.
- Recruit industrial chemical production such as biobutenols.
- Increase grain-based pet food production in Kansas.
- Recruit more distilleries.

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:

- Make this part of the Kansas Corn Commission education effort.
- 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.
- Use the Center for Food Integrity to help determine a percentage of consumer acceptance.
- 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.

Medium Priority Outcomes

Nationwide reputation as the home of renewable diesel. Kansas is home to the only renewable diesel plant attached to an ethanol plant in the country.
ACTION ITEMS:

- Develop promotional materials highlighting Kansas as the home of renewable diesel.
- Highlight renewable diesel as part of Kansas Ag Month festivities.
- Educate consumers about the product, where to get it and why they should purchase it.
- Educate on the difference between biodiesel and renewable diesel.

State-sponsored economic development incentives which meet the needs of value-added corn enterprises.
ACTION ITEMS:

- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.
- Develop an "ag-friendly county" designation.

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 irrigation efficiency technologies.
- 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, K-State, 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 in order 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.
- Use public money to support the *Vision for the Future of Water Supply in Kansas.*
- Restore water plan funding for educational projects.
- Have locally led conservation districts be at the forefront of soil/water 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:

- 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.

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

Low Priority Outcomes

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

Successfully Achieved Outcomes

Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of corn and reduce environmental impact.

This outcome was achieved with the passage of House Bill 2095, allowing the transport of up to 90,000 pounds for motor carriers with six axles transporting agricultural products, effective July 1, 2017.

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COTTON INDUSTRY

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

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

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

STATUS

Kansas ranks 17th nationwide in production of cotton, producing less than 1 percent of the nation's cash receipt value of the crop. Although a relatively small percentage of the national total, production and ginning in the state has 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 $10.3 million. Through indirect and induced impacts, the industry creates a total economic contribution of approximately $16.8 million.

Cotton production and ginning in Kansas has exceeded 1.1 million bales since 1996. Significant infrastructure investments, exceeding $44 million, have been made in Kansas cotton including the establishment of four gins located in Moscow, Pratt, Anthony and Wellington, a 100,000-bale warehouse in Liberal, and more than 80 strippers and other harvest-related equipment. More than $4.2 million in cash investments have been made in the Plains Cotton Cooperative Association. The number of acres planted has increased from 16,000 acres in 2015 to 56,000 acres in 2017, a 250 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	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. 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.

Factor	Implications for Growth and Development Opportunities
Water	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. 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 *Vision for the Future of Water Supply in Kansas*, which aligns the priority of growing the economy with the strategies and actions necessary to ensure a reliable water supply is available to support that growth. Several action items within the Vision call for opportunities to address the policy and research challenges associated with increasing cotton acres in Kansas.

SUCCESS STORIES

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

- Several action items supporting cotton were included in the Kansas Water Vision.
- The state currently maintains four cotton gins and a cotton warehouse facility.
- Kansas cotton growers are represented in leadership roles on national and regional advocacy organizations.
- Kansas has established partnerships with leaders in Texas and other high-acreage cotton states.

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	Cotton is considered one of the most susceptible agricultural crops to 2,4-D. In 2013, an estimated $6.1 million of cotton crop loss in Kansas could be attributed to the drift of 2,4-D. Damage was observed in every cotton field in Seward, Stevens, Grant, Haskell, Meade and Gray counties. 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. 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.

Challenge	Details of Challenge
Chlorpyrifos	In fall 2015, the Environmental Protection Agency issued a proposal to revoke all tolerances for chlorpyrifos. Chlorpyrifos is used on cotton to control aphids and similar pests. It is one of the few remaining crop protection products that provides a broad spectrum of control for multiple insect pests. Without control of these pests, farmers can sustain yield loss and quality loss. Cotton industry groups have requested that the EPA consider all submitted studies and reverse its final decisions.
Critical Infrastructure	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. 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.
International Trade	According to the 2015 edition of Cotton Counts Its Trade, the top five export customers of raw cotton fiber are China, Turkey, Vietnam, Mexico and Indonesia. Of those, Indonesia and Vietnam have seen an increase in imported cotton while cotton imports to China have decreased. Export potential exists for any country experiencing growth in its GDP.
Policy	The 2004 World Trade Organization settlement case regarding the Brazil–United States cotton dispute on the issue of unfair subsidies on cotton found that the U.S. support for its cotton industry was inconsistent with its obligations under the Subsidies and Countervailing Measures (SCM) Agreement. The settlement continues to impact cotton's status in the Agricultural Act of 2014 (Farm Bill). Cotton is not a covered commodity under the Farm Bill so it lacks the Price Loss Protection or Agricultural Risk Coverage afforded to other commodities such as corn, soybeans and wheat. Cotton growers have to rely on insurance products (Stacked Income Protection [STAX] Program) in the absence of other Farm Bill support mechanisms. While restoring cotton as a Title I commodity under the next Farm Bill is a more long-term resolution to this issue, designating cotton in the "other oilseed" category offers an alternative for improved coverage under existing commodity programs.
Water	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.
Workforce Development	Workforce development issues impacting the cotton industry in Kansas relate to affordable and qualified custom harvesting.

Cotton Industry 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 policy issues that limit the growth of cotton in Kansas.
- Strengthen the use of DriftWatch™ by growers of sensitive crops and pesticide applicators.
- Evaluate profitability, prices and water use of cotton.

Adequate access to supplies of shorter season EnlistDuo Phytogen cottonseed for Kansas growers.

ACTION ITEMS:

- Communicate with Dow portfolio marketing leader of cottonseed the need for sufficient supplies of shorter season
- Enlist Duo Phytogen cottonseed for Kansas growers.
- Annually track availability and grower demand to ensure maintenance of sufficient supplies.
- Continue to communicate with seed companies the demand for sufficient supplies of shorter season varieties for Kansas growers.

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.

Inclusion of cotton as a Title I Commodity in the Farm Bill allowing for improved insurance coverage. The outcome of a 2004 World Trade Organization settlement case impacted cotton's status under the Farm Bill; as a result, cotton is not a covered commodity and lacks coverage afforded to other commodities.

ACTION ITEMS:

- 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 Farm Bill roundtable discussions.
- Coordinate with other states, building a coalition of support for inclusion of cotton as a Title I Commodity.
- Communicate desired outcome and issue with congressional delegation and U.S. Secretary of Agriculture.
- Coordinate with National Cotton Council in communicating Kansas cotton growers desire to include cotton as a Title I Commodity in the next Farm Bill.
- Coordinate with federal delegation and national groups to advocate for the Farm Bill inclusion.
- Evaluate building upon the way cotton coverage was addressed in the Senate Ag Appropriations bill as a possible long-term solution.

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 the Kansas Department of Agriculture 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.

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 during the 2018 Legislative Session on the topic of key ag transportation projects for the next highway plan.

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

ACTION ITEMS:

- 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.
- Site a K-State Research and Extension Specialist in southwest Kansas with cotton expertise to connect research to in-field management strategies.
- 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, both through the university and non-university researchers.

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.

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.

Desired Outcome: 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 later winter/early spring 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 & encourage enrollment in DriftWatch.
- Plan for communication and outreach for the change in enrollment process.
- Enroll all Kansas cotton acres in DriftWatch™ program.
- Communicate and outreach the change in enrollment process 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.

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, including John Deere, to increase production and availability of cotton harvesting equipment.
- Increase media promotion of Kansas cotton (e.g., Check the Label, Kansas Cotton).

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DAIRY

I N D U S T R Y

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

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

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

STATUS

Kansas is the 16th-ranked dairy state for milk production and is home to 152,000 dairy cows on 300 dairy farms. Approximately 80-85 percent of the milk produced in the state is produced in western Kansas on 29 large farms that originated since 1994. Milk processing capacity has grown in the state since 2012 with the addition of processing facilities in Rexford, Garden City and Hugoton. There are also milk plants of recognizable size in Hutchinson and Wichita. Currently, 75 percent of milk in Kansas is exported for processing; however, with the addition of a milk powder plant in Garden City which was completed in 2017, an estimated 75 percent of milk produced in Kansas is now processed within the state's borders.

The Kansas dairy industry is one of the fastest growing dairy states in terms of rate of milk production growth. Kansas has established itself as a prime location in the U.S. for dairies with its abundant land, feed supply, ideal climate, proactive water policies and positive business environment. Kansas has consistently ranked as one of the fastest growing dairy states. Milk production in Kansas has doubled since 1994 and is now a one billion dollar industry.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the Kansas dairy industry had a direct output of almost $744 million and a total economic contribution of approximately $1.33 billion. The industry creates 1667 jobs directly, and with indirect and induced impacts the total number of jobs grows to 4826.

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

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	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. 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.
Water	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 *Vision for the Future of Water Supply in Kansas*, 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. 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.

SUCCESS STORIES

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

- Addition of three milk processing facilities since 2011
- Consistent annual increase in milk production since 1994
- Recent tax structure enhancements, including:
  - Income tax exemption on pass-through business income
  - Reinstatement of producers' ability to offset capital gains from the sale of breeding livestock, including cull cows, with schedule C, E, and F ordinary income losses
  - Sales tax exemption on the construction, reconstruction and remodeling of livestock facilities for projects greater than $50,000
- In 2012, a dairy in northwest Kansas constructed a new milk condensing facility to add value to their milk for a direct marketing partnership with an international company. The farm now condenses the milk from their four farms to approximately 30% of original volume and ships it to processing facilities in Texas in a cost-plus model. This improves economic viability of the farm through more stable milk prices. Additionally, it enhances environmental sustainability through the recapture of water in a dry climate and reducing the number of trucks on the road.

- Dairies continue to utilize water numerous times resulting in great water conservation and long-term industry viability.
  - In 2015, a dairy in southwest Kansas became the first dairy in the state to implement a Water Conservation Area (WCA) management plan — a voluntary tool used to reduce water use in exchange for flexible water right management — at one of their three locations. Following the adoption of the consent agreement for this WCA, the dairy plans to implement WCAs at their other facilities.
  - Development of additional milk processing in western Kansas includes removing water from the milk for other use in the immediate area versus export of water in milk.

CHALLENGES

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

Challenge	Details of Challenge
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.
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.

Challenge	Details of Challenge
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.

Dairy Industry 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, 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 dairy sector desired outcomes.

High Priority Outcomes

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.

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.

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.
- Execute a Governor's dairy recruitment mission to California, targeting key dairy prospects, that will help close a deal or open a door to new prospects.
- Continue exploring and promoting technology adoption such as robotic milking.
- Develop case studies to prove and promote new methods.
- Compare and contrast increased production with the humane treatment of animals.

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.

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 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.
- Review salary structure for engineer positions to encourage increased interest and applications for vacant positions.

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.
- Identify Kansas Board of Regents institutions, industry and others who have the capacity and resources to provide training in specified subject areas. Private and public education providers have been identified and have begun the process of implementation.
- Develop training programs to match the needs of the industry and execute according to demand and frequency required by industry employers. Private and public education providers have implemented training programs to match skills needed.

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 the new transload facilities being developed in Kansas.
- Assist in developing future options and collaborations that will allow for increased development around the transload facilities.

Medium Priority Outcomes

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.
- Work with existing organizations with 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

Continued development of new milk processing facilities in Kansas through capital investments.

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

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

Membership in the United States Dairy Export Council.

Successfully Achieved Outcomes

Consumptive use regulations using simple, science-based methodology when converting from irrigation to stockwatering or any other beneficial use.

This outcome was successfully achieved with the changes to K.A.R. 5-5-9, as published in the September 22, 2017, Kansas Register.

Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of fluid mile and reduce environment impact.

This outcome was achieved with the passage of House Bill 2095, allowing the transport of up to 90,000 pounds for motor carriers with six axles transporting agricultural products, effective July 1, 2017.

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EQUINE

I N D U S T R Y

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 horses, it is important to understand the areas where Kansas has a comparative advantage and the best opportunities for growth or expansion.

Factor	Implications for Growth and Development Opportunities
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.
Feed Supply and Land Availability	Kansas is home to abundant feedstock supplies, including high quality hay demanded by many horse owners. 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.
Human Capital	The Kansas State University department of animal sciences and industry houses respected faculty with expertise in equine nutrition and reproduction.
Supporting Infrastructure	Kansas boasts many stables, arenas, horse breeders, farriers, veterinarians, trainers and other professionals available to offer services to horse owners.
Facilities	The American Royal Complex will offer Kansas the opportunity to attract and host world-class equine events and has a nearby airport that could potentially facilitate shipment of horses from overseas.

SUCCESS STORIES

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

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

CHALLENGES

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

Challenge	Details of Challenge
Capital	Equine facilities such as arenas and stables can become expensive, making it difficult for undercapitalized entrepreneurs to start up.
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.
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 will not have Kansas-specific information, but information from the study could 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.
Extension Personnel	Currently, no university staff hold extension appointments in the equine industry, limiting the dissemination of information related to horse nutrition, reproduction and health.

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 22 percent, which is higher than standalone casinos. As such, race tracks are not a viable business in their current state. This has led to horse breeders exiting the state, and reduced economic activity from horse breeding and racing.
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.
Insurance	Despite the availability of commercial insurance for equine-related business, premiums are often cost prohibitive.
Trail Maintenance	There is a Corps of Engineers funding shortfall for trail maintenance.
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.

Equine Industry 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, 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 equine sector desired outcomes.

High Priority Outcomes

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:

- Fund the American Horse Council study that would investigate the Kansas equine industry, through KHC funds or alternate funding sources.
- Incorporate information into agriculture resources highlighting the impact of the equine industry in Kansas.
- Identify additional potential funding sources, possibly including grants, racing organizations, Kansas Horse Council, breed associations, KLA, Kansas Farm Bureau, KDA and other state agencies.

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:

- Continue efforts to achieve successful relocation of the American Royal complex to Kansas.
- Evaluating existing facilities and identify needs for further improvement.
- 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.

Statewide equine extension specialist position for enhanced education and outreach.
ACTION ITEMS:

- Hold input sessions with Kansas horse industry stakeholders to determine desire and specific interests for a statewide equine extension specialist.
- Consider establishing an equine industry checkoff program to aid in funding an extension position.
- Establish a statewide equine extension specialist position.

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

Medium Priority Outcomes

Restoration of federal appropriation funding for inspection of horse slaughter facilities.
ACTION ITEMS:

- Work with congressional delegation to restore federal appropriations.

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.

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

- Investigate where air cargo flights come from into the Kansas City airport.
- Check APHIS website for livestock import facility requirements.
- Write a report to share with Edgemoor Infrastructure regarding requirements for air transportation of horses.

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

- Investigate the possibility of an adopt-a-trail program for equine trail maintenance.
- 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.

FEED and FORAGE

I N D U S T R Y

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

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

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

STATUS

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

Key Kansas forage production statistics include:

- 1st in sorghum silage production: 35.3 percent of U.S. total
- 3rd in all hay production: 6.24 million tons — 4.2 percent of U.S. total
- 6th in feeds and fodder export: $545.2 million
- 2016 corn silage production: 2.93 million tons — 2.3 percent of U.S. total
- 2016 sorghum silage production: 1.47 million tons — 35.3 percent of U.S. total

The top 5 import countries for U.S. hay account for 96 percent of total U.S. export volume. Japan is the major importer of U.S. hay, followed by China, Korea, UAE and Taiwan. China leads imports in terms of U.S. alfalfa hay.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the forage industry in Kansas has a direct output of approximately $863.8 million and creates 10,247 jobs in the state. Through indirect and induced impacts, the industry supports a total of 14,093 jobs and creates a total economic contribution of nearly $1.45 billion.

OPPORTUNITIES

In order to develop a strategic growth plan for the feed and forage industry, it is important to understand the areas where Kansas has a comparative advantage and the best opportunities for growth or expansion.

Factor	Implications for Growth and Development Opportunities
Ethanol	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. 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.
Export Infrastructure	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. Before hay is exported, it is generally sliced and recompressed or pelleted. This offers freight advantages as it maximizes space on railcars and trucks.
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.

Factor	Implications for Growth and Development Opportunities
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	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. Advancements in forage sorghum silage have greatly increased yields while maintaining water use efficiencies. 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).
Policy Environment	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. 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. 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. The noxious weed policy in Kansas is reasonable and less restrictive than surrounding states.

Factor	Implications for Growth and Development Opportunities
Research and Education	Kansas State University departments of agronomy and animal science hold significant expertise in forage production and livestock utilization of feeds and forages in both traditional and alternative feed and forage crops. In fact, the departments are jointly investigating the development of alternative forages, such as teff, that can be commercialized for dry climates in areas like western Kansas. The K-State grain science department is the only of its kind in the world, and has a world renowned feed science and management degree program, along with associated expertise and research areas. 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.
Supporting Institutional Infrastructure	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. There are 12 dry mill ethanol plants currently in operation in Kansas, creating a market for approximately 183 million bushels of corn and sorghum. Kansas is also home to more than 1 billion bushels of commercial grain storage capacity to accommodate the Kansas grain crops. Major hay conditioning and silage harvesting equipment manufacturers are located in Kansas.

SUCCESS STORIES

Key successes in the industry:

- An irrigation efficiency study that looked at combining the principles of center pivot irrigation with drip irrigation showed that new technology can reduce the amount of irrigation water required with a typical center pivot system.
- The intermodal facility in Edgerton is taking advantage of the significantly reduced freight cost of shipping containers returning to China and other Asian markets by shipping distiller's grains from Kansas into those markets in containers.

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	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. A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers. 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. 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. Forage and feed testing facilities in Kansas are antiquated. Producers heavily rely on this information when selling their feed and forage.
Industry Opponents	There are increasing attacks on the use of genetic technology in feed and forage production and a great debate on whether the products are suitable for use in food both in the United States and around the world. Another debate centers on whether corn should be used for fuel, ethanol in particular, as opposed to food and feed. This debate intensifies in times of high corn prices such as those seen in recent years. Recently, a major dairy company has announced that all of its milk products will be produced without GMO feed for the cows, which does affect the method and manner in which feed is produced for approximately 8,000 Kansas dairy cows. There is a need to develop the next generation of industry spokespersons.
International Trade	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. 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. Access to international markets for feed and forage products are key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access.

Challenge	Details of Challenge
Policy	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. 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. 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. 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. 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. 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. 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. 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.
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.

Feed and 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, 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 feed and forage sector desired outcomes.

High Priority Outcomes

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 of projects related to water conservation, quantity, 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.

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

ACTION ITEMS:

- Coordinate meeting with KLA, KFB, and Kansas staff from USDA and FSA to discuss opportunities for allowing limited haying, grazing and vegetative management on acres enrolled in federal cost-share conservation programs.
- Meet with U.S. Secretary of Agriculture and federal program leads to express desired outcome; evaluate programmatic alternatives that may be available prior to Farm Bill development.
- Jointly express roundtable discussion with Congressional delegation for consideration in next Farm Bill.
- 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.
- Identify specific changes to the CRP program that can be effectively targeted and implemented in a proactive and scientific-based approach.

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. Encourage funding initiatives that address needs of forage, alfalfa and pasture applications.
- 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 the utilization of public/private partnerships to increase grant funding opportunities and conduct a thorough review of all funding mechanisms.
- Encourage research projects that are conducted on-farm 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.

Effective and easily accessible education programs designed for feed mills to comply with the Veterinary Feed Directive regulations.

ACTION ITEMS:

- Industry outreach on a community level to make sure farmers, ranchers, feed mills and veterinarians understand the impact to them.
- Form a collaborative group of subject matter experts including KDA dairy and feed safety program, KDA Division of Animal Health, and K-State's Beef Cattle Institute to work on industry outreach and compliance education.
- Provide video questions and answers from the experts for the producer perspective, the veterinary perspective and the feed mill operative perspective and put videos online.
- Create promotional materials to advertise the educational materials available to understand the impact of VFD.
- Get KDA dairy and feed safety program inspectors trained on VFD compliance and enforcement.
- Provide training opportunities for impacted industry in partnership with Missouri Department of Agriculture.
- Provide training opportunities for impacted industry in partnership with IGP Institute.
- Explore public/private partnerships of training programs for feed manufacturing and industry, in addition to the VFD directive. This could include the coordination of OSHA, FMSA, EPA quality, or additional training programs in a manner consistent with VFD.
- Develop stronger relationships with feed companies and veterinarians to educate producers on the regulations and rules for VFD.

Inclusion of forages in the crop insurance program in the next Farm Bill. Forages currently lack coverage afforded to other commodities.
ACTION ITEMS:

- Invite forage representation to participate in the 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.

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 & 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.

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

- Identify export markets with the greatest potential. Conduct thorough review of countries that currently import feed and forages.
- Identify those countries that have already done business with Kansas and those that have not. Develop list of potential new customers based on that review.
- Work with organizations such as U.S. Grains Council to host buyer teams in Kansas.
- Support bilateral and multilateral trade pacts that expand export potential for feed and forage products.
- Develop information regarding distiller's dried grain export marketing, including countries of interest, barriers, and trends.
- Increase ethanol production through support of the Renewable Fuel Standard at the federal level with congressional delegation and EPA regulators.
- Integration of KDA, IGP Institute and other Kansas trade delegations to decrease costs and duplicative efforts.

Growth of the beef, dairy, pork, poultry and equine sectors in Kansas through industry participation in each sector's growth strategy. Kansas livestock industries are the largest market outlet for feed and forage products.
ACTION ITEMS:

- Partner in executing beef growth strategy.
- Partner in executing pork growth strategy.
- Partner in poultry growth strategy.
- Partner in equine growth strategy.
- Support work in other sectors that increases demand for products.
- Encourage work with the beef, pork, poultry and equine sectors to determine what value could be added to feed and forage products to assist them in increasing their supply, decreasing cost, or increasing their customer value.

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.

Medium Priority Outcomes

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.

Over-height exemptions for forage haulers to maximize efficiency and reduce environmental impact, with specific routes evaluated if statewide coverage cannot be achieved.
ACTION ITEMS:

- Evaluate current restrictions (through Kansas Department of Transportation) to increase load heights.
- Develop over-height routes throughout the state.
- Create an over-height permit for hay bales on approved routes.

Outcome Successfully Achieved

Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of feed products and reduce environmental impact.

This outcome was achieved with the passage of House Bill 2095, allowing the transport of up to 90,000 pounds for motor carriers with six axles transporting agricultural products, effective July 1, 2017.

FOOD PROCESSING

I N D U S T R Y

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 over $20.2 billion and creates 30,876 jobs in the state. Through indirect and induced impacts, the industry supports a total of 130,521 jobs and creates a total economic contribution of approximately $39.2 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 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 and plenty of rail access across the state along with a state-of-the-art intermodal facility are key to a strong export infrastructure along with a central location in the United States.
From the Land of Kansas	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 374 member companies, an online marketplace and a great brand, being part of *From the Land of Kansas* could be an asset for any food processor.

Factor	Implications for Growth and Development Opportunities
Policy Environment	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. 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.
Supporting Institutional Infrastructure	Kansas State University and KDA house expertise to guide food processors looking to get started or expand in Kansas. They can help businesses be successful in the regulatory environment as well as offer some unique start-up and marketing assistance. The Kansas value-added lab offers expertise on preparation and storage for processed foods. 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.

SUCCESS STORIES

Develop bulleted list of key successes in the industry:

- A processing company in Lyon County brings partially processed meat in from other locations and does further processing at the Kansas location before shipping it out.
- A national company has a bratwurst and sausage patty plant in Holton that makes and distributes product for the whole western half of the United States based on the strategic location.
- There were 51,470 meat animals processed in local meat processing facilities in 2016.
- A national confectionery company chose Topeka as the best location for a new manufacturing facility.
- A regional meat processing company is expanding in Emporia.
- A food processing company in Scott City is on the cutting edge of sorghum processing for food.
- There are 167 processor/manufacturer members in *From the Land of Kansas*.

CHALLENGES

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

Challenge	Details of Challenge
Consumer Demand	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.

Challenge	Details of Challenge
Critical Infrastructure	Transportation infrastructure is critical for food processing. Access to processing facilities with roads that can handle tractor trailers and access to rail for receiving raw commodities is important. Processors rely heavily on the freight network to move their products to those areas of higher population primarily in states around the exterior of the country. Refrigerated shipping capabilities are also a key component in which Kansas has room to grow. 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. 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.
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 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. *From the Land of Kansas* has a role to play in building the international brand recognition for Kansas.
Meat Inspector Access	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. 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.
Policy	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. 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. 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.

Challenge	Details of Challenge
Water	Water efficiency and conservation is important in all business sectors.
Workforce Development	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. 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. There is a shortage of housing options in rural communities. 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.

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, 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 food processing sector desired outcomes.

High Priority Outcomes

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 or industry associations.
- 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. Requests from the Summit for partnering with IGP or K-State Global Campus for distance delivery including online modules that would be accessible anytime at your own pace.
- 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.

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.
- Improving 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.

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.
- Get feedback from industry and incentive experts and make necessary changes.
- 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.

Medium Priority Outcomes

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

- 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.

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

- Educate secondary agriculture education students on the opportunities available in the food processing industry.
- Increase communications 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 single list of all agricultural-related jobs/internships.
- Create listing of companies who 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.

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:

- Determine if other states are interested in a joint effort to change interstate meat shipment rules.
- Work collaboratively with those states that are interested.
- Work with the congressional delegation to allow "equal to" state programs to do interstate meat shipment.
- Allow state-inspected product to be shipped over state lines.
- 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.
- Work with USDA to get the state inspection recognized across state borders instead of requiring two inspections.
- Create easy-to-understand one-pager explaining differences between state and federal laws.

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:

- 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 Department of 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.

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.

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.

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 the agribusiness technology and entrepreneurship district legislation.

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.

Mobile processing capabilities available to small processors with necessary food safety guidelines.

ACTION ITEMS:

- Create a licensing guide on mobile beef, pork, sheep and goat processing units.
- Create a licensing guide on mobile poultry processing units.
- Create a licensing guide on mobile wild game processing units.
- Create a licensing guide on mobile commercial kitchen units.
- Establish food safety guidelines for mobile units.

Increased number of commercial kitchen locations available for use across the state for local food processing.

ACTION ITEMS

- Create a list of kitchens in all areas of the state that are or could be used in an incubator or leased commercial capacity.
- Gauge capacity for increased use at existing incubator kitchens.
- Determine need for quantity and location of commercial kitchens.
- Connect with commercial kitchen capacity in gap areas that could be leased to food entrepreneurs for use as needed.
- Seek grant funding and community partners in areas where there are gaps that can't be filled with existing capacity, and establish kitchens in those gap areas.
- License incubator kitchens for this specific use.

Research to develop methods for phosphorus elimination in waste water.

Evaluation of cold storage needs for processors to identify potential for building a new facility.

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PET FOOD

I N D U S T R Y

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 a significant portion of the total Kansas exports were animal and pet food exports. Proximity to pet food ingredients which are grown or produced in Kansas are a significant advantage for this region. Pet owners are a growing segment of the population, and the purchasing power in this demographic opens up great potential for this industry.

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

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

STATUS

With the growing trend of pet ownership, the pet food industry, which includes dog and cat food along with food for birds, fish, reptiles, hamsters and other pets, is poised for additional growth. This business growth can develop into a larger market of value-added products from the resources available in Kansas. Two of the top five pet food companies own manufacturing operations in the state. According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the animal food industry in Kansas has a total direct output of approximately $5.08 billion and creates 3,546 jobs. The industry supports a total of 18,749 jobs and provides a total economic contribution of over $8.37 billion. The dog and cat food manufacturing industry alone employs 2,158 with a direct output of over $3.01 billion. The dog and cat food manufacturing industry supports 11,015 employees through indirect and induced impacts and creates a total economic contribution of approximately $4.98 billion.

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

According to the Euromonitor International data available at the end of 2016, global dog and cat food sales alone amounted to about $80.2 billion. In Kansas, animal and pet food exports were at 4.2 percent of total pet food production which equates to $206.9 million and ranks this category 4th in state exports.

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

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

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

OPPORTUNITIES

In order to develop a strategic growth plan for the pet food industry, it is important to understand the areas where Kansas has a comparative advantage and the best opportunities for growth or expansion.

Factor	Implications for Growth and Development Opportunities
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.
Export Infrastructure	Maintaining and improving export infrastructure will help ensure demand for Kansas pet food products around the world. Good roads for trucks and plenty of rail access across the state along with a state-of-the-art intermodal facility are key to a strong export infrastructure along with a central location in the United States.

Factor	Implications for Growth and Development Opportunities
Ingredient Sources	Pet food uses sorghum, animal renderings, other grains or grain by-products grown or produced in Kansas. Meat is the number one ingredient in premium dog and cat food. Manufacturers note the importance of processing facilities located near the ingredient supply. As Kansas grows animal agriculture, opportunities to support this market with by-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	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. 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.
Regulatory Compliance	With the innovations at Kansas State University in pet food safety, Kansas is a leader in regulatory compliance and providing a safe, wholesome product. Many existing pet food manufacturing facilities will be unable to comply with the Food Safety Modernization Act's changes to manufacturing regulations in the next 3-5 years. There is a huge opportunity to attract replacement capacity to Kansas. Some estimates suggest the opportunity of 15 additional plants in Kansas in the next 5-8 years. The Kansas Department of Agriculture received Federal State Marketing Improvement Program grant funds to develop FSMA training modules for Kansas pet food industry licensees. The online teaching modules and compliance education initiative will be complete in 2018.
Supporting Institutional Infrastructure	K-State and KDA house expertise to guide processors looking to get started or expand in Kansas. They can help businesses be successful in the regulatory environment as well as offer some unique start-up and marketing assistance. Having both grain processing and large animal expertise at K-State is an important part of being the pet food capital.

SUCCESS STORIES

- K-State Pet Food Program Strategy Planning group gathered representatives from the industry, K-State, KDA and economic development and decided to host the Pet Food Experience workshop in Manhattan again since the first one was well attended.
- The Petfood Forum relocated to Kansas City from Chicago; the relocation was received with enthusiasm and the event will be held in Kansas City for the next four years. In 2018, KDA along with Kansas commodity partners will jointly host a Kansas grains trade show booth highlighting corn, sorghum, soybean and wheat to pet food forum attendees.
- 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. The KDA also secured a STEP grant to return to the trade show again in 2018.
- 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.
- The KDA ag marketing division secured a STEP grant to include a trade mission to Petfood Forum–China. The department took three Kansas pet food industry companies to the forum in August 2017.
- Together with Food Export Association of the Midwest, the KDA ag marketing division is bringing a pet food ingredient buyer mission to Kansas City in April 2018. Five overseas buyers will be sponsored as part of the mission.
- 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.

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	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. A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers. Communities need to clean up houses and/or neighborhoods which are in poor condition and explore some spec home construction to offer to prospective employees. The state and federal government don't help the issue by subsidizing low-income housing in rural communities.

Challenge	Details of Challenge
Distribution	Pets are where the people are — the largest consumer base is on the coasts and around other major urban centers which also means most of the product has to be shipped long distances if it's made in Kansas. Many small manufacturers of pet food need a warehouse and distribution facility but aren't 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.
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.
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	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. The U.S. has an antiquated view of poultry meal and poultry by-products as the only country in the world with split definitions. Other species don't have split definitions. 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. 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. Corporate farming laws in Kansas make it difficult for poultry production and poultry is a major meat ingredient in pet food.

Challenge	Details of Challenge
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	Pet food manufacturers, similar to other agricultural companies, face challenges finding and hiring qualified candidates. In the pet food industry, it is often more challenging to find employees who are willing to work in manufacturing rather than finding employees with a specific level of education. Hiring and maintaining a work force particularly in the rural communities is a challenge. 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.

Pet Food Industry 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, 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 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.

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 Kansas Department of Agriculture 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).

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 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.

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 BS/MS/PhD level degrees.

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.
- Start in Kansas to lead for the rest of the country. Once formed, this association could coordinate all the outcomes and action items associated with the pet food sector.

Medium Priority Outcomes

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.

Effective and accessible pet food manufacturer training programs on the Food Safety Modernization Act.
ACTION ITEMS:

- Deliver training programs through K-State Research and Extension.
- Break FSMA down into small pieces.
- Promote web-based FSMA training written by K-State extension.
- Combine with other states and national organizations to bring increased training opportunities to Kansas.

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.
- Help farmers connect with pet food manufacturers.

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:

- 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 financers) 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.

Low Priority Outcomes

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

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PORK

I N D U S T R Y

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

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

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

STATUS

Kansas ranks 10th nationwide in hog inventory, producing about 2.7 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 2016, Kansas producers sold 3,345,553 market hogs, feeder pigs and seedstock with a gross market value of $427.5 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, 2017).

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 2017 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 2017 prices, the pork industry spends over $76 million on soybean meal annually (KPA Kansas Pork Industry Facts, 2017).

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the pork industry in Kansas has a direct output of over $433.9 million and creates 2,818 jobs in the state. Through indirect and induced impacts, the industry supports a total of 4,982 jobs and creates a total economic contribution of over $795.4 million.

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

OPPORTUNITIES

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

Factor	Implications for Growth and Development Opportunities
Biosecurity and Foreign Animal Disease Traceability	KDA Division of Animal Health is working with veterinarians and swine industry partners to best develop protocols to address disease concerns. 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.
Contract Production and Nutrient Utilization	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. Some farmers have opted to contract grow hogs which allows them to not only diversify their operation, but it also allows them access to manure to use on their crops. Manure management and the nutrient utilization capacity of crops grown on large Kansas farms fit well into the business model for Kansas farmers.

Factor	Implications for Growth and Development Opportunities
Environment	Although most hog production is indoors, and hogs can adapt to some degree to different thermal environments, there is a cost to production associated with keeping them outside their comfort zones. The semi-arid climate and mild ambient temperatures make Kansas well-suited for hog production. Kansas is taking significant proactive steps to preserve and extend the usable life of water supplies in Kansas. In recent years, voluntary, flexible and producer-driven water conservation tools have been implemented to help farmers and livestock producers manage their water rights while continuing to raise crops and livestock. Kansas has developed a *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. 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.
Human Capital	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.
Industry Value	Kansas currently has value-added processing for pork brought in from processing plants in other states.
Policy Environment	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.
Public Outreach	Kansas Pork Association staff work on marketing and outreach both online via social media platforms and at events around the state.

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	Kansas is recognized as one of the best exercised states in foreign animal disease. The construction of the National Bio and Agro-Defense Facility and the existing Biosecurity Research Institute enhance the research capabilities for animal health and biosecurity for the state, U.S. and global swine industry.

SUCCESS STORIES

- Expansion of a large pork operation in north central Kansas is expanding economic growth of that region.
- 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.

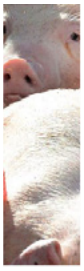
CHALLENGES

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	Premises ID systems are not required in Kansas. Some states are transitioning or have already transitioned to a premises ID system. A system with proper trace back and trace forward capabilities provides timely response to minimize the economic impact in the event of an animal disease outbreak. Indiana is a state model to evaluate if/when premises ID consideration is evaluated in Kansas.
Critical Infrastructure	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. 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.

Challenge	Details of Challenge
Industry Support	At permit hearings, there is a greater voice in opposition of hog farms than in support.
International Trade	A key area for growth will result from increasing global demand for pork. With Kansas' partnerships in U.S. Meat Export Federation and commodity groups, the state can increase global demand for red meat. In 2016, exports added more than $58.61 to the value of each hog marketed. Kansas must work with elected officials to keep export markets open and accessible for producers.
Policy	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. 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. Due to lack of staff, the Kansas Department of Health and Environment permit process can take a long time. Many producers acknowledge the lack of agricultural engineers contributes to the problem.
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	Kansas currently lacks a large-scale processing facility in the state. Although transportation is readily available, transportation costs to processing facilities out of state can become cost prohibitive for producers. Pork is currently imported and processed into value-added products in Kansas.
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.

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



Pork Industry 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, 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 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:

- 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 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 (H-2A, H-2B, family-based immigrant visas, NAFTA Professional [TN] visa, etc.).
- Create specialized programs to meet workforce needs of the Kansas pork industry (e.g., work release program, military service program).

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 im prove 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.
- Recruit a principal engineer to the state.

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

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

Expansion of talent development and educational training opportunities for students preparing for careers in the pork industry. Currently, awareness of careers does not often include those in the support roles — for example, extension and U.S. Department of Agriculture Food Safety and Inspection Service.
ACTION ITEMS:

- Work with the Kansas pork industry to identify and list specific skills and skill sets needed.
- Partner with K-State or USDA Food Safety and Inspection Service to promote pork industry careers in secondary and postsecondary schools.
- Develop promotional materials (KPA) highlighting careers in the pork industry.
- Develop internship programs including a broader breadth and exposure to careers in the pork industry.
- Develop swine industry certifications or degrees for community/technical colleges in southwest and southeast Kansas.
- Educate agricultural education students on the opportunities in the swine industry.

Identify Kansas communities that express acceptance to and interest in understanding the economic benefits of swine facilities and are open to welcoming businesses into their region.
ACTION ITEMS:

- Conduct 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 avail ability, economic development incentives or health and environment statues and regulations.
- Work on all levels — state, regional and local — to be pro-business and open to agriculture development.
- Engage with consumers and influencers about facts and realities of pork industry in order to gain trust and confidence of consumers.

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 or 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.
- Assist in the development of a certified site selection program.

Medium Priority Outcomes

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 high lighting 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 high-technology, 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.

Market- and industry-driven traceability system to provide critical tools to manage a disease outbreak, enhance consumer confidence and trust in Kansas livestock, and protect food safety.
ACTION ITEMS:

- Coordinate meeting between industry groups to develop individual animal traceability framework to pilot in Kansas that minimizes costs to producers and protects the confidentiality of individual animal owner records.

Pre-identified building sites for swine facilities with available natural resources (i.e. 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 Department of Commerce to identify locations in the state to fulfill needs of incoming inquiries.

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

Low Priority Outcomes

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

- Conduct study looking at the demand/consumer willingness to pay for local meat.
- Learn the size/scope of pork processing in Kansas.
- Engage pork producers and those involved in the local food movement—create a focus group seeking feedback regarding niche markets.
- Create a *From the Land of Kansas* branded meat program.

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POULTRY

I N D U S T R Y

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.

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

Along with the numerous advantages Kansas offers the poultry industry, several challenges exist as well, which pose potential barriers to growth. The lack of in-state processing facilities means poultry farms have to ship out of state for processing, which adds expense to the bottom line. Several issues could improve the outlook for poultry production, including some relating to water use, shipping efficiencies and international trade. Because poultry is still a growing sector in Kansas, 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 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 $113.5 million and creates 148 jobs in the state. Through indirect and induced impacts, the industry supports a total of 515 jobs and creates a total economic contribution of almost $201.3 million.

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

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

OPPORTUNITIES

In order to develop a strategic growth plan for the poultry industry it is important to understand the areas where Kansas has a comparative advantage and the best opportunities for growth or expansion.

Factor	Implications for Growth and Development Opportunities
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 poultry community. 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.
Feed Supply and Land Availability	Kansas is home to abundant poultry feedstock supplies including: • Corn and corn derived dried distiller's grain • Sorghum and sorghum derived distiller's dried grains • Soybeans and soybean meal 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.

Factor	Implications for Growth and Development Opportunities
Human Capital	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. 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.
Policy Environment	Kansas tax law allows sales tax exemption on the construction, reconstruction and remodeling of poultry and egg facilities for projects greater than $50,000; and sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion. 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. 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. 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. 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. In partnership with K-State, KDA can provide plan writing and training to poultry processors to meet Hazard Analysis and Critical Control Points (HACCP) standards.
Supporting Infrastructure	The presence of a world-leading poultry genetic company makes for readily available access to the finest egg laying stock in the world. 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.

Factor	Implications for Growth and Development Opportunities
Water	Kansas is also taking significant proactive steps to preserve and extend the usable life of the water supply in Kansas. In recent years, voluntary, flexible and producer-driven water conservation tools have been implemented to help farmers and ranchers manage their water rights while continuing to raise crops or livestock. Additionally, Kansas has developed a *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.

SUCCESS STORIES

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

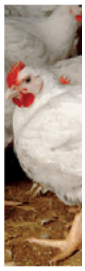
- During the high path avian influenza (HPAI) outbreak in spring 2015, Kansas confirmed itself as one of the leaders in foreign animal disease response through succinct testing and monitoring of affected areas.
- KDA Division of Animal Health staff worked proactively with poultry companies to assist in the development of disease outbreak plans.
- A facility in central Kansas has invested in expanded organic and conventional egg production facilities.
- A genetics company opened their first Kansas farm in 2016. This breeder farm, located in southeast Kansas, houses two pullet rearing and two breeder lay houses.
- The Poultry Federation welcomed Kansas as a new member state in June 2017.

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	A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers. 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. 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.
Industry Perception	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 additional to potential grower education is necessary to further develop the Kansas poultry industry.

Challenge	Details of Challenge
International Trade	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 phy-to-sanitary measures. Resistance to free trade agreements at the federal level can hinder this access.
Lack of Facilities	Kansas lacks in-state poultry processing and value-added facilities. Kansas poultry farms ship broilers and spent hens out of state for processing (Arkansas, Missouri and Mississippi).
Nutrient Management	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.
Policy	Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: Waters of the U.S., National Organic Egg Standards, the Endangered Species Act, international trade and more.
Supporting Organizations	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.
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.
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.



Poultry Industry 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

Clear understanding of opportunity for poultry industry growth in Kansas through completion of a feasibility study.
ACTION ITEMS:

- Author or underwrite a feasibility study to determine poultry growth opportunities (genetics, growers, processing, or value adding) in Kansas and advantages of doing business in the state.
- Create a white sheet addressing Kansas deficiencies and the actions needed to fix them.
- Form a team of industry leaders that is well educated on growth opportunities and advantages of the industry in Kansas .

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

- Hold input session with poultry industry determining interest in research offerings and mentoring offered through extension.
- Evaluate methods for funding additional personnel and determined areas of expertise that could match the needs of the industry.
- Generate a master poultry grower list in an effort to communicate with and organize the Kansas poultry industry.
- Increase the number of Kansas State University graduates hired into employment opportunities within the industry .
- Research on poultry diseases to help producers manage flock health.

Regulations based on sound science and supportive of business success, particularly in regard to organic standards and other laws which directly affect the poultry industry.
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 to federal elected officials.
- Partner with other states to advocate against federal overreach.

Identify Kansas communities that express acceptance to and interest in understanding the economic benefits of the poultry industry and are open to welcoming businesses into their region.
ACTION ITEMS:

- Include a community or regional economic impact section in the poultry feasibility study.
- Work with economic development personnel in various communities to understand data and answer questions regarding poultry and poultry growth opportunities.
- Increase communication about the poultry industry to Kansas communities, and work to dispel misconceptions that give the industry a bad reputation.
- 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 who to integrate and work alongside the poultry industry.

Alternative workforce programs to fill talent and workforce needs of the industry. A successful example is the current Kansas Department of Corrections work release program's support of existing poultry business workforce gaps.
ACTION ITEMS:

- Create a report documenting the programs/sources for hiring new employees and other workforce issues poultry producers face on a daily basis.
- Draft a workable solution document citing state and potential federal workforce programs to be shared industrywide and within communities across the state.

Develop further processing and value-add infrastructure.
ACTION ITEMS:

- Increase the number of poultry processing sites available to Kansas growers.

Successfully Achieved Outcomes

Expansion of The Poultry Federation to include Kansas. Joining a federation would provide opportunities to establish industry contacts, expand business to business networking and increase overall state representation in the poultry industry.

Kansas joined The Poultry Federation in June 2017.

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SORGHUM

I N D U S T R Y

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

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

A long-term growth strategy to expand the impact of sorghum in Kansas will rely on input and discussion among key partners in the industry. A centralized large-scale research center will promote innovations for all segments of the sorghum industry, and additional research partnerships would be key. 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, 7.1 million acres of sorghum were planted in 2014. Of the 21 sorghum-producing states, Kansas ranks first followed by Texas, Colorado, Oklahoma and Nebraska. These states are included in the Sorghum Belt, an area from South Dakota to South Texas that offers a quality dryland growth opportunity.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the sorghum industry in Kansas has a direct output of approximately $681.7 million and creates 1,392 jobs in the state. Through indirect and induced impacts, the industry supports a total of 4,233 jobs and creates a total economic contribution of nearly $1.17 billion.

Sorghum is also gaining popularity in food products in the U.S. because of its gluten-free food and non-GMO properties. Sorghum is a suitable substitute for wheat, rye and barley for those who cannot tolerate gluten. Sorghum 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.
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 Board) levels. One can deduce that Kansas is in a positive situation when considering votes needed to allocate funds for market development, renewable research proposals and crop improvement projects.

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

SUCCESS STORIES

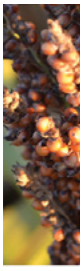
The following are a few notable success stories in the sorghum sector:

- Governor Sam Brownback has supported a funding partnership with K-State and industry to establish a sorghum research hub.
- An industry task force gave KDA two very specific objectives to help work toward: breeding research and limited water situation extension expertise.
- Sorghum has established a vibrant export market into China, mostly for poultry and pork feed.
- Kansas has secured USDA Federal State Marketing Improvement Grant funds to specifically support research of sorghum use in the animal and pet food industry.
- The KDA ag marketing division secured a STEP grant to include a trade mission to Ethiopia in August 2016. The KSU Sorghum and Millet Innovation Lab provided mission support.
- The KDA ag marketing division secured a STEP grant to include 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.

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.
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	China continues to be the number one importer of sorghum grown in the United States. The Chinese government maintains interest in domestic grain supplies by controlling pricing and access to markets. The long-term stability of the Chinese market as an outlet for Kansas sorghum is largely unknown at this time.
Policy	The National Resources Conservation Service 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-grade product development.
Workforce	Lack of skilled agriculture workforce is a top inhibitor of growth and expansion for many Kansas agriculture entities.



Sorghum Industry 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, 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 sorghum sector desired outcomes.

High Priority Outcomes

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.
- Steer significant funding to research of sorghum hybrid, not just toward water.
- Direct research into ethanol and value co-product stream made from sorghum feedstock.
- Consider new technologies like EFARM — Experiment Farm with Advanced Robotic Machinery — to demonstrate modern farming projects and achievements .
- Consider conversion of air to water utilizing wind towers.

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 feeds, pet food, food-grade, value-added and ethanol/DDGS.
- Utilize checkoff dollars to bring companies and assets together to drive more value into the crop as well as develop potential market outlets.

Livestock feed research partnerships with Kansas State University that support the use of sorghum across Kansas agriculture sectors. These research application sectors would focus on beef cattle, dairy cattle, distiller's grains, pet food, poultry and swine.

ACTION ITEMS:

- Partner with 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 maximize 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.
- Develop an education module to teach Kansas farmers and agribusinesses about how other countries receive sorghum export shipments — smaller bags or loads can benefit many receiving counties.

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 K-State.
- Actively participate in CSIP stakeholder meetings and provide input gathered regarding producer/state research and marketing interests in feed, pet food, food-grade, value-added and ethanol/DDGS.

Medium Priority Outcomes

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 be produced through ethanol.

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

- Leverage commodity and organizational membership resources in effort 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. The circle of influence could grow to feature not only livestock feed but also food grade, pet food, value-added, ethanol and DDGS representatives.

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.

Low Priority Outcomes

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

Successfully Achieved Outcomes

Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of sorghum and reduce environmental impact.

This outcome was achieved with the passage of House Bill 2095, allowing the transport of up to 90,000 pounds for motor carriers with six axles transporting agricultural products, effective July 1, 2017.

Grow Smarter. Grow Stronger.

Grow Kansas.

SOYBEANS

AND 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.

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 192.5 million bushels, 5th in sunflower production with over 738,000 hundredweights in 2016. 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 $1.26 billion and creates 1,169 jobs in the state. Through indirect and induced impacts, the industry supports a total of 6,806 jobs and creates a total economic contribution of approximately $2.16 billion.

In this sector of Kansas agriculture the by-products can be just as important as the oil. Soybean meal is a major ingredient in the livestock feeding business, and Kansas has more than 2.2 million cattle on feed, 1.8 million hogs on feed and a growing poultry industry. Canola oil for cooking is by far the largest consumer of Kansas produced canola. Sunflower and canola feed streams are also marketed to specialty markets such as bird seed and food.

Two key challenges for oilseed production in Kansas have been suitability of the growing conditions and adoption by Kansas farmers. Soybeans are widely grown in the United States and are a key part of the crop rotation in the eastern part of Kansas. Soybeans are also highly sensitive to drought and high temperature/low humidity growing conditions that make them less suitable for the central and western parts of Kansas. Sunflowers and canola are grown extensively in the northern plains of the U.S. The industry in that region benefits from well-established infrastructure, such as crop consulting, input suppliers, extension services, storage facilities and processors. The infrastructure to support sunflowers and canola is more limited in Kansas. 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 its economic impact and the number of farmers interested in growing these crops. Kansas is home to leaders in the agricultural technology industry, further developing technology solutions to improve the efficiency of oilseed production.
Domestic Consumption	A strong consumer base for canola oil already exists in the U.S. Nearly 80% of all canola utilized in the U.S. is imported from Canada. Great demand exists for U.S.-grown product in this sector.

Factor	Implications for Growth and Development Opportunities
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. Building relationships with trade partners such as Mexico will increase the demand for Kansas-grown soybeans.
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	Kansas is home to strong leadership in the oilseed industry, creating additional investment opportunities. The Kansas State University Department of Agronomy is a recognized leader in oilseed production and breeding. 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.
Land Availability	Kansas has the second most farm land of any state, roughly 90 percent devoted to agriculture.
Livestock Feeding	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. Canola by-products are a desirable feed stream for the dairy industry.
Processing	Additional processing such as crush plants, soy milk and other processing/packaging facilities will increase demand and improve local prices. A facility in Goodland crushes virtually all canola produced in Kansas.
Supporting Infrastructure	Kansas is home to some of the world's leading crop genetic companies and research facilities, which could lead to the production of seed suitable to the Kansas climate. Existing intermodal, transload, rail and shipping container facilities provide a solid export infrastructure for oilseeds and value-added products with additional improvements planned.

SUCCESS STORIES

Key successes in the industry:

- In 2017 Cargill announced plans to build a state-of-the-art biodiesel plant in Wichita. The $90 million investment will produce 60 million gallons of biodiesel annually when it opens in January of 2019.

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	A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers. 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. A lack of processing plants in western Kansas adversely impacts soybean and sunflower local prices, increasing the relative profitability of corn. 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 can make the transportation system more reliable and cost-effective.
International Trade	Access to international markets for oilseed products is key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access
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.

Soybean 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, 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 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:

- Market Kansas-produced oilseeds to buyers around the world.
- 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-add 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.
- Host at least two inbound trade missions per year, bringing potential new international customers to Kansas to show case the oilseed industry.
- Increase direct rail to Mexico.
- Encourage funding of MAP program.

Faster regulatory approvals for inputs imperative to oilseed production.

ACTION ITEMS:

- Engage with EPA and relevant federal agencies on issues important to the oilseed sector.
- Support Senator Pat Roberts' stance on the requirement of cost/benefit analysis for regulatory approvals.
- Encourage science-based regulations.

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 canola research.
- Promote the economics of canola production.
- Identify public/private partnerships to fund research.
- Increase biodiesel research.

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

- Include GMO information in the Soybean Commission 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-aged consumers.
- Improve communication of benefits (environmental, economic, etc.).
- Utilize social media to communication 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 an "ag friendly communities" designation.
- 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.

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.
- Partner in executing the dairy growth strategy.
- Partner in executing the pork growth strategy.
- Partner in executing the poultry growth strategy.

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. Engage USDA-RMA on expanding double crop insurance after wheat and canola insurance to additional counties.
ACTION ITEMS:

- Engage USDA-RMA on expanding double crop insurance after wheat to additional counties.
- Promotion of 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.

Successfully Achieved Outcomes

Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of oilseeds and reduce environmental impact.

This outcome was achieved with the passage of House Bill 2095, allowing the transport of up to 90,000 pounds for motor carriers with six axles transporting agricultural products, effective July 1, 2017.

SPECIALTY CROP

I N D U S T R Y

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

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

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

STATUS

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

The U. S. Department of Agriculture defines specialty crops as tree nuts, dried fruits, horticulture and nursery crops (including floriculture). As reported by the USDA National Agricultural Statistics Service in 2015, Kansas harvested 3,600 acres of summer potatoes and 7,800 acres of dry, edible beans. Kansas is ranked 4th in the country in summer potato production. No other specialty crops meet minimal quantities for ranking.

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

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

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

OPPORTUNITIES

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

Factor	Implications for Growth and Development Opportunities
Industry Association	The Kansas Vegetable Growers Association is the organized industry association for producers. This group partners with bordering states Iowa, Missouri and Nebraska to organize the Great Plains Growers Conference for educational purposes. At this time there is no known industry association for large-scale specialty crop producers in the state. Subcultures that currently exist are farmers' markets, local level farm and food councils, the Local Food and Farm Task Force, and seasonal high tunnel EQIP (Environmental Quality Incentives Programs) locations across the state.

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 will aid 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.

CHALLENGES

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

Challenge	Details of Challenge
Available Resources	There is limited land-grant university knowledge and research. Although many specialty crop extension resources are located in the eastern part of the state, the need exists for public education on specialty crop production in the central and western parts of Kansas, due to the lack of extension personnel and educational programming in these regions. Seward County Community College is in the process of growing the college's sustainable agriculture resources program, which includes specialty crop education. Additionally, Cloud County Community College will add the institution's first commercial horticulture class in fall 2016.
Critical Infrastructure	There is a lack of published information regarding specialty crop transport across the state. Some of our known "bulk" growers or aggregation points are shipping commodities out of the state.
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 belong to any organized specialty crop association. Thus advocacy, education and marketing of this sector attracts very limited attention. Additionally, overall attitudes within the agriculture industry may be divided with some believing a growth in the specialty crop industry may have a negative effect on traditionally grown row crop acreage.
Water	Some crops — like sweet corn — could be considered water intensive. Others — like sweet potatoes — require very little water to grow. Additionally, understanding how much water a crop takes depends on how many growing rotations are harvested on an annual basis.
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.

Specialty Crop Industry 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, 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 specialty crop sector desired outcomes.

High Priority Outcomes

Increased revenue for education, promotion, and outreach at the state and local level. (Analysis of possible specialty crop checkoff programs as a source of revenue for the education, promotion and research of industry sectors.)
ACTION ITEMS:

- Thoroughly research all currently existing national specialty crop checkoff programs and their mechanisms for participation, funding, etc.
- Identify Kansas specialty crop industries that would be best suited for participation in national checkoff programs.
- Conduct research to determine whether a state specialty crop checkoff could be beneficial to producers.
- Target FFA and young agriculturists to research and write a checkoff program, if identified as a beneficial strategy to the industry .
- Include honey in the identification of Kansas specialty crop industries that would be best suited for participation in a national checkoff program.

Completion of a survey process by K-State Research and Extension and the Kansas Department of Agriculture in order to provide broad baseline knowledge of the specialty crop industry, including the scope and needs of producers and the specific crops that are grown and harvested.
ACTION ITEMS:

- Work to develop a survey instrument that is reflective of the data that is necessary to collect.
- Publicize and collect survey responses from the specialty crop industry at large.
- Develop explanatory materials documenting the responses obtained and distribute to industry partners, stakeholders and the general public.
- Hold a meeting to review results of the specialty crop survey with stakeholders.

Comprehensive specialty crop marketing initiative designed 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.
- Encourage producer participation in trade organizations like the Kansas Vegetable Growers Association and industry events like the Great Plains Growers Conference. This should be a cohesive effort of different agencies.
- Develop inventory lists promoting specialty crop industry and marketing outlets across the state. Examples could be harvesting equipment partnerships, registered farmers' markets, produce auctions, buyer networks, or direct to retailer relationships.
- Educate and promote Kansans and beginning specialty farmers by demonstrating specialty crop successes and economic viability of this farming option.
- Encourage producer participation in trade organizations and industry events as a cohesive effort of different agencies working together.
- Explore the opportunity to increase or develop signage and marketing materials that prominently display where specialty crops can be found in retail outlets.

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

- Work with Kansas specialty crop producers to ensure that their temporary, seasonal, and alternative workforce needs are met.
- Evaluate the needs of the industry in relation to general workforce needs of the state.
- 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.

Educational programs that teach Kansas communities about current specialty crop practices and industry growth opportunities for the purpose of business development and economic growth.
ACTION ITEMS:

- Conduct an economic impact study for the Kansas specialty crop industry.
- Work with local-level extension specialists and economic development representatives teaching about specialty crop benefits and growth opportunities for Kansans.
- 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.
- Provide education on the growth, processing, and manufacturing of hemp.
- Use existing food councils and community events and partnerships to offer educational programs and develop curriculum.

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

ACTION ITEMS:

- Add K-State Research and Extension specialists with an emphasis on specialty crop and horticulture production.
- Increase specialty crop and horticulture research, including research plot placement throughout the state.
- Implement a plan to place or allow travel for horticulture agents or specialists to share expertise across the state, including non-traditional growing areas such as southwest Kansas.
- Identify and utilize other specialists in Kansas such as current specialty crop producers as part-time extension personnel or trainers to full-time personnel for this sector.
- Develop a plan with industry to help fund additional extension specialists, such as check-off dollars or a penny per production acre program.

Statewide specialty crop marketing campaign to educate consumers and encourage support for Kansas specialty crop producers and service providers.

ACTION ITEMS:

- Establish a statewide specialty crop consumer marketing campaign designed to raise awareness about crops grown and harvested in Kansas and highlight marketing/purchasing opportunities for specialty crops with consumers
- Include 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.
- Develop a marketing plan aimed at attracting producers in conjunction with informing consumers to create the proper supply/demand ratio for early success.

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:

- Survey current Kansas food processing license holders and inventory types of specialty crops purchased and processed (including volume, Tier 2 marketing).
- Seek input from specialty crop brokers regarding opportunities and challenges for sourcing crops from Kansas to fulfill Tier 2 purchasing needs.
- Once supply and demand are identified, focus on gaps and purposely share needs with Kansas communities and producers interested in starting new or growing existing specialty crop operations.
- Research options for funding of aggregation and distribution facilities regionally.
- Provide education for extending season and production through processing options available.

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 in order to increase knowledge regarding food hubs and their methodology.

Gathering of knowledge pertaining to the growth and needs of the horticulture industry in Kansas, as provided by a comprehensive survey championed by KDA, Kansas Forest Service, Kansas State University Department of Horticulture & Natural Resources, and other industry partners.

ACTION ITEMS:

- Determine the best method for conducting a survey and develop an instrument that is reflective of the current membership and breadth of the horticulture industry.
- Publicize and collect survey responses from the horticulture industry at large.
- Develop explanatory materials documenting the responses obtained and distribute to industry partners, stakeholders, and the general public.
- Lead an effort to educate, license, and inform DriftWatch and all stakeholders so specialty crop farms can tolerate spraying.
- Identify agencies and stakeholder groups which can help fund the survey of the horticulture industry.

A vibrant Kansas Vegetable Growers Association providing industry support and connections to its members.

ACTION ITEMS:

- Provide administrative assistance to the organization as needed to update website, marketing materials, and/or member communications.
- Provide meeting room resources as needed for member gatherings.
- Assist with member and potential new member communications encouraging inclusion in Kansas specialty crop growth and networking opportunities.
- Research possibility of funding a grower association through checkoff dollars.

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SPECIALTY LIVESTOCK INDUSTRY

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

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

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

STATUS

Kansas is home to many livestock species such as goats, sheep, bison, alpaca, llamas and other specialty livestock. Compared to more traditional livestock production in Kansas, the size of these industries is relatively small. Kansas is ranked 9th and 22nd in the nation in meat goat and sheep production, respectively. Kansas ranks 8th in bison with just over 4 percent of the U.S. bison herd.

According to estimates prepared by the Kansas Department of Agriculture and based on the Implan economic data model, the specialty livestock (bison, sheep and goat) industries in Kansas combine for a direct output of $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.

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

OPPORTUNITIES

In order to develop a strategic growth plan for the specialty livestock industries it is important to understand the areas where Kansas has a comparative advantage and the best opportunities for growth or expansion.

Factor	Implications for Growth and Development Opportunities
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	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. 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.

Factor	Implications for Growth and Development Opportunities
Human Capital	The Kansas State University Department of Animal Sciences and Industry houses respected faculty with expertise in livestock issues as well as faculty within the Cooperative Extension Service with knowledge of some specialty livestock species. This wealth of knowledge in the livestock industry in Kansas drives continual improvement that carries over to the specialty livestock sectors.
Policy Environment	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. Also at the state level, the state of Kansas works closely with the livestock community to ensure that the Kansas livestock industry is protected from overreaching federal regulation. Governor Sam Brownback has been a national leader in speaking out against overregulation related to the Waters of the U.S. and the Endangered Species Act and is a strong proponent of easing transportation restrictions on the agricultural industries. 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. 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. 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.
Supporting Infrastructure	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.
Weather and Natural Resources	The semi-arid climate in Kansas is suitable for livestock production. 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.

SUCCESS STORIES

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

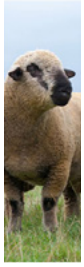
- A buffalo ranch located in eastern Kansas is a breeding stock ranch that also offers meat sales and agritourism opportunities. In recent years their herd has increased from 12 to 75 cows, and offered over 600 ranch tours in 2015.
- A specialty meats processing company founded 30 years ago now employs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

CHALLENGES

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

Challenge	Details of Challenge
Capital	Due to the unfamiliarity of the industry, access to capital can be an issue for both producers and processors.
Critical Infrastructure	A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers. 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. As livestock producers and processors identify when and where to grow their presence, a key factor they will consider are utility rates.
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	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. Other countries have been producing products more cheaply and flooding the U.S. market.

Challenge	Details of Challenge
Lack of Facilities	Kansas could benefit from additional local or regional slaughter facilities.
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	Critical to starting a livestock operation is access to an abundant and reliable water supply. This can prove challenging in many areas of western Kansas that are closed to new water appropriations. New or expanding livestock operations in these regions with stock water use requirements above 15 acre-feet will have to purchase land with sufficient water rights.
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.



Specialty Livestock Industry 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, 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 specialty livestock sector desired outcomes.

High Priority Outcomes

On-farm education for producers to promote the benefits of raising specialty livestock.
ACTION ITEMS:

- Support increased funding to K-State Research and Extension for specialty livestock research and extension specialists.
- On-farm, hands-on field days showcasing production practices and economics of specialty livestock production.
- Secure funding for rangeland management research.
- Develop and disseminate needs assessment for what practitioners need. Then develop programs for producers around those needs.
- Develop industry alliances among specialty livestock producers to strengthen their voices and impact.
- Develop a clearinghouse to focus on generating consumable information that will help grow the industry.

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

- Encourage companies to participate in trade missions and reverse trade missions.
- Work to establish more specialty livestock sales in Kansas.
- Promote health benefits of the product to appropriate audiences.
- Develop specialty livestock association or partner with current associations.

Educational opportunities to promote mobile processing units and inform potential investors so that mobile processing capabilities are available to small processors with necessary food safety guidelines.
ACTION ITEMS:

- Create a licensing guide on mobile beef, pork, sheep and goat processing units.
- Create a licensing guide on mobile wild game processing units.
- Establish food safety guidelines for mobile units.
- Create network to streamline supply and demand.
- Research regulations as well as other states' regulations.
- Develop economic incentives for specialty livestock processors.

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

- Utilize producer groups for potential funding source.
- Utilize district/county extension agents with specialty livestock interests.

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:

- Evaluate all state incentives currently available.
- Meet with industry to learn which incentives work and which need 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 ag.
- Get feedback from industry and incentive experts and make necessary changes.
- Get approval from the Governor's office to move ahead with legislation.
- Draft a bill for consideration from the Kansas Legislature.

Low Priority Outcomes

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.

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

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UNMANNED

AERIAL SYSTEMS (UAS)

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

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

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

STATUS

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

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

OPPORTUNITIES

In order to develop a strategic growth plan for 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	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. 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.
Human Capital	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.
Policy Environment	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. Also at the state level, the state of Kansas works closely with the agricultural industry to ensure its protection from overreaching federal regulation. 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.

Factor	Implications for Growth and Development Opportunities
Supporting Infrastructure	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.
Weather and Natural Resources	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. Agricultural technologies such as UAS can assist in addressing key challenges in other agriculture sectors, such as reducing usage of water, chemicals and fertilizers.

SUCCESS STORIES

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

- In 2012, a technology company formed a partnership with Kansas State University to merge small radio controlled airplanes and near infrared photo image technology to determine crop health. Since that time, the company has become a leader in UAS manufacturing and has dealers across the U.S.
- Kansas State Polytechnic became the first entity in the nation to achieve statewide access during flight operations.
- K-State, the University of Kansas and Wichita State University are three of the twelve members of the FAA Center of Excellence for Unmanned Aircraft Systems.
- The Kansas UAS Summit, held in October 2015, has prompted greater cooperation and organization of the UAS industry within the state.
- In June 2016, the FAA released final regulations on small unmanned aircraft use commercially, creating certainty about future ability to use this technology effectively.
- Kansas participated in the 2017 UAS Summit and Expo in Dallas, Texas, for the first time, working to establish a presence at national UAS events.

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

Challenge	Details of Challenge
Industry Perception	Unmanned aerial vehicles are commonly referred to as "drones." The term drone originated in the military and drones were commonly utilized as a stealth weapon. Now, many citizens view "drones" in a negative viewpoint related to a threat to their ability to maintain privacy and safety.
International Trade	Access to international markets for technology products is a great potential revenue stream. Resistance to free trade agreements at the federal level can hinder this access.
Policy	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.
Research and Information	While there are a lot of useful methods for capturing data related to crop production, there is a dearth of information and algorithms to actually interpret the data in a way that is helpful for a farmer looking to make management decisions.
Small Entrepreneurs	It is difficult for small entrepreneurs to get their products in stores to make them accessible to consumers. Marketing assistance is also difficult. It is difficult to find sufficient scale to make an economic impact on marketing efforts outside of Facebook and social media.
Workforce Development	Currently, there are very few people with a background in UAS technology. This makes the job market incredibly competitive. At the university level, it is hard to keep PhD level faculty because they can be offered such lucrative salaries in the industry. Graduates with technical knowledge in engineering, agriculture, computers and technology will be necessary to fill the workforce needs of the technology industry.

Unmanned Aerial Systems Growth Objective:

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

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, 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 UAS sector desired outcomes.

High Priority Outcomes

Faster download and upload speeds from mobile networks in rural Kansas. This is critical to adoption and implementation of UAS technology on the farm.
ACTION ITEMS:

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

Regulations based on sound science and supportive of business success, particularly in regard to regulations on unmanned aerial vehicles. Restrictive regulations on either the state or local level that are based on fear would limit growth in this industry.
ACTION ITEMS:

- Work to 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 state and local level that may be inhibitory to growth.
- Work with appropriate agencies to ensure current regulations are available to the public and that they are enforced.

Algorithms in use with UAS systems that provide useful recommendations to farmers. With current UAS technology farmers and ranchers are not able to understand the data generated by UAS, nor create solutions and management decisions, such as fertilizer application plans.
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 attend Consortium for Kansas Unmanned Systems event or look at facilitating one-on-one meetings of businesses with similar interests.
- 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 what agricultural degree programs at Kansas State University complement the UAS industry, such as agronomy or biological and agricultural engineering.
- Establish a UAS minor in applicable departments.
- Strengthen the study options of UAS at Kansas State Polytechnic, if needed.
- Promote UAS/precision agriculture as career and academic option to students from K-12 through postsecondary.

Kansas presence at regional and national UAS events in an effort to attract unmanned aerial vehicle manufacturing to Kansas.
ACTION ITEMS:

- Continue participation at national UAS Summit & Expo; attended for the first time in 2017.
- Continue participation at UAS Cluster Initiative events.
- Continue active participation and leadership at UAS Summit in Kansas.

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.

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.

Research on applications in animal agriculture through collaborations between Kansas State University 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:

- Market the benefits of Kansas' business friendly environment.
- Educate lawmakers on current infrastructure and policies that successfully creates 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.

WHEAT

I N D U S T R Y

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

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

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

STATUS

Kansas has long been known as the Wheat State, and with good reason: Kansas is the nation's leading wheat producer with records of wheat production actually predating statehood. There are indications that wheat was produced in the region as early as 1839. In 2016, 8.5 million acres of wheat were planted and 8.2 million acres were harvested with an average yield of 57 bushels per acre. This accounts for 9.1 percent of the state's total agricultural production and 14.9 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 $1.46 billion and creates 2,979 jobs in the state. Through indirect and induced impacts, the industry supports a total of 9,057 jobs and creates a total economic contribution of approximately $2.51 billion.

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

OPPORTUNITIES

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

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

Factor	Implications for Growth and Development Opportunities
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.
Hard White Wheat	New varieties of hard white wheat are being released and offer an opportunity to expand Kansas' production diversity in the state.
Leadership	Kansas is home to world-renowned leaders in the wheat industry, including leaders at the Kansas State University Department of Agronomy, the Wheat Genetics Resource Center, Kansas Wheat, etc., with many active grower leaders across the state serving or having served nationally.
Policy Environment	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. 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
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.

SUCCESS STORIES

Key successes in this industry:

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

CHALLENGES

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

Challenge	Details of Challenge
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	There is a need for more unit train loading facilities as the cost of freight continues to rise; being able to take advantage of price discounting for the use of unit trains would be advantageous for moving Kansas wheat to end users around the country as well as to ports for export. In order to see significant growth in the hard white wheat sector in Kansas, the ability to segregate wheat types (red versus white) in commercial storage needs to exist and handlers must understand its importance. A great way to add value to Kansas wheat is turning it into Kansas flour. Additional flour milling in Kansas would increase demand as well. Flour mill location is most influenced by the cost of transportation to the customer and the cost of wheat transportation. 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.

Challenge	Details of Challenge
Dietary Trends	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. Standardized marketing claims for advertised characteristics such as gluten-free, natural, organic, local, etc. could help consumers better understand the products they are buying.
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.
Global Opportunities	Maintaining more agronomic traits and building them into varieties that are good for milling and baking will create desire for Kansas wheat around the world, and increased production will make it more widely known and available. 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. 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. 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.
Identity Preservation	Farmers and grain handling firms need the ability to keep classes separate such as hard red winter and hard white, but also keep GMO and non-GMO separate in the future. 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.

Challenge	Details of Challenge
Policy	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. 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. 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. 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.
Water	Wheat farmers rely on ever-depleting sources of groundwater for irrigation.
Workforce Development	Growth in the wheat sector, particularly in seed technology, irrigation research and technology and flour milling, will require a skilled workforce, which continues to be a significant challenge through the entire agricultural industry.
Yield vs. Quality	The balance between yield and quality is an old struggle for wheat breeders insofar as determining how much yield to sacrifice to incorporate good milling and baking quality traits or how much quality to sacrifice in order to boost yield. The marketplace is not currently signaling much value for quality in terms of price.

Wheat Industry 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, 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 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:

- Maintain the state and nationally funded university research commitments.
- Maintain the checkoff funded research commitment.
- Grow the WGRC with the NSF 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.

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:

- Meet regularly to stay connected on regulatory issues.
- Engage with EPA on issues important to the wheat sector.
- Engage Governor, Attorney General and congressional delegation to further the Kansas position as needed.
- Meet with Trump administration EPA leadership.
- 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.

Identity preserved wheat for customers around the world. This can be achieved by capitalizing on the availability of shipping containers to ship identity preserved wheat from the point of filling the container to the point of delivery.
ACTION ITEMS:

- Work toward container facilities in major wheat growing regions.
- Continue Wheat Quality Council work of surveying and reporting wheat conditions.
- Continue Wheat Quality Lab work of testing milling and baking characteristics of Kansas wheat varieties.
- Determine customer needs and develop marketing avenues to deliver to specific markets.

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:

- Partner in executing the food processing growth strategy.
- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.
- Put a flour mill in southwest Kansas that is focused on wheat middling production to supplement feedlots and livestock industries.
- Explore increasing production of certified organic wheat and opportunities to make Kansas a leader in organic wheat.
- Seek opportunities for fractionation of high-value bran components as human/animal feed additives.
- Develop a focused white wheat milling site.

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, 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 norther 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 of succession possibilities for veterans to experience hands-on learning in exchange for farm labor activities.

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

ACTION ITEMS:

- Work with Kansas Legislature to pass the agribusiness technology and entrepreneurship district legislation.
- Work toward an increased amount of on-farm storage.
- Subsidize protein testers for farmers.
- 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.

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

ACTION ITEMS:

- Execute the durum variety development action plan.
- Business recruitment delegation to the pasta manufacturers doing business in the U.S. to begin building interest in Kansas.

Successfully Achieved Outcomes

Increased truck weights on state highways, specifically going to 90,000 pounds on six axles, to maximize efficient movement of wheat and reduce environmental impact.

This outcome was achieved with the passage of House Bill 2095, allowing the transport of up to 90,000 pounds for motor carriers with six axles transporting agricultural products, effective July 1, 2017.

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 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 both 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 2018 Kansas Governor's Summit on Agricultural Growth to be held in Manhattan, Kansas, on August 23, 2018

GROW SMARTER. GROW STRONGER.
GROW KANSAS.

Grow Smarter. Grow Stronger.

Grow Kansas.