Feed and Forage

EXECUTIVE SUMMARY

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

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

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

Kansas AGROWTH
GROW SMARTER. GROW STRONGER. GROW KANSAS.

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 % of U.S. total
- 3rd in All Hay Production: 6.24 million tons — 4.2 % of U.S. total
- 6th in Feeds & Fodder Export: $545.2 million
- 2016 corn silage production: 2.93 million tons — 2.3 % of U.S. total
- 2016 sorghum silage production: 1.47 million tons — 35.3 % 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 $846.1 million and creates 10,035.9 jobs in the state. Through indirect and induced impacts, the industry supports a total of 13,803.0 jobs and creates a total economic contribution of nearly $1.42 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.

OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
Irrigation Technology	Some of the best crop yields in Kansas are achieved under irrigation. As available ground-water for irrigation is reduced it is important to find ways of achieving the same production and economic returns with less water. Being more efficient with irrigation systems in terms of water use will help reduce water use and potentially pumping costs while maintaining good yields.
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).

OPPORTUNITIES

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 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.
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.

OPPORTUNITIES

Factor	Implications for Growth and Development Opportunities
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.

CHALLENGES

Challenge	Details of Challenge
Critical Infrastructure (cont'd)	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.

CHALLENGES

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.

CHALLENGES

Challenge	Details of Challenge
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.

NEXT STEPS IN STRATEGIC DEVELOPMENT

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, will be implemented by industry and key partners and updated annually at the Kansas Governor's Summit on Agricultural Growth.

FEED AND FORAGE INDUSTRY OUTCOMES

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

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

Phase 1 (Begin within two years)

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

FEED AND FORAGE INDUSTRY OUTCOMES

Phase 1 (Begin within two years)

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

Phase 2 (Begin within 2-4 years)

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