Nebraska Livestock Expansion White Paper

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Executive Summary

Nebraska's agricultural production complex is particularly important economically as it represents a rich combination of both crop and livestock sectors with associated processing. In 2010 this complex accounted for an estimated 27 percent of Nebraska's gross state product, 25 percent of total labor income and 24 percent of the state's employment numbers[1]. And in non-metropolitan areas, its economic significance is even more profound.

In what could be called the *Nebraska Advantage*, there is in place an interrelated system of crop, livestock and biofuel production capacity that is basically unmatched anywhere in the country. Besides being ranked 1st in irrigated acres, with more than nine million acres, the state ranks 1st in commercial red meat production and is essentially tied with Texas for cattle on feed, 2nd in corn-based ethanol production, 3rd in corn for grain production, 4th in soybean production, 5th in all hay production, 6th in all hogs and pigs, and 7th in commercial hog slaughter.

The symbiotic relationship of the major enterprises of corn, soybean and biofuel production, with livestock production creating a critical interactive role, has been branded the *Golden Triangle* by industry officials. It is a system in which the components are linked with one another through various feedback loops and flows, leading to synergistic opportunities and outcomes. Because of this system, there is much more value-added economic activity playing out in the nonmetropolitan economies of the state. And while this system has always existed in some form — with crop and forage enterprises providing feed inputs into livestock production, and livestock providing organic fertilizer back to the cropland, etc. — the level of interaction has recently moved to a higher plane One example is corn-based ethanol production, which not only produces ethanol fuel but also distillers' grains. Once considered a marginal waste product of the process, DGs are now regarded as a valuable co-product of the biofuels industry as high quality livestock feed. In turn, the competitive advantage of livestock production (particularly ruminant livestock) located close to this feed source has provided a scaling up of crop producers' access to organic-based fertilizer as a substitute for commercial fertilizer. Likewise, the soybean meal co-product from soybean processing is a valuable feed input for several livestock species.

But, as true of any system, the *Golden Triangle* production cluster relies on the strength of *all* the component industries to survive and thrive. And there are concerns that the *Nebraska Advantage* is not operating to its full potential and may even be slipping in rigor in recent years.

One concern is that Nebraska still exports high proportions of its crop output as commodities — over a third of its annual corn crop, at least half of the in-state production of DGs and more than 80 percent of its soybean meal output. With the continuation of irrigation development over the past decade, the state has expanded its annual corn and soybean production by about 50 and 25 percent, respectively, leading to even greater volumes being shipped out of the state as commodities rather than flowing into in-state value-added livestock production and processing, with the subsequent economic activity for rural economies.

There is also a concern that while Nebraska has kept pace with U.S. trends, Nebraska has fallen behind many neighboring states at a time when various livestock sectors are increasingly moving from coastal regions towards the central part of the United States. Nebraska has continued to see relative growth within the beef sector over the last decade based on proximity to corn and DGs.

[1] Thompson, et al., 2012

Nebraska has continued to keep pace with changes in pig crop numbers compared to the national average but has had less than half of the increase Iowa has seen. Recent trends show a decline in market hogs in Nebraska, compared to an increase in numbers for most Midwestern states. The gap between annual pig crop numbers and pigs slaughtered within the state shows potential for growth within the market hog sector. Currently, Nebraska exports about 2.5 million pigs annually to neighboring states to be finished and shipped back to Nebraska for processing. Within the dairy sector, Nebraska has continued to see a decline in herd numbers, while a number of states, including Idaho, have seen a major influx of dairy numbers. Nebraska's poultry industry, consisting mainly of egg laying hens, has been declining over the last decade, while the U.S. as a whole has remained relatively constant.

Despite the apparent economic advantages for livestock production in Nebraska, the industry has not grown in the past two decades at rates comparable to neighboring states. There are numerous issues and policies that have constrained potential livestock development in the state, including, limitations on corporate farming activity in Nebraska, state and local permitting processes, nuisance rules and lawsuits, and issues and concerns from the general public and interest groups. Further expansion of the livestock industry is dependent upon finding feasible solutions to each of these issues.

Economic benefits of livestock expansion include increased employment and associated labor income, value-added activity, local tax revenue, and the value of manure as a substitute for commercial fertilizer. A base expansion scenario that includes a 25% increase in market hogs, a doubling of dairy cow numbers, a ten percent increase in fed cattle production and a tripling of egg production, along with the associated processing industries, has the potential to provide an additional 19,040 jobs, with labor income of almost $800 million and value-added activity of over $1.4 billion. This activity has the potential to generate over $38 million in local tax revenue. While this amounts to a fairly small percentage of Nebraska's total economy, these impacts will occur almost entirely in non-metropolitan areas of the state and would be quite beneficial to rural economies.

At this juncture it would appear that the livestock component of this unique system has considerable potential for further expansion. In fact, the long-term economic sustainability of the total crop/livestock/biofuel system and its ability to thrive in the future may hinge upon such expansion as global demand for food products, especially protein-based products, rises. The market forces, both domestic and global, are well positioned to allow investment in and expansion of this state's animal industry in the coming decade.

Decisions of whether or not to pursue livestock expansion activity will depend on community stakeholders at the local levels across the state, as they consider these economic and other implications. Likewise, all the citizens of Nebraska and their policy makers have a vital stake in the outcome. Any one of the possible expansion scenarios analyzed in this study represents thousands of potential jobs and associated earnings distributed widely within and across Nebraska communities and local economies. From that additional value-added economic activity, developed in an environmentally and socially responsible manner, will flow the potential for enhanced economic opportunity and quality of life for all Nebraskans into the future. In sum, the economic challenges posed, as well as the associated economic opportunities afforded, are simply too weighty in Nebraska's economic future to ignore.

Introduction

The livestock industry in Nebraska is a vibrant and significant part of the state's agricultural sector and of the overall state economy. From the state's cattle ranches and feedlots to its pork, dairy, poultry, and other livestock operations, the industry is a leader. Nationally, Nebraska is the leading red meat production state and a top ten producer in several production and processing categories. In the state, livestock production base represented almost half of all cash receipts for agriculture in 2012, which in turn makes up more than 25 percent of the state's gross state product.

This vibrant livestock sector succeeds in Nebraska, in part, due to natural competitive advantages and linkages to the state's crop production and bioenergy production sectors. This crop-livestock-biofuel system has been termed the *Golden Triangle* (Figure 1) and represents a tremendous economic opportunity if the industry can respond to economic signals for growth. Livestock production in the heart of grain and feedstuffs production represents both feed cost efficiencies for livestock producers as well as value-added markets for crop producers. The biofuels sector is an important contributor to this advantage as well. While crop production delivered to biofuel refineries competes directly with the livestock demand for feedstuffs, the co-products of Nebraska's ethanol production, namely DGs, are a valuable feed supplement that can be utilized more economically and efficiently for livestock production in Nebraska than in other regions, providing a relative feed cost advantage that could be termed the *Nebraska Advantage*.

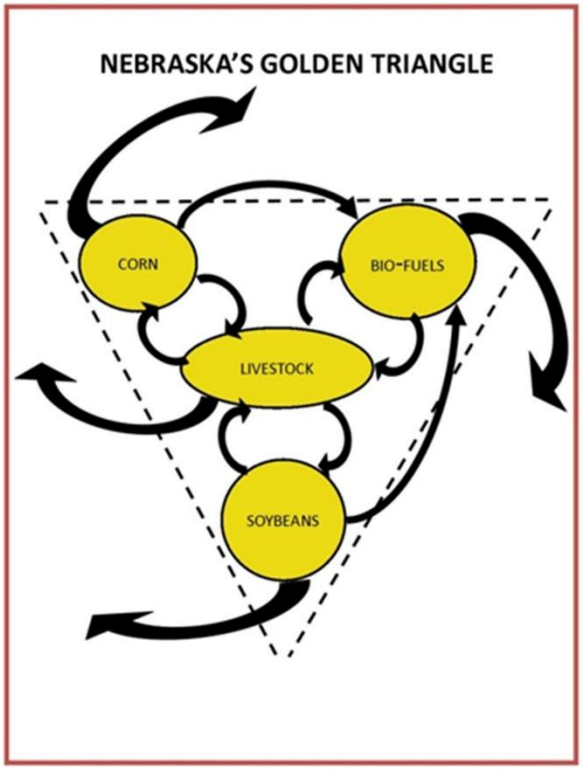


Figure 1: Golden Triangle

As true of any system, the *Golden Triangle* production cluster relies on the strength of all the component industries to survive and thrive. And there are concerns that the *Nebraska Advantage* is not operating to its full potential and may even be slipping in rigor in recent years. One concern is that Nebraska still exports high proportions of its crop output as commodities — over a third of its annual corn crop, at least half of the in-state production of DGs and more than 80 percent of its soybean meal output. With the continuation of irrigation development over the past decade, the state has expanded its annual corn and soybean production by about 50 and 25 percent, respectively, leading to even greater volumes being shipped out of the state as commodities rather than flowing into in-state value-added livestock production and processing, with the subsequent economic activity for rural economies.

Despite the apparent economic advantages for livestock production in Nebraska, the industry has not grown in the past two decades at rates comparable to neighboring states. This paper provides insight on the status of the livestock industry in the state and the potential challenges to and impacts from expansion of the industry. The first section on livestock trends provides a picture of the current industry in the state and its competitive position relative to neighboring and leading livestock producing states. It shows both where growth is and is not occurring,

illustrating both the challenges and opportunities facing the industry. The second section addresses the legal questions related to environmental regulations and siting decisions as well as the general public perceptions of the livestock industry. This policy framework affects how producers pursue and manage expansion. Industry and/or legislative efforts to address these issues will be an important contributor to future livestock expansion. The final section focuses on the potential economic impact of beef, dairy, pork, and poultry expansion in the state. Analysis of various expansion scenarios, as well as concerns over potential future reductions in processing capacity, provide a picture of the economic consequences of policy and industry choices that affect livestock expansion opportunities. The conclusion provides a final analysis of the industry, the policy issues, and the economic impacts of livestock expansion to illustrate the industry issues, policy choices, and potential consequences facing the industry and the state.

Livestock Trends in Nebraska

The livestock industry continues to be a significant economic and cultural part of Nebraska's history. In 2012, Nebraska ranked fourth in cash receipts from all farm commodities, accounting for over $25.6 billion. Livestock and livestock product sales totaled $11.6 billion in 2012, which amounted to 45 percent of all agriculture cash receipts.[2]

Nebraska continues to be one of the leading livestock producing states in the nation. Currently, Nebraska ranks 1st in commercial red meat production and commercial cattle slaughter, is tied with Texas for cattle on feed, 2nd in all cattle and calves, 4th in beef cows and heifers calved, 6th in all hogs and pigs on farms, 7th in commercial hog slaughter and 9th in table egg layers.

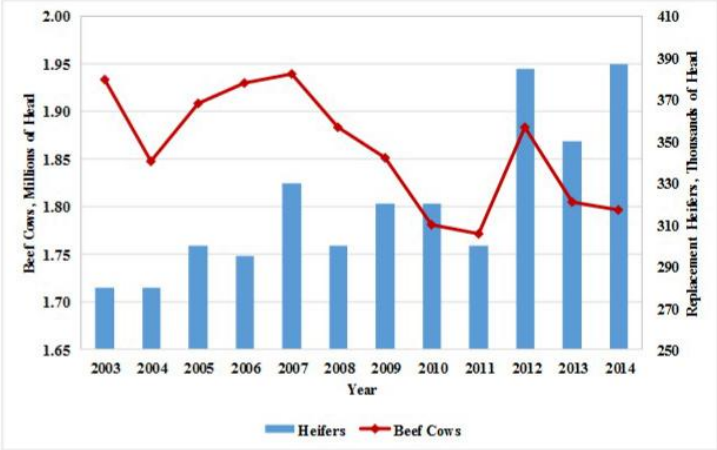


Figure 2: January 1 Nebraska Cattle Inventory, Number of Beef Cows and Heifers

Beef Industry

Nebraska currently ranks 2nd in all cattle and calves with an inventory of 6.15 million head. The U.S. beef cow herd numbers have been declining, mostly due to drought and economic conditions, and Nebraska is no different (Figure 2). While Nebraska's beef cow numbers have declined over the last decade from 1.934 million head in 2003 to 1.797 million head in 2014, heifers held for replacement are currently increasing.

Since 2003, Nebraska has ranked 3rd in the annual calf crop. Over this period calf crop numbers; however, declined 2.3 percent, from 1.77 million to 1.68 million head (Figure 3).

The decline in calf crop numbers continues nationally, with the United States as a whole declining 8.8 percent.

Nebraska has ranked 2nd in total cattle on feed since 2003, but according to the January 1, 2014 cattle on feed report, Nebraska is now tied with Texas for first place. With declining annual calf crops in the last decade,

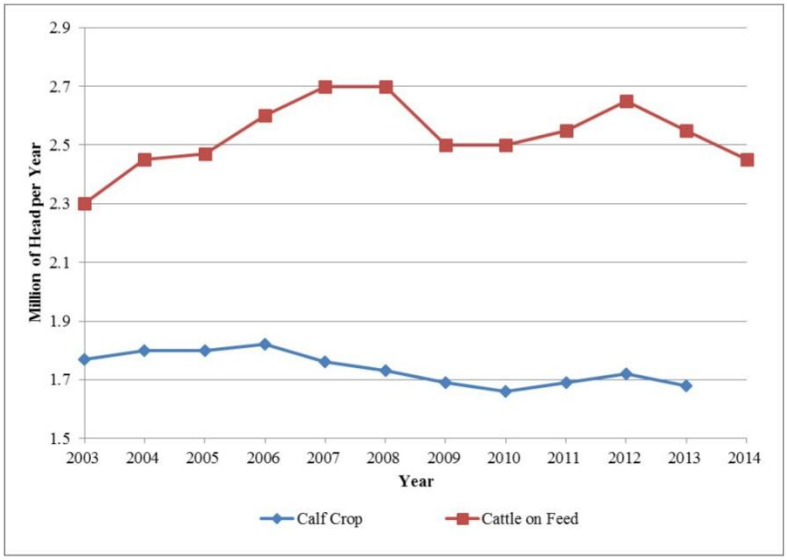


Figure 3: Nebraska Calf Crop and January 1 Cattle on Feed Inventory Numbers

[2] www.ers.usda.gov/data-products/Farm-income-and-wealth-statistics.aspx

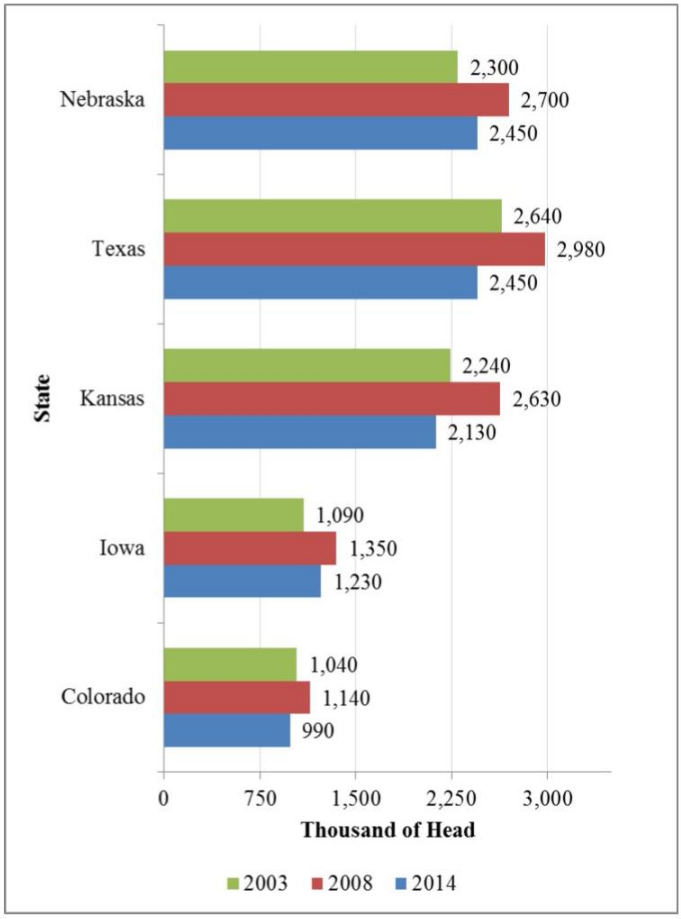


Figure 4: January 1 Cattle on Feed Inventory in Top Five States of U.S.

the nation as a whole had witnessed a decline in cattle on feed of over 10 percent. The 2003, 2008, and 2014 January 1 cattle on feed inventory for the top five states in the United States are presented in Figure 4. The prominent cattle on feed states had an increase in cattle on feed numbers from 2003 to 2008, but experienced a decline from 2008 to 2014. Over the entire decade, Nebraska saw a 6.5 percent increase in cattle on feed, while Texas and Kansas had decreases of 7.1 and 4.9 percent, respectively. Iowa had an increase of 12.8 percent with a considerably smaller inventory compared to the other three states. Nebraska and Iowa witnessed the smallest decline for cattle on feed from 2008 to 2014, owing to their proximity to corn production and DGs by-products.

Beef packer slaughtering capacity for fed cattle, excluding cull cows or bulls, in Nebraska declined 2.1 percent over the last decade; with the main decline occurring in the beginning of the decade and then remaining relatively stable thereafter (Figure 5). As of 2013, nearly 65 percent of the U.S. beef slaughter capacity resided in Nebraska and neighboring states. Nebraska has continued to rank 1st in fed cattle slaughtered (excluding cull cows and bulls) since 2003. Over the last decade, though, Nebraska's fed cattle slaughtered

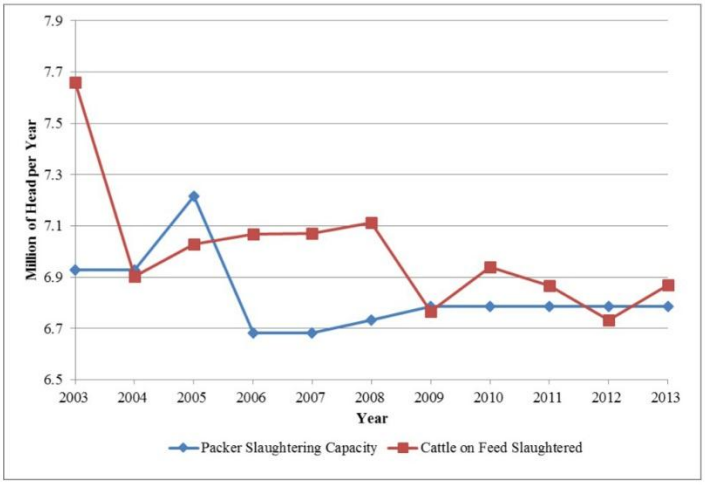


Figure 5: Nebraska Fed Cattle Slaughtering Capacity and Actual Slaughter

declined 10.3 percent compared to the U.S. decline of 8.1 percent. While Nebraska has seen a 10.5 percent decline in fed cattle slaughtered, they only have seen a decline of 2.7 percent in total pounds of fed beef processed due to increased slaughter weights.

Pork Industry

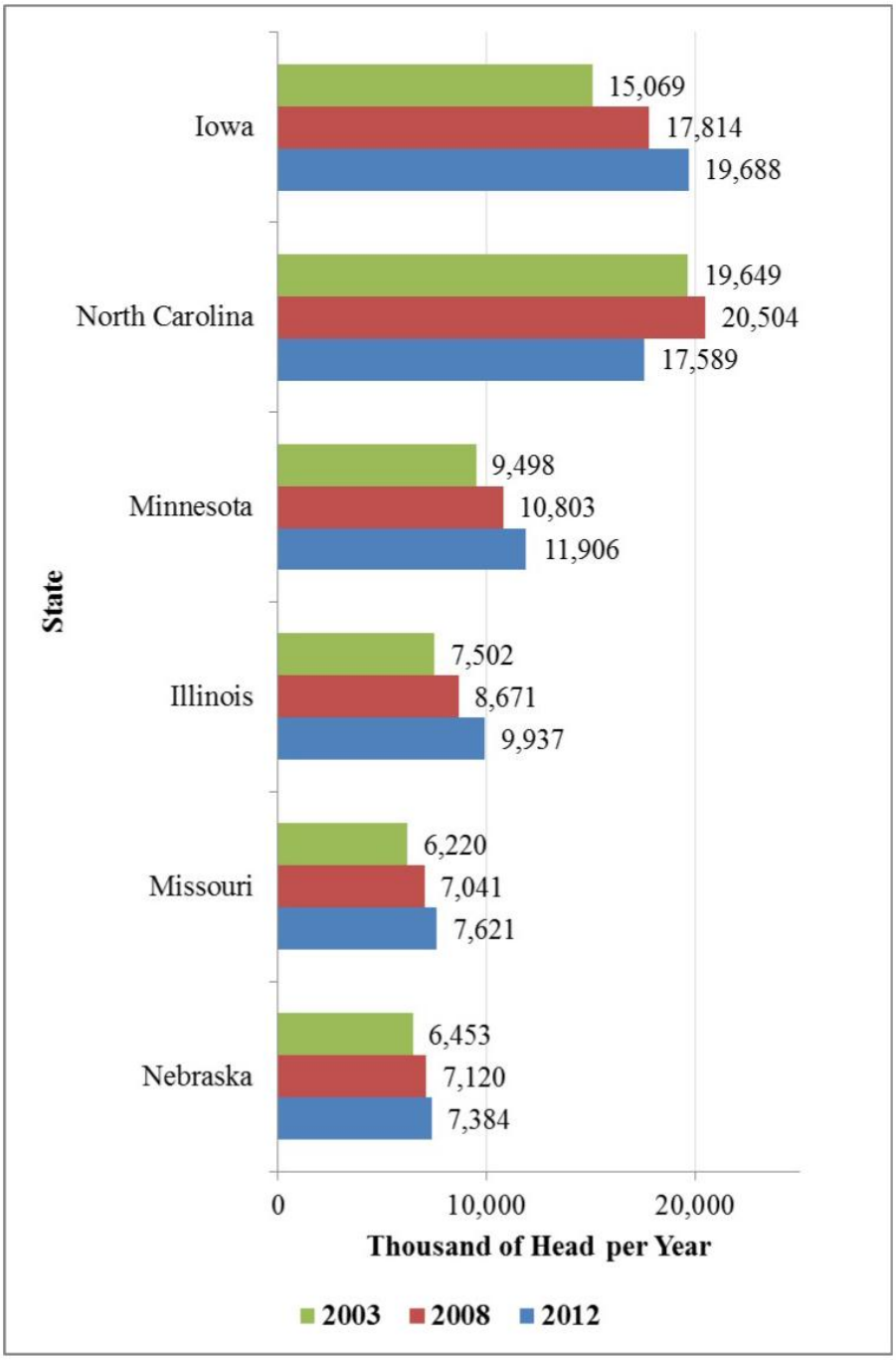


Figure 6: Annual Pig Crop in Top Five States of U.S. and Sixth Ranked Nebraska

As of 2012, Nebraska ranked 6th in the U.S., at 3.1 million head, for the number of all hogs and pigs on farms. Over the past decade, pig crop numbers in Nebraska have increased 14.4 percent, keeping pace with the national average. Nebraska's pig crop inventory grew from 6.453 million head in 2003 to 7.348 million head per the 2012 inventory (Figure 6). Nebraska's neighbor to the east, Iowa, has seen a 30.7 percent growth in pig production over the last decade.

Nebraska currently ranks sixth in the total head of hogs being fed for slaughter (i.e., market hog inventory). Since 2003, Nebraska's market hog inventory has increased by 6.9 percent from 2.535 million head to 2.710 million head. During the first half of the decade, the market hog inventory increased by 17.2 percent, but declined

during the second half by 11.8 percent. Figure 7 shows the top five states in market hog numbers in comparison to Nebraska. Iowa saw the largest increase in market hog inventory over the last decade at about 31.5 percent. Of the top five states in annual market hog inventory, North Carolina was the only state that witnessed a decline over the last decade at -14.7 percent.

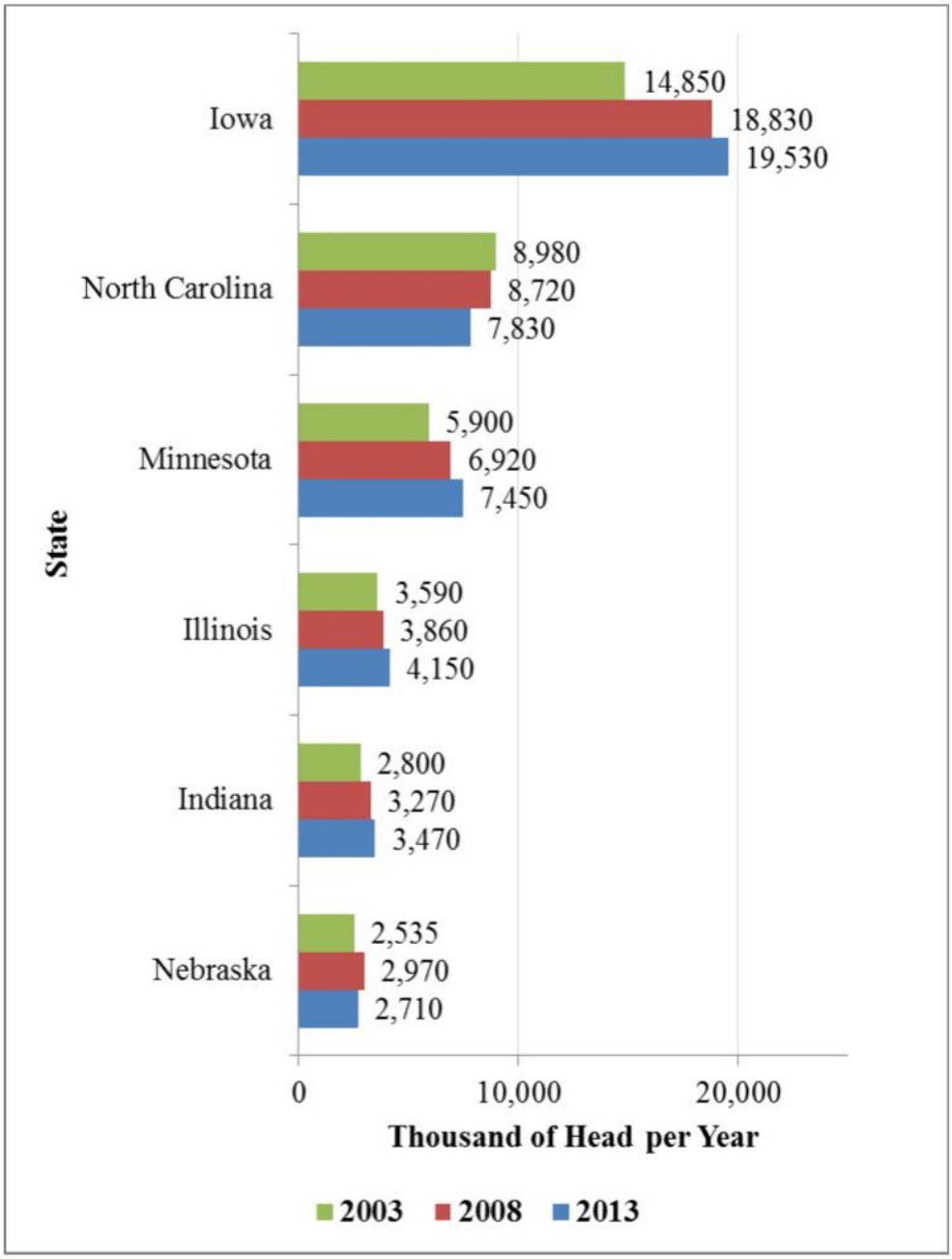
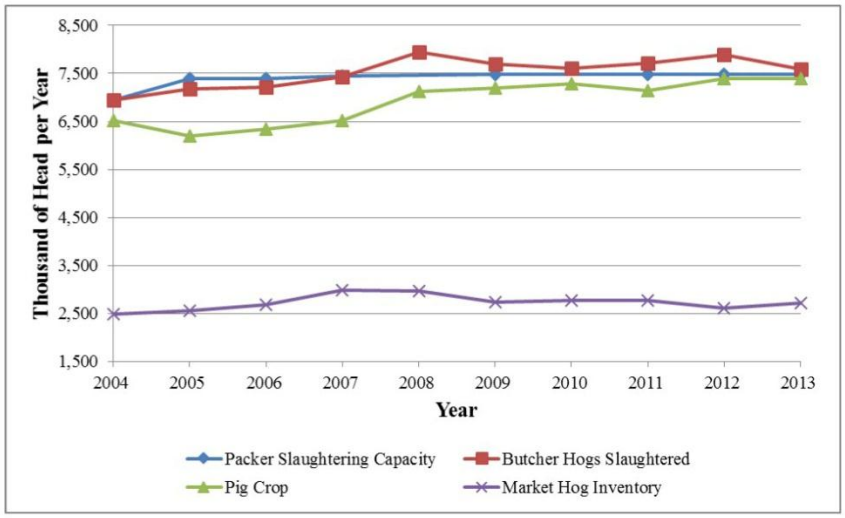


Figure 7: Annual Market Hog Dec 1 Inventory in Top Five States of U.S. and Sixth Ranked Nebraska



*Preliminary 2013 packer slaughtering capacity estimate.

Figure 8: Summary of Pork Industry in Nebraska for 2004-2013

Nebraska currently ranks 7th in total head of butcher hogs slaughtered, slaughtering above capacity at 7.596 million head in 2013. This was a 9.2 percent increase over 2003 (Figure 8). The three butcher hog slaughtering plants in Nebraska had a capacity of about 7.482 million head in 2013, an increase of 8.6 percent from the 6.89 million head capacity in 2003. As the number of head slaughtered has increased, so have slaughter weights, with a resulting 13.9 percent increase in the total pounds of pork processed from 2003-2013. Over this time period, slaughter weights increased 3.1 percent to 273 pounds per head.

A gap currently exists between the annual pig crop, the market hog inventory in Nebraska and the number of hogs slaughtered. The Nebraska Pork Producers Association estimates that Nebraska exports about 2.5 million pigs annually to be finished in neighboring states (fed from weaning to market weight) and then shipped back to the state for processing.

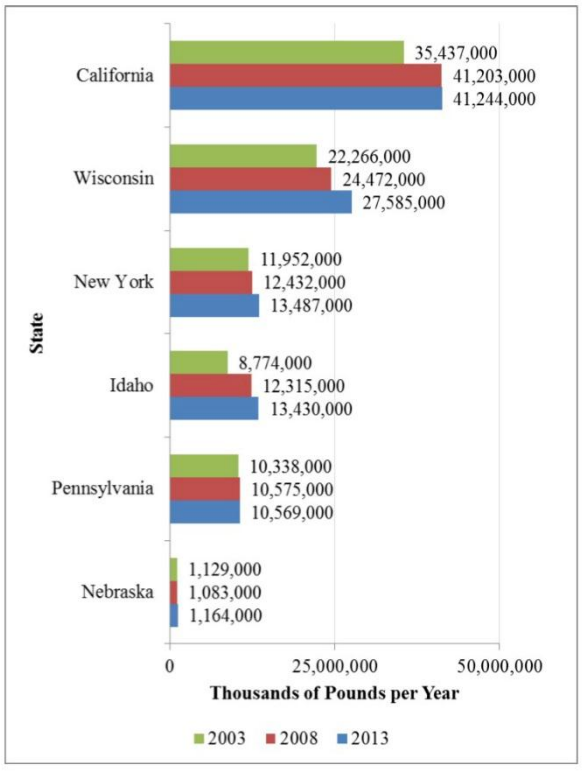


Figure 9: Total Pounds of Milk Produced in Top Five States of U.S. and Twenty-Sixth Ranked Nebraska

Dairy Industry

While the U.S. dairy cow inventory has held fairly steady over the last decade, Nebraska has seen a 19.7 percent decline. In 2003, Nebraska had 66,000 head of dairy cows and that number declined to 53,000 head in 2013. While there has been a decline in dairy cow numbers, Nebraska has seen a 3 percent increase in total pounds of milk produced over the last decade, with current production at about 1.164 million pounds of milk. The increase in total milk production has been due to an increase in milk production per cow of approximately 8.3 percent. Nebraska's dairy cows currently produce about 21,164 pounds of milk per cow per year.

The total pounds of milk produced in the top five states of the U.S. compared to Nebraska are shown in Figure 9. Nebraska has remained relatively steady in their market share for total

pounds of milk produced because of the increase in total milk production. Total milk production in the U.S. has continued to rise by over 20 percent in the last decade, even as the U.S. dairy cow inventory has declined. All of the top five states have seen a rise in the total pounds over the last decade with Idaho seeing the largest increase of almost 55 percent.

Poultry Industry

Nebraska's poultry industry currently consists of egg laying hens, and to a lesser extent, broiler production. Nebraska ranks 27th in all poultry inventory, which represents the total number of birds, including chickens, broilers and turkeys. Over the last decade, Nebraska has seen a 38 percent decline in its poultry inventory, from 18.223 million head to 11.325 million head. This dramatic decline took place in the latter half of the decade, and was mainly due to the closure of a turkey slaughtering and processing plant. The closure caused the number of commercial turkey growers to significantly decline.

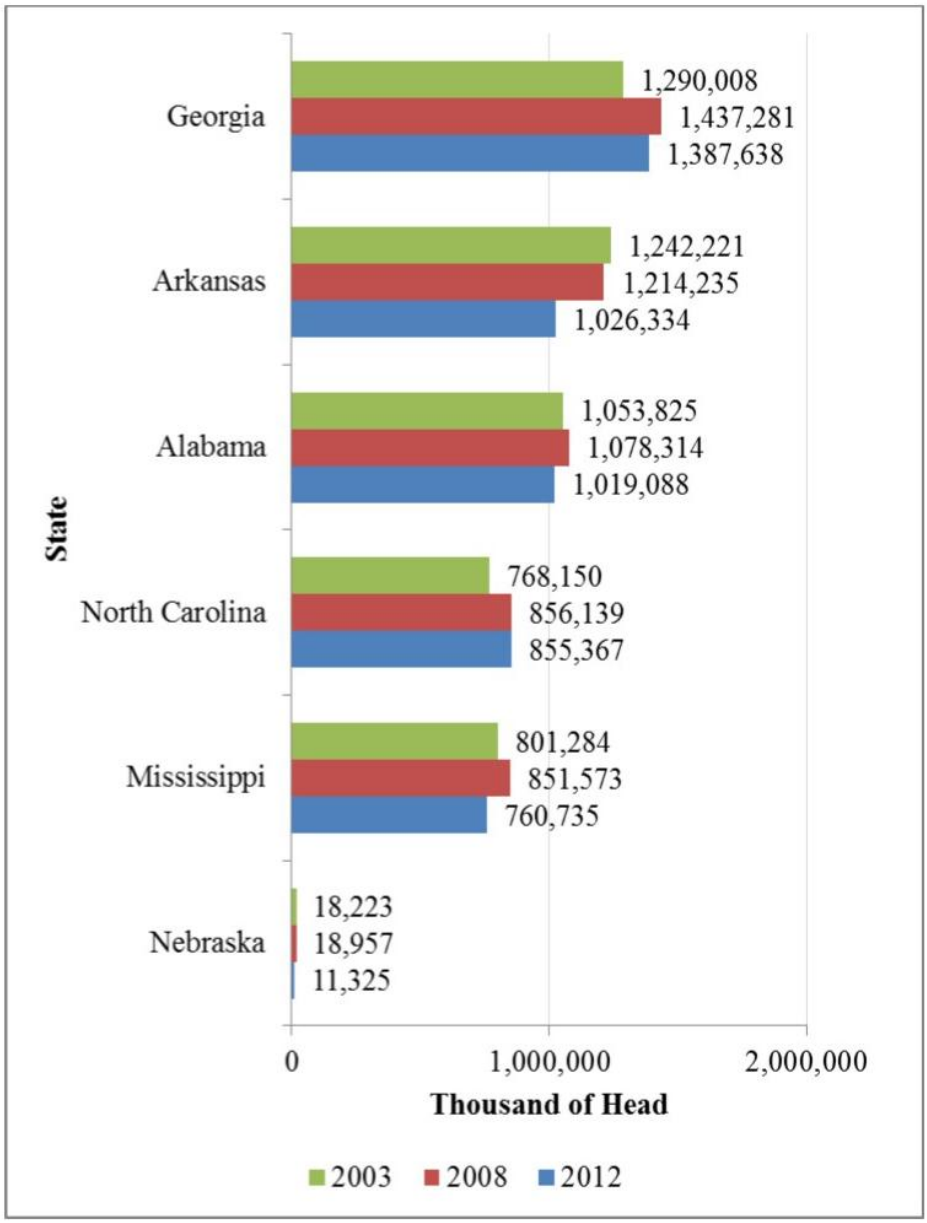


Figure 10: Annual Dec. 1 all Poultry Inventory in Top Five States of U.S. and Twenty-Seventh Ranked Nebraska

The annual all poultry inventory for Nebraska compared to the top five states is shown in Figure 10. Over the past decade the U.S. poultry inventory has remained relatively stable. The majority of the U.S. poultry production is concentrated in the southeastern states, with Georgia currently ranked 1st. Arkansas saw the largest decline in poultry inventory over the last decade at 17.2 percent, with North Carolina seeing the largest increase of just over 7.2 percent.

USDA statistics indicate that from 2000 to 2012 the value of Nebraska's egg production grew by 92 percent. However, over the same time period, neighboring states were growing much faster, with Iowa at 311 percent, Missouri at 144 percent and South Dakota at 159 percent.

Summary

Nebraska has continued to see growth within the beef sector over the last decade. Growth within the cattle feeding industry stems from possible advantages within the state based on location and proximity to DGs by-products as well as corn production. Nebraska has continued to keep pace with increases in pig crop numbers compared to the national average but is less than half of the increase that neighboring state Iowa has seen. The gap between annual pig crop numbers and pigs slaughtered within the state shows potential for growth within the market hog sector. Within the dairy sector, Nebraska has continued to see a decline in herd numbers but a slight increase in total pounds produced. Nebraska's poultry industry, consisting mainly of egg laying hens, has been declining over the last decade, while the U.S. as a whole has remained relatively constant.

Legal Issues

The livestock industry is a major part of Nebraska's economy but several sectors within the industry have not grown at rates comparable to neighboring states in the last two decades. There are three major legal topics that significantly influence how new livestock operations are sited, constructed and operated in Nebraska: (1) animal feeding operation (AFO) water quality permits from the Nebraska Department of Environmental Quality (DEQ), (2) county zoning of livestock facilities and (3) nuisance lawsuits brought against livestock operations. In addition, Initiative 300 has restricted who can participate in production agriculture in Nebraska, while a provision of the Nebraska Competitive Livestock Markets Act has prevented meatpackers from participating in beef and swine production.

DEQ AFO Environmental Permits

DEQ has been regulating waste discharges from livestock operations in Nebraska since 1971. Currently, all large AFOs (Table 1, below) must obtain construction and operating permits from DEQ to prevent AFO waste discharges to surface or ground water.[3] Medium and small AFOs may be required to obtain DEQ construction and operating permits on a case-by-case basis if DEQ determines, after a site inspection, that AFO waste discharges are likely to contaminate surface or ground water.[4] The operating permit for large AFOs must include the use of best management practices to minimize livestock odors.[5] Ground water quality monitoring may be required for AFOs with relatively shallow depths to ground water.[6]

Table 1. Animal Feeding Operation (AFO) Categories

Species	Large AFOs	Medium AFOs	Small AFOs
Cattle/calves/heifers	≥ 1,000	300-999	>300
Dairy cows	≥ 700	200-699	> 200
Swine–55 lbs or more	≥ 2,500	750-2,499	> 750
Swine–weaned or nursery pigs	≥ 10,000	3,000-9,999	> 3,000
Chickens–laying hens, broilers; liquid manure system	≥ 30,000	9,000-29,999	> 9,000
Chickens–laying hens; dry manure system	≥ 82,000	25,000-81,999	> 25,000
Chickens–except laying hens; dry manure system	≥ 125,000	37,500-124,999	> 37,500
Turkeys	≥ 55,000	16,500-54,999	> 16,500
Horses	≥ 500	150-499	> 150
Sheep/lambs	≥ 10,000	3,000-9,999	> 3,000

Source: Nebraska Department of Environmental Quality, *Animal Feeding Operation (AFO) Categories, 05-006* (December 2013)

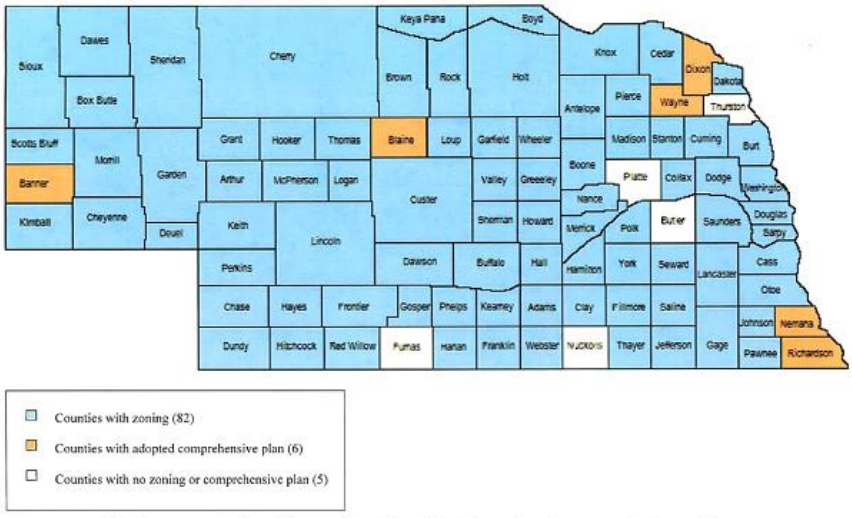
[3] *Neb. Adm Code* Title 130, ch. 5 para. 001 (Oct. 4, 2011).
[4] Id. ch. 2 para. 001-002.
[5] Id. ch. 3 para. 001.09.
[6] In a 2003 DEQ study, the authors indicate that ground water quality monitoring was at that time required when the depth to ground water was 50 feet or less. Marty Link & Dan Inman, *Ground Water Monitoring at Livestock Waste Control Facilities in Nebraska, December 2003*, at 2 (Neb. Dept. of Env. Quality 1994). In this study the authors concluded that less than 3 percent of livestock waste control facilities were thought to be harming ground water quality. *Id*. at 2, 14 (18 of 630 livestock operations "appear to be negatively impacting ground water quality.")

Most livestock producers needing a DEQ AFO permit hire a consultant or engineer to assist in obtaining the permit. If producers meet all relevant DEQ requirements, they will likely be granted a permit. However, livestock producers also need county zoning approval if the AFO is located in a zoned county,[7] which may be more difficult to obtain than the DEQ permit.

The purpose of the DEQ AFO permitting program is to limit livestock waste from polluting surface water or ground water. DEQ has received complaints from the public regarding AFO odors, but this is in large part beyond DEQ's authority. DEQ could possibly be requested to require large AFO operators to follow the odor reducing best management practices that are part of the AFO's operating requirements if the operator were not already doing so.

County AFO Zoning

County zoning in Nebraska was first authorized in 1967. A 1994 study identified 28 zoned counties in Nebraska.[8] As of February 2012, the number of zoned counties in Nebraska has increased to 82 (Figure 10).[9] Most recently zoned counties implemented zoning in order to control how large AFOs could locate within the county, especially after Initiative 300 had been invalidated in federal court in 2005 and the last appeal denied in 2007. Some counties have zoning setback requirements of a mile or more for new large AFOs. County AFO zoning in Nebraska is in contrast to, for example, Iowa where counties are not allowed to zone agricultural operations. The five unzoned counties are: Butler, Furnas, Nuckolls, Platte, and Thurston (Figure 11). The six counties that have prepared comprehensive plans, a prerequisite to zoning, but where no zoning regulations were established as of February 2012, are Banner, Blaine, Dixon, Nemaha, Richardson and Wayne.



Source: Legislative Research Office and updated by the Nebraska Association of County Officials – Feb. 2012

Figure 11: Livestock Zoning Status of Nebraska Counties

[7] *Neb. Adm . Code* Title 130, Form B, Permit Application at B-2; Form C, Applicant Disclosure at C-3

[8] J. David Aiken, Annette M. Higby & Nancy L. Thompson, *A Farmer's Handbook on Livestock Regulation in Nebraska*, pages 15-28 (Center for Rural Affairs, 1994). The counties were Adams, Brown, Cass, Cheyenne, Clay, Dakota, Deuel, Dodge, Douglas, Hall, Hamilton, Howard, Kearney, Keith, Lancaster, Lincoln, Madison, Merrick, Otoe, Pierce, Saline, Sarpy, Saunders, Scotts Bluff, Seward, Stanton, Washington and York.

[9] "Zoning Status of Nebraska Counties," Legislative Research Office and Nebraska Association of County Officials, February 2012 (map). See Figure 11.

Table 2. Livestock Zoning-related Developments

Year	Development
1997	Nebraska Supreme Court rules that farrowing cooperatives violate Initiative 300 corporate farming requirements. *Pig Pro Nonstock Cooperative v. Moore*, 253 Neb. 72.
1997	Strengthening of DEQ livestock waste control permitting regulations to protect ground water and reduce phosphorous pollution of surface water.
1999	Interim county zoning legislation adopted.
2000	Counties cannot regulate new livestock operations without first adopting county zoning (including a comprehensive plan). *Enterprise Partners v. Perkins County*, 260 Neb.
2002	Counties may regulate animal feeding operations through zoning. *Premium Farms v. Holt County*, 263 Neb. 415.
2002	Nebraska Court of Appeals rules that livestock odors can reduce residential property values. *Livingston v. Jefferson County*, 10 Neb. App. 934.
2002	County officials violated open meeting requirements in granting zoning permit for dairy near trout stream. *Alderman v. Antelope County*, 11 Neb. App. 412.
2003	Nebraska Supreme Court ruled that city of Alma could regulate AFOs in order to protect community water supply. *City of Alma v. Furnas County Farms*, 266 Neb. 558.
2003	Livestock friendly counties legislation adopted; currently 25 counties have received state livestock-friendly designations: Adams, Banner, Box Butte, Cuming, Dawes, Dawson, Deuel, Dodge, Gage, Garden, Grant, Hitchcock, Holt, Jefferson, Johnson, Keith, Kimball, Lincoln, Morrill, Otoe, Saline, Scotts Bluff, Sheridan, Wayne, and Webster. See Figure 12 for map.
2005	Attempt of livestock developer to start development of livestock facilities before county zoning ordinance took effect was unsuccessful. *Hanchera v. Red Willow County Board of Supervisors*, 269 Neb. 623.
2005	Initiative 300 invalidated by federal courts; made it easier for corporate livestock developments to proceed, although some have been limited by restrictive county livestock zoning regulations. *Jones v. Gale*, 405 F. Supp.2d 1066 (D. Neb.); affirmed 470 F.3d 1261 (8th Cir. 2006); U.S. Supreme Court appeal denied April 2, 2007.
2013	LB550 introduced: (1) would authorize state to make infrastructure loans to livestock friendly counties; (2) DEQ could provide technical assistance to counties considering zoning applications for animal feeding operations; and (3) livestock developers would be eligible for larger state investment tax credits. Supported by several agricultural groups as well as the Nebraska Association of County Officials.
2013	Township livestock waste regulations not preempted by DEQ AFO water quality regulations or county zoning regulations. *Butler County Dairy, LLC v. Butler County*, 285 Neb. 408.
2014	Amendment AM1585 to LB550 filed. The amendment would, among other things, replace DEQ AFO siting technical assistance with Department of Agriculture grants to livestock friendly counties to plan for livestock development.

AFO Nuisance Lawsuits

Under traditional Anglo-American law landowners have been able to challenge a neighbor's property use as constituting a nuisance in court.[10] In 1976, the Nebraska Supreme Court ruled, for the first time, that a rural livestock operation could constitute a nuisance and be legally required to discontinue operations if the nuisance could not be reduced to tolerable levels. In the 1982 Nebraska Right to Farm Act, farming operations are protected against nuisance lawsuits if the agricultural operation, or expansion of that operation, was established before the neighbor filing the lawsuit took possession of their property and the agricultural operation did not constitute a nuisance before the neighbor took possession.[11]

Few livestock operations have been adversely affected by nuisance lawsuits. Historically, two of those affected were closed, three were required to pay significant damages and one was allowed to continue operation after changes to its livestock waste control facilities were made. Most of the livestock nuisance aspects for most new AFOs may be reduced through a combination of county zoning AFO setback requirements and improved AFO management practices.

The 1994 *National Farms* decision illustrates the issues that may be associated with very large AFOs; over 80,000 swine in this case. The plaintiffs suing National Farms received substantial money damages–over $300,000–for odors and other nuisance factors associated with an AFO over two miles away. The substantial AFO setback distances found in some county zoning regulations are an attempt to prevent or reduce the likelihood of this type of nuisance situation.

The Nebraska Right to Farm Act protects livestock operations, and agricultural operations in general, from nuisance lawsuits, but only if the livestock operation was in existence before the neighbors complaining of the nuisance. In all of the post-1976 cases the plaintiffs were there before the livestock operation.

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[10] See Neb. Rev. Stat. §28-1321; for more information on this topic see *Farmers' Handbook*, note 8, at pp. 29-37.

[11] Neb. Rev. Stat. §2-4403. See also Neb. Rev. Stat. § 81-1506(1)(b) (livestock nuisance lawsuits). Interestingly, the Iowa Supreme Court has ruled that the Iowa Right to Farm Act was unconstitutional for limiting nuisance lawsuits against farmers to only those neighbors who were there first. *Bormann v Board of Supervisors*, 584 NW 2d (Iowa 1998). This means that any neighbor can file a nuisance law suit against Iowa farmers, not just those who were there first.

Table 3. Livestock Nuisance-related Development

Year	Development
1908	Cattle/hog feed yard in the City of Franklin was not a nuisance because it was not improperly operated. *Francisco v. Furry,* 82 Neb. 754.
1943	Sarpy county swine operation was not a nuisance because it was not improperly operated. *Vrana v. Grain Belt Supply Co.,* 143 Neb. 118.
1950	Nebraska City livestock slaughter facility could be a nuisance even if properly operated. *Sarraillon v. Stevenson,* 153 Neb. 182.
1976	Colfax county cattle operation installed cattle pens holding up to 3800 cattle and four livestock waste lagoons directly across the road from the plaintiff's farmhouse. The Nebraska Supreme Court reversed its earlier livestock nuisance holdings and ruled 5-2 that a livestock operation could constitute a nuisance even if it were properly operated. *Botch v. Leigh Land Co.,* 195 Neb. 509.
1980	If Colfax county cattle operator could not modify the livestock operation so as to reduce the nuisance to tolerable levels, the livestock operation could be required to be discontinued. *Botch v. Leigh Land Co.,* 205 Neb. 401.
1980	Merrick county cattle operator built 15 cattle pens holding 2500-3500 cattle across the road from the plaintiff's farmhouse. Jury awarded $50,000 in damages. Cattle operator admitted in testimony that he did not take the impact on the neighbors into account when developing the cattle feeding operation. *Gee v. Dinsdale Bros. Inc*., 207 Neb. 224.
1981	Livestock waste control system changes reduced facility's livestock nuisance to a tolerable level. *Botch v. Leigh Land Co.,* 210 Neb. 290.
1982	Nebraska Right to Farm Act adopted. Protects agricultural operations from nuisance lawsuits if the agricultural operation was there first.
1985	Swine facility required to be discontinued as a nuisance. Swine facility's own expert testified that it was impossible to operate the facility within a half mile of a residence and not have an odor problem. The AFO was about 1/4 mile from the plaintiff's farm-house. *Cline v. Franklin Pork Inc.,* 219 Neb. 234.
1985	Farmer sold off 1.67 acres of farmland for an acreage, then built a 400-head swine facility 133 feet from the house built on that acreage. The swine facility was ordered to be discontinued as a nuisance. *Flansburgh v. Coffey,* 220 Neb. 381.
1994	National Farms held liable for $376,000 in damages for odors and other livestock nuisance factors. National Farms had up to 85,000 hogs 2.25 miles away from the Kopeckys' home. *Kopecky v. National Farms,* 244 Neb. 846.
2004	Swine facilities constituted a nuisance and plaintiffs were entitled to damages. All of the plaintiffs lived within two miles of one of Pillen's 5000 head farrowing units. *Stephens v. Pillen,* 12 Neb. App. 600.

Corporate Farming Ban

Article XII section 8 of the Nebraska Constitution, popularly known as Initiative 300, was approved by Nebraska voters and became part of the Nebraska Constitution on November 29, 1982. Initiative 300 prohibited non-family farm or ranch corporations from owning or operating agricultural land and from owning or raising livestock. To qualify as a family farm or ranch corporation, the family needed to own a majority of the corporation's stock and a family member had to provide daily labor and management for the operation. Agricultural land already owned by a non-family farm or ranch corporation was grandfathered. Initiative 300 effectively precluded new corporate involvement in Nebraska production agriculture until 2007. Initiative 300 was ruled unconstitutional in federal district court in 2005.[12] That court ruling was affirmed in federal circuit court in 2006.[13] The U.S. Supreme Court declined to review the circuit court decision on April 2, 2007. Since that date Initiative 300 has been unenforceable in court. Non-family farm or ranch corporations are once again eligible to own or operate agricultural land in Nebraska, and to own or raise livestock.

Packer Feeding Ban

Initiative 300 banned non-family farm or ranch corporations from owning or raising livestock. That provision effectively banned meatpackers from owning or raising livestock in Nebraska unless the livestock was purchased for slaughter. Livestock ownership or production was not grandfathered under Initiative 300. Since Initiative 300 has been invalidated in federal court, it no longer restricts packer livestock ownership or production. However, the Competitive Livestock Markets Act, adopted in 1999, does prohibit meatpackers from engaging in beef or swine production in Nebraska.[14] Current legislation introduced by Sen. Schlitz, LB942, would remove the restriction on packer involvement in swine production. If this legislation were enacted, packers would be legally allowed to purchase or develop and operate swine production facilities to produce swine on their own behalf. Packers would also be enabled to own swine raised by Nebraska producers under contract. This change could lead to additional swine production in Nebraska.

Considerations

There is no doubt that livestock development is economically beneficial to Nebraska. However, local opposition to new AFOs may limit that development, as it has in the past. Following are a list of issues that could be considered relative to future Nebraska livestock development.

1. *Odor footprinting techniques should be evaluated for use in AFO zoning decisions.* University of Minnesota researchers have developed odor footprints for swine confinements. This technique has generated considerable interest within the Nebraska zoning community, and may be a way to establish a more science-based foundation for at least swine AFO zoning setback regulations in the future.

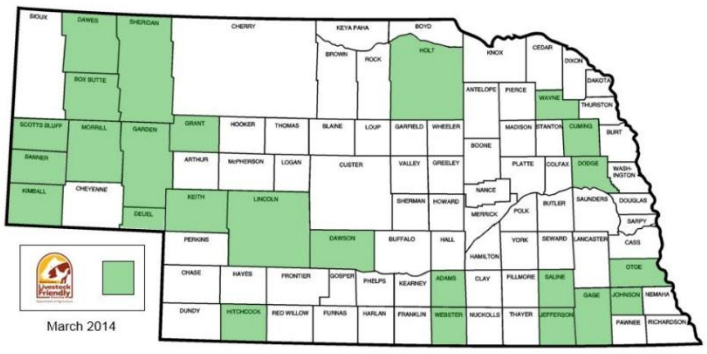
[12] *Jones v. Gale*, 405 F. Supp. 2d 1066 (D. Neb. 2005).
[13] *Jones v. Gale*, 470 F. 3d 1261 (8th Cir. 2006).
[14] Neb. Rev. Stat. § 54-2604 (2010).

2. Counties could consider providing incentives for livestock operators to implement advanced odor reduction and environmental protection practices and facilities. Some Nebraska counties already do this by having different setbacks for AFOs depending upon the manure handling system or processes employed. AFO operators can qualify for a smaller setback by, for example, covering manure pits, filtering confinement air exhausts or by using facultative lagoons to reduce odors.

3. *Expand educational efforts regarding AFO ground water quality impacts*. Ground water quality protection may be an issue when new AFOs are considered for county zoning permits. Proposed large AFOs in areas with higher ground water tables must have ground water quality protection plans approved by DEQ in order to obtain their environmental permit. Media accounts suggest that some ground water quality threats from proposed AFOs may not be well understood by the general public. This suggests an educational opportunity to improve public understanding regarding the ground water pollution potential of AFOs.

4. Rural counties wanting to increase their level of economic development should evaluate their attitudes towards new livestock operations. Most of the proven economic development opportunities for rural Nebraska are agricultural based: livestock feeding, ethanol production, and wind farms. If a county wants to increase the number of local jobs and the local tax base, taking an objective look at proposed livestock facilities would be a positive step. Once a county turns down zoning approval for a new or expanded AFO, it lessens the likelihood that other proposals will be forthcoming. Counties should take a long-term approach in considering whether to permit a new or expanded livestock operation within their jurisdiction. Carefully crafted zoning regulations can give potential livestock operators a clear signal of what type of operations the county would favor. If an applicant meets all the county zoning rules, county officials should understand that denying the zoning permit (even though it meets all county requirements) will likely reduce the interest of future livestock developers to locate in the county.

5. *LB550 should receive serious legislative attention*. LB550 is a positive proposal to add some substance to the livestock friendly county program by providing state aid to state-designated livestock friendly counties. This could create some momentum for new livestock development within livestock friendly counties (Figure 12). However, it is incumbent upon livestock friendly counties to keep up their end of the bargain by granting zoning permits to livestock proposals that meet county zoning requirements.



Source: Nebraska Department of Agriculture

Figure 12: Livestock Friendly County Map

Several legal issues as well as policies have potentially constrained livestock development within Nebraska. If the livestock industry can overcome these challenges, there exists the potential growth within the industry.

Economic Impacts of the Livestock Industry

The question could be asked, "What would be the economic impact to Nebraska's local economies if livestock expansion were to occur." The intent of this section is to provide a reliable set of economic performance measures to sub-state region and county-level economies.

In consultation with industry officials, the following scenarios considered possible under current conditions were designed:

- A 25 percent expansion of hog finishing volume in Nebraska, scattered across three regions of the state and 15 counties. Some 270 on-farm units, each with a 2,400 head capacity, added.
- More than a doubling on the state's current dairy herd numbers (60,000 head addition), divided equally across three regions and 18 counties, with two new dairy processing facilities built. A total of 24 new dairies, each with a 2,500 head capacity added.
- A 10 percent increase in fed cattle production in the state, with expansion distributed geographically in a similar proportion to current patterns.
- A three-fold increase of in-state egg production occurring in two regions.
- One *contraction* scenario was also considered, that being the economic impacts should Nebraska experience the closing of one of its three pork processing plants.

While the current scenarios are generic in nature without county-specific information, the analytical procedure has been completed so as to provide timely response to actual expansion plans, with detailed economic impact metrics. Using IMPLAN (a widely-used input-output analysis framework) the key economic impact measures can be estimated down to the county level for both direct and indirect effects. Other components are also part of the impact assessment, including: local tax revenue impacts, assessment of feed input availability with production changes and the fertilizer economics associated with the manure bi-products. The following sections summarize the analysis of these scenarios and highlight the economic implications should any or all of them transpire.

Hog Finishing Expansion

Currently, Nebraska exports about 2.5 million pigs annually to be finished in neighboring states and then shipped back to the state for processing. This represents about 30 percent of this state's annual pig crop. In consultation with hog industry experts, a hog finishing expansion scenario was proposed that would essentially result in half of these exported pigs, 1.3 million, staying in Nebraska to be fed out to slaughter weight — a 25 percent expansion over the 2012 market hog production level.

The scenario requires a 648,000 head expansion of facilities spread across three regions of the state and a total of 15 counties. A total of 270 finishing barns would be built (18 per county), each with a capacity of 2,400 head and an assumed annual turnover rate of two. It is assumed the facility's owner (most likely an existing farm operator) would contract with an integrator who would own the hogs and provide the feed and veterinary inputs. Thus, the on-farm revenues would be in the form of an annual fee covering the use of the facility and the associated labor as well as the value of the manure co-product.

The combined direct and indirect impact of this increase would result in more than 2,700 full-time employment positions with a wage and proprietor earnings expansion of $116 million annually. The additional value added to the state's annual economy would be nearly $185 million. Essentially, three-fourths of these increases would occur in the three regions and the respective counties that would be home to the expansion activity. In other words, the rural economies would be the primary recipients of expanded employment opportunities and earnings, as well as more robust value-added activity.

Table 4. Summary of Livestock Expansion Impacts

Impacts	Livestock Expansion Scenarios			
	25% Increase in Market-Weight Hogs	Doubling of State Dairy Cow Numbers	10% Increase in Fed Cattle Production	Tripling of Egg Production
Annual Livestock Number Increase	1,300,000 hd.	60,000 hd.	560,000 hd.	20 mi. layers
Economic Impacts (Annual):				
Employment Numbers	2,700	3,100	11,600	1,640
Labor Income	$116 mi.	$129 mi.	$447 mi.	$90 mi.
Value-Added Activity	$185 mi.	$301 mi.	$776 mi.	$153 mi.
Local Tax Impacts (Annual):				
Property Tax (Facilities)	$1,930,000	$1,451,000	$250,000	$6,500,000
Property Tax (Other)	$3,781,000	$4,233,000	$14,573,000	$2,958,400
Local Sales Tax	$405,000	$501,000	$1,545,000	$341,600
Total Local Tax Revenue	$6,116,000	$6,186,000	$16,118,000	$9,800,000
Revenue Value of Manure (Annual)	$6,480,000	$1,200,000	$11,200,000	a.

[a.] Not available

Moreover, the expansion would create an estimated $6.1 million increase in local tax revenue, to be allocated towards K-12 schools, roads/bridges, and so on — public services important to the quality of life of the citizens. And here as well, about three-fourths of these added local tax revenues would be flowing to the counties receiving this expansion.

Estimated total feed consumption for the hog finishing expansion is 8.6 million bushels of corn, 52,000 ton DGs (dry equivalent), and 82,500 ton of soybean meal. Given that the expansion is distributed over three different regions and 15 counties, the present availability of feed inputs (surplus of area production over livestock consumption) in any of the areas is such that the expansion would not create adverse price increases of feed inputs for other existing livestock producers.

The enhanced availability of manure for crop production in the respective counties is not an insignificant additional effect from hog expansion. In total, the annual manure production would

be sufficient to fertilize nearly 52,000 acres of cropland annually. At a conservative estimated value of almost $125 per acre, this represents a revenue enhancement to the recipient counties of nearly $6.48 million.

Economic benefits from hog expansion are widely distributed across the rural areas rather than being heavily concentrated in urban centers. The value-added activity of both the livestock production and the processing enhances local economies and helps maintain, if not expand, population levels of rural areas. Furthermore, the addition of a hog finishing enterprise represents a particularly unique opportunity for young people to come back to production agriculture. A single hog finishing facility added to an existing family farm operation would likely generate sufficient economic returns to support an additional household, while simultaneously providing a more diverse and reliable income flow for the entire farming operation. The estimated annual integrator fee less ownership costs of property taxes, utilities and building upkeep, plus the value of the manure as fertilizer would approach $90,000 per year for the farm operation. The old adage *"hogs pay for the farm"* still appears to have relevance, especially in the context of the entry of new-generation agricultural producers.

Dairy Expansion

Nebraska has experienced a steady decline of dairy production over many years. Smaller dairy operations have phased out and larger operations scaled to the sizes for high efficiencies have not been established in sufficient numbers to replace them. This has occurred at a time the U.S. industry itself is undergoing structural shifts and gradual relocation. Given (1) the availability of necessary inputs for viable dairy production in Nebraska, (2) the interest among processors to be located in the central U.S., and (3) a rapidly growing export market for dairy-based protein products, there appears to be a small window of opportunity for Nebraska to reverse recent trends.

The proposed scenario calls for more than a doubling of current dairy numbers, with an additional 60,000 cows. The increase is assumed to occur in three different regions of the state — each experiencing an additional 20,000 head of dairy cows in the form of eight dairies built for 2,500 head capacity and located across six counties. There would also be two additional dairy processors coming into the state.

The economic impact of this expansion would be felt in the local economies. Analysis suggests that the direct impacts alone would add more than 1,300 jobs, with an annual payroll of nearly $51 million. Each dairy would represent a full-time workforce of 28 with salaries exceeding county average wages. When economic multipliers are factored in, total job numbers added to the state's economy exceed 3,000, with accrued earnings of $129 million. More than four-fifths of these jobs and earnings would accrue within the three multi-county regions where the expansion occurs. For the two counties which would be home to a milk processing facility (most likely a regional trade center county), total direct and indirect employment numbers would likely exceed 600 jobs in each of those counties, some of which would likely be filled by commuters from neighboring rural counties.

Local assessment valuation for property tax purposes would be enhanced. A 2,500 head dairy facility would cost an estimated $6.7 million, and would generate over $50,000 of property taxes annually for local governmental units. When combined with other property investment

associated with the expansion impact, the additional county-level property tax collections could easily increase more than $125,000 per year. When looking at the combined effect of a 60,000 cow dairy expansion for the state, the total property tax collections would be more than $5.7 million annually, of which, nearly 90 percent would accrue to local governments in the three multi-county regions where expansion occurs.

The annual value of the manure co-product from each dairy operation would have more than a $150,000 substitution value for conventional fertilizer at current price levels. The combined value for the full expansion of 24 dairies would be over $1.2 million annually.

Fed Cattle Expansion

Presently, the cattle sector is the major contributor to Nebraska's livestock industry, accounting for essentially 80 percent of the economic measures. The state has some definite comparative advantages over other cattle producing areas including access to feed inputs (forage/crop residue, corn, DGs, soybean meal, etc.), proximity to existing processing, transportation and location infrastructure, and so on. As a result, industry officials believe that an expansion of at least 10 percent of annual fed cattle production is attainable in the foreseeable future, even though the U.S. cattle production volume has been on a gradual decline in recent years.

In this expansion scenario we assume a 10 percent increase in fed cattle production. At current levels of around 5.6 million head annually, this represents an expansion of 560,000 head. Given that feedlots are generally operating somewhat below 100 percent capacity and/or can rather quickly add additional space, we are assuming that such an expansion could be achieved without any new feedlots being built. Moreover, it is assumed that current geographic distribution of fed cattle production would continue to hold such that all sub-state areas and respective counties would experience a 10 percent growth rate. As for processing, we assume that no new facilities would be built, but that processing output would increase 10 percent and be achieved by adding extra work shifts at existing plants.

Analysis of this expansion of fed cattle production and associated processing would indicate that the direct economic impacts alone would be employment growth of 4,400 jobs, $173 million additional labor income and more than $282 million of value-added impact. When combined with the multiplier impacts of additional fed cattle production activity, the expected economic impacts would be 3,300 additional jobs, generating $96 million of labor income and more than $330 million of value-added impact for the state as a whole. Obviously, these impacts would be distributed across those regional and local economies which are presently heavily interwoven into the beef cattle industry.

With the 10 percent expansion working through both the cattle production and the beef processing activities, and with the inclusion of the associated economic multiplier effects, the total potential outcome would be an additional 11,600 jobs with associated labor earnings of $447 million, and value-added impact of more than $775 million to the Nebraska economy.

Local tax implications from an expansion of fed cattle production and processing would vary somewhat from the hog finishing expansion and the dairy expansion, primarily because current feedlot capacity would likely accommodate the expansion with only minor property development. Also, the processing facilities might see only modest property improvements as

additional work shifts would be added to existing plants already under operation. However, the property expansion would be added to local property assessment roles, as the additional work force and impacted businesses see the need to add housing and commercial property improvements. Local property tax effects would tend to be where the associated jobs are more mostly concentrated, as would the local sale tax revenues. The combined impact of both property tax and local sales tax annual revenues from the fed cattle expansion would exceed $16 million annually.

In terms of feed usage, the fed cattle production is the major feed user of the state's livestock industry. Consequently, the idea of a 10 percent expansion of fed cattle output represents a significant increase of in-state feed consumption. Under typical feed rations of corn, DGs, roughage and supplements, the annual corn-equivalent consumption (corn, DGs, and corn-based forage) increase would likely exceed 40 million bushels. Obviously, if such fed cattle expansion occurred within a fairly small region of the state, the feed input needs would easily exceed the combined current corn surpluses of several counties. However, given (1) the ongoing expansion of irrigation and Nebraska's annual corn production volume expanding at a current rate of more than 50 million bushels per year, and (2) a fed-cattle infrastructure widely spread across the state, an ample feed supply should exist in most areas within a cost-efficient hauling distance.

The manure co-product of the expanded fed cattle production represents an increasingly valuable output for the sector. Given a conservative estimate of the nutrient value of manure produced annually in feedlots of $20 per head, annual total value of the manure co-product generated by this expansion would be $11.2 million.

Poultry Expansion

Poultry production in Nebraska has historically been a minor component of the state's animal industry. But the egg laying component has been present and growing over time. USDA statistics indicate that, from 2000 to 2012, the value of Nebraska's egg production grew by 92 percent. However, over the same time period, neighboring states were growing much faster, with Iowa at 311 percent, Missouri at 144 percent and South Dakota at 159 percent. Given that Nebraska has similar resource endowments as these other states, it is believed egg production in the state could grow significantly in the years ahead; hence a three-fold expansion scenario was considered realistic and analyzed here.

The scenario assumed an expansion of 20 million layers in the state, located in the two regions where most egg production is currently—the Northeast and the Southeast regions. When direct and multiplier impacts are combined, the total economic impact of this expansion would create nearly 1,640 jobs, of which 60 percent would be located in the two regions, and the remainder in the rest of the state. Earnings from the expansion would exceed $90 million annually, with more than 70 percent of those earnings accruing in the two regions. The value-added contribution to the state's economy would be nearly $153 million, of which about 70 percent would be located in the economies of the two regions.

Feed usage of such a poultry expansion would be considerable. The annual consumption of the expanded layer flock would likely exceed 34 million bushels of corn and 140,000 tons of soybean meal. If all the expansion occurred in a few counties, local feed availability could be

problematic leading to rising feed costs of existing livestock producers in the area. However, it is much more likely that additional laying facilities would be scattered across several counties in northeast and southeast Nebraska, such that local cash grain production should be adequate.

In addition to the greater demand for grain generated by an expanded egg laying sector, cash grain producers in the regions would also benefit from access to supplies of poultry manure for crop fertilizer. Assuming a conservative estimated nutrient value of the manure applied to the cropland, the total value of the poultry manure co-product would exceed $2.4 million.

Pork Processing Plant Closure

Because of the relatively fast growth of hog production in nearby states in recent years, the possibility exists that Nebraska could someday see the closure of one of its three major pork processing plants. Should this occur, significant economic fallout could result in the local economies where those plants reside. And as profound as the direct effects of plant layoffs may be in terms of job and earnings losses, the negative economic implications are even greater due to the multiplier effects working through those area economies. Thus, a contraction scenario of one Nebraska pork processing plant closing was analyzed to provide a more definitive economic metrics.

The results suggest that the direct impacts could lead to a loss of over 1,400 jobs and annual earnings of over $61 million. The direct impact would lead to nearly a $72 million reduction of value-added activity, with the bulk of that loss attributed to the local and regional economy. When the multiplier effects of the plant closing work through these economies, total job losses would exceed 2,000, with lost annual earnings of $100 million. Total value-added activity of the economic area would drop more than $90 million. These impacts would certainly be a major economic blow to a nonmetropolitan economy that would likely spill across several counties.

The above assumes that a pork processing plant closure would not affect the current level of market-weight hog production in the state. While this may be a reasonable assumption in the short-run, it may not hold indefinitely, since market hog producers benefit economically from closer proximity to the pork processing plant. In the long-run, a processing plant closure like this could well lead to further loss of hog production, and if that occurred, the multiplier effects observed above would be even more severe.

Economic Impacts in Perspective

The four expansion scenarios and the various impact metrics are summarized in Table 4. In terms of the total economic impacts of these scenarios relative to the state's economy, the impact is relatively modest. As of 2010, the state's animal industry generated 106,000 jobs (8.7 percent of total state employment), $4.2 billion of labor income (7.9 percent of total labor earnings in the state), and $7.7 billion of gross state product (8.7 percent of Nebraska's total GDP). So, any of the above expansion scenarios, in terms of the total state impacts, may not seem particularly significant. However, as previously noted, the economic impacts of livestock expansion occur almost entirely in nonmetropolitan Nebraska, and often are widely distributed across rural counties. Here is where the "*economic footprint*" can be, and is, particularly significant. For example, in a typical rural county the addition of 50 to 75 jobs with wage levels above county

averages would be quite beneficial to that county's economy. In fact, few if any other economic development alternatives could boast of comparable job and income outcomes for the rural agricultural-based economy.

The value-added effects of further livestock development can provide greater economic diversity and resiliency to those rural economies that embrace it. To a large extent, the crop and livestock sectors tend to counter-balance one another in terms of profitability from year-to-year, which in turn can provide more stable economic conditions for rural main street. And as crop producers adjust from recent years of record-shattering profits to more normalized levels, and as profitability conditions improve for livestock producers, a larger livestock presence bodes well for any rural economy.

Conclusion

As a major producer of crops, livestock and most recently biofuels, Nebraska has a unique and competitive bio-economy — the *Golden Triangle*. Over the last decade Nebraska's livestock industry has not kept pace with other nearby states in percent growth, in particular with dairy and hog production, even with apparent economic advantages. The potential livestock development within Nebraska has been constrained by several issues and policies. These issues include 1) limitations on corporate farming activity in Nebraska, 2) state and local permitting processes, 3) nuisance roles and lawsuits, and 4) issues and concerns from the general public and interest groups. If these issues can be overcome by the livestock industry, further expansion could provide substantial growth in economic output and employment throughout Nebraska.

At this juncture it would appear that the livestock component of this unique system has considerable potential for further expansion. In fact, the long-term economic sustainability of the total crop/livestock/biofuel system and its ability to thrive in the future may hinge upon such expansion as global demand for food products, especially protein-based products, rises. The market forces, both domestic and global, are well positioned to allow investment in and expansion of this state's animal industry in the coming decade.

Certainly, decisions of whether or not to pursue livestock expansion activity will depend on community stakeholders at the local levels across the state, as they consider these economic and other implications. But likewise, all the citizens of Nebraska and their policy makers also have a vital stake in the outcome. Any one of the possible expansion scenarios analyzed in this study represents thousands of potential jobs and associated earnings distributed widely within and across Nebraska communities and local economies. From that additional value-added economic activity, developed in an environmentally and socially responsible manner, will flow the potential for enhanced economic opportunity and quality of life for all Nebraskans into the future. In sum, the economic challenges posed, as well as the associated economic opportunities afforded, are simply too weighty in Nebraska's economic future to ignore.

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