



Kansas
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Animal Health

ANIMAL HEALTH

Livestock production is the largest contributor to the agriculture industry in Kansas, representing a wide breadth of farmers, ranchers and agribusinesses. Kansas is a leader in livestock production, largely due to the presence of a large concentration of public and private entities in the animal health and nutrition sectors including research and production of therapeutics, diagnostics, biologics, and nutrition and feed products. Kansas sits within the KC Animal Health Corridor, a region which houses more than 300 animal health companies that account for 56 percent of total worldwide animal health, diagnostics and pet food sales. The presence of strong agriculture educational resources and an expansive transportation network together create a sound foundation for animal health success in Kansas.

Preparing for an animal health emergency situation is a priority in Kansas, and government and private industry have taken multiple steps to make Kansas a recognized leader in foreign animal disease preparedness. Kansas regularly exercises its foreign animal disease response plan and in 2018 created a pilot program, CattleTrace, which is now a standalone organization, U.S. CattleTrace. The goal is to develop a national infrastructure for disease traceability and encourage private industry's use of the infrastructure for individualized management practices. Kansas was the first state in the nation to work with feedlots to implement individual biosecurity plans, and in 2017 the Kansas Secure

Food Supply project was launched by the Kansas Department of Agriculture Division of Animal

Health with a goal of working with Kansas dairy, beef, and pork producers to develop Secure Food Supply Plans. To date, more than 1.554 million head of beef cattle, 210,900 head of dairy cows, and 2.1 million head of pigs have been covered under Secure Food Supply Plans.

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

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

STATUS

Livestock production is the largest contributor to the agriculture industry in Kansas, representing a wide breadth of farmers, ranchers and agribusinesses. Kansas is a leader in livestock production, largely due to the presence of a large concentration of public and private entities in the animal health and nutrition sectors including research and production of therapeutics, diagnostics, biologics, and nutrition and feed products. Kansas is located within the KC Animal Health Corridor, which is home to more than 300 animal health companies that account for 56 percent of total worldwide animal health, diagnostics and pet food sales. According to the Kansas Department of Commerce, the Kansas bioscience industry employs more than 16,000 people across approximately 1,200 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 nearing completion adjacent to K-State's campus in Manhattan and will be fully operational in 2023, will strengthen the nation's ability to conduct research, develop vaccines, diagnose emerging diseases and train veterinarians. The decision to locate NBAF in Kansas is further confirmation that Kansas not only has a strong foundation and presence in the current animal health and bioscience sectors, but that the state's prominence in this critical sector of animal and human health will continue into the future.

The construction of NBAF in Manhattan combined with the existing concentration of animal health entities in the Corridor and the proximity to research farms and livestock at K-State present an opportunity for Kansas to be a leader in the development of animal health products necessary to raise healthy livestock and protect the food supply in the United States and around the globe.

There continues to be a shortage in the number of food veterinarians willing to practice in rural communities. In order to grow and expand animal agriculture in Kansas and across the nation, it is imperative that there is a sufficient number of large- and mixed-practice veterinarians who are willing to serve in rural locations in proximity to industry. According to AVMA in 2018, the most recent year for which statistics are available, about 16 percent of veterinarians practiced on food animals or in mixed-animal practices while two-thirds were practicing exclusively on companion animals. In addition to working with current veterinary students to expose them to careers in food animal practices, there is also a need to review admissions procedures and explore opportunities to conduct outreach with high school students interested in veterinary medicine.

The foundation of a prosperous industry today and into the future is a healthy herd. In Kansas, government and private industry work closely together to advance foreign animal disease preparedness, in an effort to be the best prepared state in the nation with regard to animal health emergencies. In addition to annual, multi-day, fully functional foreign animal disease exercises, Kansas is also a national leader in the implementation of Secure Food Supply Plans on dairy, beef and pork operations across the state. To date, more than 1.554 million head of beef cattle, 210,900 head of dairy cows, and 2.1 million head of pigs have been covered under Secure Food Supply Plans. In January 2020, multiple state cattlemen's organizations from major beef producing regions announced a partnership to form U.S. CattleTrace, a disease traceability initiative. The goal is to develop a national infrastructure for disease traceability and encourage private industry's use of the infrastructure for individualized management practices.

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
<p>Critical Infrastructure</p>	<p>Whether by highway, rail or air, Kansas offers excellent transportation and marketing advantages. Kansas' strategic location, at the convergence of I-35 and I-70, places it at the crossroads of America. Our central location and excellent transportation network with access to interstate rail, trucking and air corridors put businesses within next-day freight service of 70 percent of the United States.</p> <p>Highways Kansas' highway system ranks 3rd in the nation in overall cost-effectiveness and condition, according to the Annual Highway Report by Reason Foundation, and third nationally in total road mileage with more than 140,000 total road and street miles and more than 10,000 highway miles.</p> <p>Rail Service Kansas ranks in the top 10 in the U.S. in railroad mileage with more than 4,800 miles of track.</p> <p>Air Service According to the Kansas Department of Commerce, Kansas has 137 public use airports that offer convenient access to our communities, and direct routes to all national air service hubs. Within Kansas, passenger service is offered at eight commercial airports. Wichita Dwight D. Eisenhower National Airport (ICT) is the only airport that handles substantial freight movements.</p>
<p>Education Resources</p>	<p>The College of Veterinary Medicine at Kansas State University is ranked among the nation's top veterinary medicine schools. In addition, the College of Agriculture's Department of Animal Science and Industry is one of the largest in the country. The department maintains research facilities for beef cattle, dairy cattle, swine, poultry, horses and sheep which are located in close proximity to campus.</p> <p>The University of Kansas offers degrees in bioscience-related fields. Fort Hays State University offers majors in animal science and pre-veterinary medicine. Wichita State University and Emporia State University offer a pre-veterinary medicine degree. In addition, 39 of the state's colleges, community colleges and technical schools offer degree or certificate programs in animal science, agriculture pre-veterinary medicine or a bioscience-related field.</p>

Factor	Implications for Growth and Development Opportunities
<p>Established Animal Health Industry</p>	<p>Kansas is located within the KC Animal Health Corridor, the world’s largest concentration of animal health companies. The combination of private companies, veterinary schools and other animal health related fields of study, research facilities, technical training programs, and transportation capabilities make the Kansas City region an attractive location for animal health businesses — from initial start-ups to relocations or expansions.</p> <p>Discovery of new technologies, including therapeutics, diagnostics, biologics, and nutrition and feed products, requires funding for research and development and more, and is significant to a thriving animal health sector. The Kansas State University Institute for Commercialization (KSU-IC) is dedicated to the start-up and expansion of technology-based, high-growth enterprises and enabling the commercialization of university and underutilized corporate intellectual property.</p> <p>Key communities and regions within the Corridor have also taken proactive steps to recruit and support animal health and high-tech enterprises to the region. Knowledge Based Economic Development is an economic development partnership between K-State, Manhattan Area Chamber of Commerce, North Central Kansas Community Network, KSU-IC, KSU Foundation, KSU Research Foundation and the City of Manhattan that works to recruit and support knowledge-based companies, including animal health and bioscience companies, to the Manhattan region. In addition, the Bioscience & Technology Business Center, a partnership of the City of Lawrence, Douglas County, Kansas Department of Commerce, University of Kansas and the Lawrence Chamber of Commerce, provides support to grow the bioscience and technology industries in northeastern Kansas.</p>

Factor	Implications for Growth and Development Opportunities
<p>Established Research Capabilities</p>	<p>After a three-year selection process, Kansas was selected among 29 applications and 34 potential sites around the United States to be home to NBAF, a biocontainment laboratory facility that will provide state-of-the-art infrastructure for developing vaccines, performing diagnostics, and developing countermeasures against large animal foreign animal diseases and zoonotic diseases. NBAF will include 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 2023.</p> <p>In addition to NBAF, the Biosecurity Research Institute (BRI) is also located on K-State’s campus. The BRI is a BSL-3, ABSL-3 and BSL3-Ag facility. It is also a biocontainment research and education facility that supports “comprehensive farm-to-fork infectious disease research programs that address threats to plant, animal and human health.” The facility includes 113,000 square feet of lab, education and administrative space. This facility provides K-State scientists and their collaborators with a safe and secure location to study high-consequence pathogens affecting plants, animals, and food products, including zoonotic pathogens that infect humans.</p> <p>K-State is also home to the Beef Cattle Institute, the Center for Excellence for Emerging and Zoonotic Animal Diseases, the Center of Excellence for Vector-Borne Diseases, the Center for Epithelial Research, the Arthropod-Borne Animal Diseases Research Unit, the Center for Grain and Animal Health Research, the Center for Outcomes Research and Education, Epidemiology and Population Health, the Institute for Computational Comparative Medicine, the Midwest Institute for Comparative Stem Cell Biology, the Nanotechnology Innovation Center of Kansas State, and the U.S.–China Center for Animal Health.</p> <p>With approximately half of the animal health and bioscience companies in the KC Animal Health Corridor with locations in Kansas, there is also a strong private sector research presence. In addition, private research-based enterprises are located in Kansas that partner with animal health companies to conduct research projects and trials on specific animal health products.</p>
<p>Leader in Livestock Production</p>	<p>The beef cattle sector has been and continues to be the single largest sector in the Kansas agriculture industry, with cattle and calves generating \$8.93 billion in cash receipts in 2019, which account for more than 55 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 6.5 million on Jan. 1, 2021. Kansas is also home to 173,000 dairy cows, and is ranked 10th in the nation in hog and pig inventory, 12th in the nation in meat goat inventory and 23rd in the nation in sheep inventory. Kansas is also home to innovative and high value egg laying and poultry genetic companies.</p> <p>The state is recognized for its strength in meat processing, ranking third nationally in red meat production with production capacity of nearly 6.03 billion pounds annually. There is also a growing presence of dairy processing facilities throughout the state, along with the newest facility in Garden City, Kansas, a new cheese plant will be completed by 2024 in Dodge City.</p>

Factor	Implications for Growth and Development Opportunities
Policy Environment	<p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the animal health industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, and will be supportive of efforts to expand the animal health sector. Close collaboration with USDA on animal health issues, including traceability and foreign animal disease preparedness, also contribute to opportunities to enhance the animal health sector.</p> <p>There also exists a strong commitment among state leaders to support and provide an environment that encourages growth in the animal health sector.</p>
Traceability	<p>In response to calls to action from cattle producers in Kansas, a public-private partnership that includes the Kansas Livestock Association, KDA, K-State and private industry formed in early 2018 to explore opportunities to move the industry forward on the topic of traceability. In June 2018, CattleTrace was launched as a pilot project with a goal of developing and testing a purpose-built infrastructure for disease traceability purposes. The launch of CattleTrace, now U.S. CattleTrace, has established Kansas as a leader on the topic of traceability and provides an opportunity for the Kansas beef industry to be a driver in the development of a disease traceability infrastructure that could be expanded to a national-level system.</p>
Qualified Workforce	<p>The animal health industry is known for creating high-wage, family-sustaining jobs. In 2014, the average annual bioscience wage was \$68,059, compared to \$44,768 as the average Kansas wage. These jobs often require college-level education and, potentially, specific training.</p> <p>In Kansas there are more than 16,000 individuals employed in 1,216 bioscience-related firms.</p>

CHALLENGES

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

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

Challenge	Details of Challenge
<p>Communication and Coordination</p>	<p>There exists significant potential to grow the animal health industry in Kansas, especially around NBAF, but there is a need for more organized communication and coordination among industry, academia and government. Similarly, increased transparency about research at NBAF as well as private companies would contribute to improved animal health as a whole.</p> <p>As communication and coordination among partners in this sector develops, there will be significant need to address concerns related to intellectual property in the research and development of animal health products.</p>
<p>Evolving and Emerging Diseases</p>	<p>Agriculture is a biological production system, and thus, inherently faces challenges related to the evolution and adaptation of organisms, including pathogens and diseases. Identifying and developing vaccinations against and protocols to address new and emerging diseases will continue to be a challenge for the animal health industry.</p> <p>According to the World Health Organization a large percentage of emerging diseases are zoonotic. Currently, there is not a laboratory in the U.S. that can research and work on zoonotic diseases, and also develop vaccines and countermeasures to those zoonotic diseases, which affect livestock.</p>
<p>Growing Global Population</p>	<p>As the global population climbs and is expected to surpass 10 billion within the next 30 years, farmers and ranchers will be faced with the challenge of producing food for nearly 3 billion additional people without using additional land. Further, as incomes increase and the global middle class grows, the demand for animal production will also increase.</p> <p>This presents an enormous challenge to the animal health industry as it will have to develop breeding and genetic improvement technologies, enhanced nutrition and feed products, and pharmaceuticals and vaccines to enable farmers and ranchers to increase production of safe, nutritious protein products.</p>
<p>International Trade</p>	<p>While there are significant opportunities to expand the animal health and bioscience sectors in Kansas and across the United States, there remains increasing competition from around the globe in the research, development and manufacturing of animal health products. In order to remain competitive, there needs to be a strong focus on adequate funding and support for research, a science-based regulatory system, and strong protections for intellectual property, according to Battelle and BIO.</p>

Challenge	Details of Challenge
<p>Policy</p>	<p>Antibiotics are an important tool to prevent, treat and control disease in animals. Multiple federal agencies, including the Centers for Disease Control and Prevention, Food and Drug Administration and USDA along with veterinarians, animal health companies and livestock producers, work together to ensure antibiotics, vaccines and other animal health tools are used safely and judiciously in order to protect human health. Despite efforts to ensure that animal antibiotics do not affect public health, there are some lawmakers and regulators who continue to call for increased scrutiny and regulation on the use of antibiotics in food-producing animals.</p> <p>The FDA Center for Veterinary Medicine (CVM) in fall 2018 released strategic goals for 2019-2023. Specifically, CVM identified goals to (1) align antimicrobial drug product use with the principles of antimicrobial stewardship; (2) foster antimicrobial stewardship in veterinary settings; and (3) enhance monitoring of antimicrobial resistance and use in animals in order to further preserve antimicrobial drugs to ensure human and animal health. It will be important for the livestock industry, state government, and veterinary practitioners to engage with CVM as these goals are further developed.</p> <p>Animal disease preparedness and response is a top priority in Kansas and was an important topic in the development of the 2018 Farm Bill. The final bill included the development of a National Animal Disease Preparedness, Response and Recovery Program that includes a competitive grant program for preparedness, planning and response capabilities and biosecurity improvements, among other things. There has also been significant discussion about the development of a National Animal Vaccine and Veterinary Countermeasure Bank. The use of vaccine is an important tool in an effective response plan, but a comprehensive response plan must also include components related to surveillance, biosecurity (including Secure Food Supply Plans), trained personnel (including Foreign Animal Disease Diagnosticians), enhanced traceability, logistics, and indemnity plans, as well as more rapid diagnostics support and capabilities. Policy discussions about foreign animal disease are critical to the livestock industry, and Kansas will continue to play an important leading role in these discussions.</p> <p>Elected officials and regulators will continue to have considerable influence over the ability to use animal health products, and there will continue to be challenges when politics and non-science-based agendas are the basis for statutory or regulatory changes rather than sound science. Further there seems to be a lack of understanding of the role NABAF will have in the safety and security of animal health, human health and the global food supply.</p>
<p>Workforce Development</p>	<p>In order to grow and expand animal agriculture in Kansas and across the nation, it is imperative that there is a sufficient number of food animal veterinarians who are willing to serve in rural locations in proximity to industry. While the shortage of food animal veterinarians willing to work in rural communities is not unique to Kansas, leaders across the agriculture industry in the state have highlighted this issue as a top priority. Issues related to recruitment and placement programs including loan repayment and scholarship programs, admissions policies at the Kansas State University College of Veterinary Medicine, career exposure opportunities that include undergraduate and high school students, engagement with current food animal practitioners, and more need to be considered in addressing this challenge.</p> <p>Growth in the animal health industry will require a skilled workforce, which continues to be a significant challenge throughout the entire agricultural industry. Not only will growth in the animal health and bioscience sectors require a highly skilled and specialized workforce to meet high-tech positions in federal, university and private laboratories, but there will also be a significant need for workforce to maintain those labs, participate in and conduct research projects and more.</p>

SUCCESSES

Key successes in the animal health industry:

- Kansas is a national leader in the development of Secure Food Supply Plans for cattle feeding and dairy operations. As of May 2021, 15 Kansas dairies, 43 feed yards, 41 sow farms/nurseries, and 285 sow finishers have completed or are in the process of developing site-specific biosecurity plans. This represents approximately 1.554 million head of beef cattle, 210,900 head of dairy cattle, and more than 2.1 million head of swine. More are in progress.
- The Kansas Agriculture Emergency Response Corps was launched in 2017 with a goal to recruit and train Kansas citizens who have skills that will be important in an agricultural emergency response, ranging from ag finance and communications to community liaisons and more. To date, approximately 70 members have applied and received training and plans are underway to develop networks through K-State Research and Extension district and county offices
- In order to help ensure a sufficient supply of food animal veterinarians in rural communities, the Kansas Veterinary Medical Association, the Veterinary Training Program for Rural Kansas (VTPRK), and the United States Congress are being proactive and innovative in recruitment and development of food animal veterinarians.
- A collaborative partnership that includes the Kansas Livestock Association, Kansas Department of Agriculture, and K-State individual producers came together to conduct a pilot project aimed at developing and testing a purpose-built infrastructure capable of tracing cattle movement through the supply chain for disease traceability purposes. U.S. CattleTrace has continued to collect movement data on over 1.1 million cattle and guide the development of enhanced disease traceability systems for the entire U.S.
- Kansas conducts an annual functional exercise to practice the state's ability to respond to a foreign animal disease. The exercise regularly has more than 250 participants, including local, state, federal public agencies as well as private businesses in various animal agriculture sectors.
- In coordination with K-State Department of Animal Sciences and Industry. the course "Topics in Secure Food Supply" was offered in 2019 and 2020. The course incorporated lectures from industry professionals and regulatory officials, along with students researching strategies for disease response and developing hypothetical Secure Food Supply Plans for beef, dairy and swine operations. To date approximately 40 students have participated in the course.
- The Kansas Rural Veterinary Task Force was established to review issues and make recommendations to Kansas State University, the Kansas Governor, congressional and legislative leaders, and state and federal agencies related to recruitment and placement programs. Issues that are being addressed include loan repayment and scholarship programs, admissions policies at the KSU College of Veterinary Medicine, career exposure opportunities that include undergraduate and high school students, engagement with current food animal practitioners, and more.



Animal Health

GROWTH OBJECTIVE:

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



OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

A livestock industry that is prepared to respond to an animal disease event. The development and adoption of robust biosecurity plans are critical factors in emergency preparedness.

ACTION ITEMS:

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

Continued industry-led proactive social and traditional media outreach with consumers, influencers and media about how animals are raised and the technologies utilized to treat, prevent and control animal health issues.

ACTION ITEMS:

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

Medium Priority Outcomes

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

ACTION ITEMS:

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

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

ACTION ITEMS:

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

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

ACTION ITEMS:

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

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

ACTION ITEMS:

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

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