



FEED & FORAGE

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

Although the feed and forage sector has long been a strength of Kansas agriculture, challenges exist which have

the potential to prevent future growth within the industry. Continued advancements in technology will require an increasingly skilled workforce as well as the ability to navigate concerns about technological developments. Much of the potential growth could come from export markets, which is complicated by issues of transportation, regulations and free trade agreements.

The development of a strategic growth plan for the feed and forage sector will require collaboration between the key partners in the industry. Initial steps could include enhanced educational opportunities and research developments in the areas of water, crop, forage, and grassland (both native and introduced) 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. A variety of forages are available to livestock, including silage of corn, sorghum, wheat, triticale, and hays including native grass, alfalfa, tall fescue, sorghum-sudan and brome, among others.

Key Kansas forage production statistics include:

- 2nd in sorghum silage production — 22.59% of U.S. total
- Sorghum silage production is currently 1.1 million tons — 22.6% of U.S. total
- 4th in all hay production: 5.78 million tons — 4.8% of U.S. total
- 9th in feeds and fodder export — \$235.2 million
- Corn silage production as of 2018: 4.9 million tons — 3.5% of U.S. total

The top 5 destination countries for U.S. hay exports in 2021 accounted for 94.6% of the total U.S export volume. China was the major buyer of U.S. hay (alfalfa hay + other hay), then Japan, South Korea, Saudi Arabia, and Taiwan. China took the most alfalfa hay.

According to a Kansas Department of Agriculture IMPLAN economic model, the estimated direct impact of the forage industry is \$296.8 million in output and 6,493 jobs. Including indirect and induced effects, the total impact of the industry on the Kansas economy reaches \$530.7 million in output and 7,870 jobs.

OPPORTUNITIES

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

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

Factor	Implications for Growth and Development Opportunities
Irrigation Technology	Some of the best crop yields in Kansas are achieved under irrigation. As available groundwater for irrigation is reduced it is important to find ways of achieving the same production and economic returns with less water. Being more efficient with irrigation systems in terms of water use will help reduce water use and potentially pumping costs while maintaining good yields.
Land Availability	Kansas has the third 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 11 in hogs. The livestock feeding sector is a major customer for feed and forage producers. Expanding the number of livestock being fed in Kansas will increase demand for Kansas feed and forage.
Plant Genetics	<p>Many seed corn companies already have drought-tolerant product offerings that can be expanded upon to offer genetic traits that make corn more suitable to the arid climate of central and western Kansas without significant yield loss. This would increase the number of acres on which corn can be produced.</p> <p>Advancements in forage sorghum silage have greatly increased yields while maintaining water use efficiencies.</p> <p>The production of Roundup-resistant alfalfa provides a new tool for alfalfa growers produce feed for livestock to more efficiently. Also, new technologies will be required to enhance corn and sorghum varieties even better suited for silage production. These varieties may have enhanced benefits in yield, reduction in lodging, and increased digestibility in rations (especially important for lactating dairy cattle).</p>
Policy Environment	<p>Kansas tax law allows sales tax exemption for farm machinery and equipment and various ag-based inputs. These state tax code provisions make Kansas a more attractive state for growth or expansion.</p> <p>At the federal level, Kansas is fortunate to have elected members of Congress who strongly support the agricultural industry. The Kansas congressional delegation will play an important role in influencing positive changes related to federal regulations or legislation, international trade, federal taxes, transportation rules, energy policy, natural resources and more.</p> <p>KDA signed a memorandum of understanding with the North American Weed Management Association to follow the standards set forth in the North American Weed Free Forage Program. KDA staff is also qualified to certify forage and mulch products to meet any additional requirements set forth by any receiving entity, and it is the only recognized certifying authority in Kansas.</p> <p>The noxious weed policy in Kansas is reasonable and less restrictive than surrounding states.</p>

Factor	Implications for Growth and Development Opportunities
<p>Research and Education</p>	<p>Kansas State University departments of agronomy and animal sciences and industry hold significant expertise in forage production and livestock utilization of feed and forages in both traditional and alternative feed and forage crops. In fact, the departments are jointly investigating the development of alternative forages, such as teff, that can be commercialized for dry climates in areas like western Kansas. The K-State grain science department is the only one of its kind in the world, and has a world-renowned feed science and management degree program, along with associated expertise and research areas. In addition to university involvement, Forage Genetics International — the leading developer of alfalfa genetics and the only program developing traits in alfalfa — has located a full-fledged research facility near Garden City with a focus on highest yields, disease resistance, harvest management, salt tolerance, and propagation selection from nurseries planted each year.</p> <p>Kansas Range Schools offered by the Kansas Grazing Lands Coalition offer education opportunities to increase grazing productivity as rotational grazing and alternative forages become more widely accepted.</p>
<p>Supporting Institutional Infrastructure</p>	<p>Kansas has a solid foundation throughout the entire feed and forage production community. With cow-calf production and stocker operations through eastern and central Kansas and a robust feeding sector throughout central and western Kansas, and a strong beef processing presence, Kansas has a well-established beef production network that results in efficiency benefits to all steps in the production chain and strong demand for corn. The swine industry provides a smaller but important level of demand and the growing poultry industry will provide more demand.</p> <p>There are 12 dry mill ethanol plants currently in operation in Kansas, creating a market for approximately 217 million bushels of corn and sorghum.</p> <p>Kansas is also home to more than 1.2 billion bushels of commercial grain storage capacity to accommodate the Kansas grain crops.</p> <p>Major hay conditioning and silage harvesting equipment manufacturers are located in Kansas.</p>

CHALLENGES

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

Challenge	Details of Challenge
<p>Critical Infrastructure</p>	<p>Port access is critical because Kansas doesn't have a port. Having the transportation infrastructure necessary to move feed and forage to the port is critical as well. Ports such as the Port of Catoosa in Oklahoma where Kansas feed and forages are loaded on barges need to be maintained such that shipping capacity isn't delayed or reduced due to aging infrastructure. The same applies to ports on the coasts where Kansas feed and forages would travel by rail or barge to be transloaded onto ocean- going vessels.</p> <p>A lack of adequate housing in rural areas compounds the issue of a shortage of agricultural workers.</p> <p>Kansas has adequate grain and liquid rail infrastructure. However, a lack of rail access in the western portion of the state requires processors to ship products across the state to be loaded onto rail at the intermodal facility or use alternative transportation. Acquiring shipping containers to load hay at farms is a challenge for those not near the intermodal facility.</p> <p>Kansas lacks toll mills which are needed to attract hog producers to build or expand their operations. Once an operation becomes large enough, they generally build their own feed mill and will no longer rely on the toll mills.</p>
<p>Industry Opponents</p>	<p>There are increasing attacks on the use of genetic technology in feed and forage production and a great debate on whether the products are suitable for use in feed both in the United States and around the world. Another debate centers on whether corn should be used for fuel, ethanol in particular, as opposed to food and feed. This debate intensifies in times of high corn prices such as those seen in recent years. Recently, a major dairy company has announced that all of its milk products will be produced without GMO feed for the cows, which does affect the method and manner in which feed is produced for approximately 8,000 Kansas dairy cows.</p> <p>There is a need to develop the next generation of industry spokespersons.</p>
<p>International Trade</p>	<p>Regulatory approval of new seed technology around the world is important as Kansas farmers look to take advantage of the latest advancements to improve yield and meet worldwide demand. A reliance on non-science-based standards in some trade partner nations disrupts the ability of U.S. farmers to access critical international markets.</p> <p>Roundup-ready alfalfa is widely grown across Kansas, but not accepted into several Asian/European markets.</p> <p>Access to international markets for feed and forage products is key to growing the industry. Resistance to free trade agreements at the federal level can hinder this access.</p>

Challenge	Details of Challenge
<p>Loss of Grassland Quantity and Quality</p>	<p>Grasslands, utilized for both haying and grazing, are threatened and experiencing a loss of forage quantity, quality, or both. Woody plant encroachment (WPE) is a top threat to grasslands in both Kansas and across the Great Plains, and results in significant loss of herbaceous (forage) production. Recent estimates indicate herbaceous production lost to tree cover expansion in Kansas totaled over 1.5 million tons in 2019 alone relative to what would have been achievable had tree cover not changed since 1990.</p> <p>Opportunistic and invasive herbaceous plants, having lower nutritional quality and palatability, are an additional threat and are expanding in the Kansas grassland landscape, reducing livestock nutrient availability and consumption. Examples include, but are not limited to, broomsedge bluestem, sericea lespedeza, and old world bluestems. While forage quantity and quality declines have a direct impact on livestock productivity, additional ecosystem services are being jeopardized by these identified threats.</p>
<p>Policy</p>	<p>Renewable Fuel Standard is a regular unknown when it comes to understanding the requirements for ethanol in U.S. gasoline. More transparency and predictability would bring increased stability to the ethanol market and in turn to feed prices offered to livestock producers feeding distiller's grains.</p> <p>Maintaining the flexibility farmers have in how they depreciate capital purchases as it relates to federal income taxes is critical for management and planning. Any changes that reduce that flexibility or threaten to reduce it compromise farmers' ability to plan for expenses.</p> <p>Farm families work their whole lives to build and maintain the family farming operation including the acquisition of land. Being forced to sell hard-earned assets to satisfy estate taxes is a devastating blow to family farmers.</p> <p>Kansas Department of Transportation regulations restrict the amount of hay that can be legally hauled. Currently, over-width loads are allowed with a permit, but over-height loads are not. In addition, custom cutters are able to haul over-length loads while hay haulers are not allowed to.</p> <p>Smoke management will continue to be a challenge for producers who need to burn on an annual or semi-annual basis in order to maintain the quality of their feed or forage.</p> <p>Kansas Department of Health and Environment policy limits the amount of manure that can be applied because of phosphorus levels. In areas of the state where there isn't any surface water to be contaminated with phosphorus, this can be limiting to growth of the livestock industry, which is a market outlet for feed and forages, and can limit efforts to combat invasive species.</p> <p>The Farm Service Agency Conservation Reserve Program doesn't allow farmers to sell hay that comes off their CRP fields. If this were allowed, custom haying would increase.</p> <p>Though not unique to Kansas, there exist significant challenges due to federal laws and regulations, including: Waters of the U.S., the Endangered Species Act, burdensome Occupational Safety and Health Administration regulations and more.</p>

Challenge	Details of Challenge
Research, Education, Extension	Research funds allocated to forage research are only a fraction of that of corn, soybeans and wheat. This results in significantly less forage research being conducted at universities across the country. Furthermore, forage professor appointments typically are not reappointed upon turnover. There are very few forage extension specialists available to work with the industry. A “State Forage Specialist” position should be established by Kansas State University (with no other grain or oilseed responsibilities), allowing them to better focus on a statewide forage extension education and research program, and better coordinate county and regional extension activities and efforts.
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.

SUCCESSES

Key successes in the feed and forage industry:

- A national alfalfa checkoff program was established in spring 2016 with the creation and implementation of the U.S. Alfalfa Farmer Research Initiative (USAFRI), better known as the Alfalfa Checkoff Program. The Land Institute in Salina was the first Kansas recipient of checkoff dollars in September 2018.
- A Kansan sits on the National Alfalfa and Forage Alliance board of directors.
- An irrigation efficiency study that looked at combining the principles of center pivot irrigation with drip irrigation showed that new technology can reduce the amount of irrigation water required with a typical center pivot system.
- The intermodal facility in Edgerton is taking advantage of the significantly reduced freight cost of shipping containers returning to China and other Asian markets by shipping distiller’s grains from Kansas into those markets in containers.
- In 2016-2017, a collaboration of subject matter experts including KDA dairy and feed safety program, KDA Division of Animal Health, and K-State’s Beef Cattle Institute created a portfolio of compliance education materials to share with farmers, ranchers, feed mills and veterinarians to understand and comply with Veterinary Feed Directive regulations.
- K-State has done 2 years' worth of research on the use of crabgrass — Mojo Crabgrass and Quick and Big Crabgrass in particular — as an alternative summer annual for use in Kansas. The study includes looking at harvest intervals and fertility. Crabgrass has been used for years, but this research has already helped it gain in popularity and usefulness.

Feed & Forage

GROWTH OBJECTIVE:

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

OUTCOMES & ACTION ITEMS

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

High Priority Outcomes

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

ACTION ITEMS:

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

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

ACTION ITEMS:

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

Stable, intact grasslands which have been defended through threat prevention, with reduced or minimized threats and their impacts when present.

ACTION ITEMS:

- Collaborate to increase public awareness of grassland threats and their negative impacts to ecosystem services.
- Support increased funding for, and dissemination of, research targeted at the prevention, control, and/or improved utilization of undesirable plants, both woody and herbaceous, in grasslands.
- Encourage funding initiatives that target and address grassland threats.

Implementation of action items in the Vision for the Future of Water Supply in Kansas related to the feed and forage industry, leading to a longer usable life for Kansas groundwater and surface water sources. Effective adoption of conservation practices and management efforts which support more flexible water policies, better opportunities for voluntary conservation, and increased research on management practices.

ACTION ITEMS:

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

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

ACTION ITEMS:

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

Medium Priority Outcomes

Increased funding for research in Kansas related to issues pertinent to alfalfa growers as well as other feed and forage research. This could include an alfalfa checkoff program and/or funding from additional sources. In the U.S., dollars allocated to alfalfa and forage research are only a fraction of those which are currently allocated to staple grain crops.

ACTION ITEMS:

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

Simplified permitting requirements for farm vehicles, and transportation regulations that provide flexibility to requirements for commercial driver's licenses (CDLs) to ensure that feed and forage are able to move safely and efficiently throughout the state.

ACTION ITEMS:

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

Forage sorghum representation on the national sorghum board.

ACTION ITEMS:

- Research opportunities to have forage sorghum represented on the National Sorghum Producers or sorghum checkoff board of directors.

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