Governor Tim Pawlenty's Advisory Task Force

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Minnesota's Animal Agriculture Industry Report

Livestock Advisory Task Force Membership:

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This report

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Executive Summary

Animal agriculture is a vital part of Minnesota's economy. In 2001 (the most recent year for which data were available), cash receipts from livestock production totaled nearly $4.3 billion - roughly 53 percent of the state's overall agricultural sales[1]. The full economic impact of Minnesota's livestock production exceeds $10.7 billion when indirect and induced outputs are considered[2].

In addition to being a major economic driver, livestock production is a major employer. The industry is credited with supporting nearly 100,000 jobs (directly providing nearly 28,000 jobs and creating business activity that supports 70,000 more)[3].

Animal agriculture also generates significant demand for Minnesota's largest agricultural crops through animals' consumption of feed grains. Minnesota livestock annually consume roughly 20 percent of Minnesota's corn and soybean crops. This local demand adds value to the crops - it is estimated that animal agriculture adds more than $2 billion to the value of Minnesota crops[4].

Unlike some states dominated by one species or business model, Minnesota's animal agriculture industry is diversified in terms of livestock species, farm size, and business model. This diversity is important because it gives the industry resiliency and flexibility. The Governor's Livestock Advisory Task Force recognizes the value and importance of all livestock operations and seeks to preserve and expand opportunities for all of them. As such, the recommendations included in the task force report are designed to have relevance for all Minnesota livestock operations regardless of size, location, business structure or livestock species.

Statement of Need

While Minnesota's livestock industry is a major economic force, its future is uncertain. As input costs have increased and commodity prices have remained relatively static, profit margins for farmers have shrunk. This has driven some farmers out of business, while others have chosen to farm part-time and work off the farm to supplement their farm income. Some have chosen to switch to alternative farming methods such as organics, which offer potentially higher per-unit returns in exchange for higher production costs. For others, the answer has been to try to increase the number of acres or animals to offset the declining per-unit returns. As profit margins dwindle and business costs and family costs increase, farmers find they need to modernize and increase their efficiency simply to generate a livable income. However, attempts to expand or improve their facilities are sometimes met with resistance by those who are opposed to these changes.

The state's dairy sector, once the crown jewel of Minnesota agriculture, is leaving the state at an alarming rate. In the last 10 years, Minnesota lost 173,000 dairy cows[5], 21 dairy processing plants[6] and hundreds of millions

of dollars in related economic activity. This loss is underscored by the recent decision by Associated Milk Producers Inc. (AMPI) to close its dairy processing facility in Glencoe, Minnesota.

While the short-term status of the pork, poultry and beef sectors appears more stable, there are concerns about their long-term competitive ability as well.

To address this problem, Governor Tim Pawlenty announced the formation of the Livestock Advisory Task Force (LTF) in November 2003. Governor Pawlenty directed the task force to evaluate the status of Minnesota's animal agriculture industry and make recommendations to support its retention and growth in Minnesota.

The 14-member task force included representatives from the state's livestock industry, as well as agricultural finance, producer organizations, academia, and state government. Task force members met throughout the winter and spring of 2004, listening to presentations from local government officials, agricultural officials from other states, university officials and others. These presentations and the task force discussions that followed were designed to gather information and perspectives about the status of Minnesota's animal agriculture industry and about potential initiatives to improve its long-term prospects. The result is the list of recommendations in this report.

In addition to the recommendations for Governor Pawlenty, this report provides background information about Minnesota's animal agriculture industry and the economic and social trends driving its continuing evolution. This information is included to provide readers with some of the same information the task force used when developing the recommendations.

Livestock Advisory Task Force Recommendations

Factor 1: Local Siting of Livestock Operations

Goal: To improve the use of local management in the siting of livestock operations, thereby ensuring future economic development opportunities for livestock production and rural communities, protecting the environment, and reducing associated tensions and divisiveness in rural communities.

Recommendations: The LTF believes a significant impediment to modernization and new investment in Minnesota livestock operations is the lack of predictability and uniformity in the siting process at the local level. In recent months, the LTF received input on this issue from representatives of the Minnesota Association of Townships (MAT) and the Association of Minnesota Counties (AMC). Although the LTF hoped to make specific recommendations related to the role of local governments in the siting of livestock operations, task force members believe this issue requires further discussion with MAT and AMC representatives to gain additional input and support for recommendations in this area. Therefore, the LTF recommends the continuation of the current task force for the purpose of developing recommendations on ways to increase predictability and uniformity for livestock producers in siting operations while at the same time recognizing the role of local land use planning.

The LTF further recommends that a sub-group of the current LTF (supplemented with representatives of AMC, MAT, and two members each from the Minnesota Senate and House of Representatives) be appointed to develop recommendations by the autumn of 2004 for consideration by the 2005 legislature. Areas of discussion by the extended task force would include but not be limited to:

- Conducting fact-finding on issues of local planning and land-use regulation as it relates to animal agriculture;
- Developing a comprehensive proposal for providing necessary resources, assistance, training, and incentives for local governments to conduct planning efforts that identify suitable areas to zone for animal agriculture, and to identify and develop safeguards for areas or landscape conditions that might present environmental constraints for livestock production;
- Developing a comprehensive education and training proposal for local government officials on livestock siting issues, in consultation with producer organizations, AMC and MAT. The program would focus on science-based information regarding environmental, odor, manure management, ground water, community and economic impacts from various types of livestock operations; and
- Reviewing planning and zoning enabling laws for counties and townships and recommending changes as needed.

As part of the recommendations in this section, the LTF urges that, until the Governor has had an opportunity to consider the recommendations of the LTF on local siting of livestock operations, local governments evaluate feedlot proposals on their individual merits and refrain from county and township moratoria and other restrictive actions that limit livestock production.

Factor 2: Permitting and Environmental Review Process

Goal: To improve the consistency, scientific basis, predictability, timeliness and efficiency of the state's permitting and environmental review process for livestock operations while continuing Minnesota's leadership in protecting the state's natural resources.

Recommendations:

- Direct the Minnesota Pollution Control Agency (MPCA) to develop by November 1, 2004, a customer service model such as Minnesota BizNice to assist project applicants through the permitting and environmental review process, and ensure applications are accurate and complete (MDA, MPCA, private industry). MPCA will then report on the status of this recommendation to the follow-up team of Livestock Task Force members;
- Direct the MPCA to work with producer groups and other stakeholders to identify process improvements for permitting and regulatory oversight. Focus should include promotion and support for Industry led Environmental Quality Assurance programs including development of regulatory self-certification for producers voluntarily participating in endorsed EQA programs. MPCA should report to the follow up LTF team on plans and progress by September 2004;
- Direct MPCA to update its General NPDES permits to increase flexibility and encompass more applicants (MPCA). Complete initial General Permits by November 1, 2004 and report to follow-up LTF team on additional General Permits (to cover anaerobic methane digesters, and other advanced technologies) and target dates for their completion;
- Direct the Environmental Quality Board (EQB) to evaluate animal-unit thresholds triggering environmental assessment worksheets (EAWs) and report findings to the follow-up team of LTF members by November 1, 2004 (EQB, MPCA, MDA); and
- Direct EQB, MPCA and the Minnesota Department of Agriculture (MDA) to determine feasibility of an alternative environmental review process (featuring time-certain steps) for operations eligible for General NPDES Permits and operations in certain geographic areas, and report back to the follow-up team of LTF members by September 2004 (EQB, MPCA, MDA).

Factor 3: Access to Capital

Goal: To encourage and enhance investment opportunities in Minnesota's livestock industry.

Recommendations:

- Develop initiatives for the 2005 legislative session to provide tax credits and other financial incentives to assist livestock operations in modernizing and reinvesting in existing facilities and report back to the follow up team of LTF members by October 2004 (Governor's office, MDA, Department of Revenue, DEED); and
- Direct the MDA and Minnesota Department of Employment and Economic Development (DEED) to review existing loan and grant programs and recommend changes that will give the programs greater flexibility to meet the financing needs of livestock producers (MDA, DEED) by October 2004.

Factor 4: Research, Technology, Productivity

Goal: To prioritize resources and increase funding for research and education projects that support the key factors of the task force, and that enable producers and government officials across the state to support and develop Minnesota's livestock industry.

Recommendation: Direct and support investments in the University of Minnesota and Minnesota State Colleges and Universities (MnSCU) Farm Financial Management Systems to work in consultation with livestock stakeholder groups to develop and implement by November 2004 an action plan to improve the competitiveness of Minnesota's livestock industry. The plan should address the following research and education needs:

Short-term needs

- Enhance research efforts related to on-farm odor and manure nutrient management (i.e., focus on public concerns over environmental issues including potential human health effects, demonstrate technologies that enhance the environment and further utilize manure's nutrient and bio-fuel benefits);
- Enhance producers' management skills to empower them to address such challenges as on-farm human resource demands, management of additional animal units and long-range fiscal planning regardless of operation size; and
- Invest in applied research capabilities (i.e., improved research facilities that reflect current technologies necessary for increased competitiveness, product quality and animal welfare, evaluate alternative sources of protein as well as provide technical assistance in the production and marketing of specialty or alternative meat and dairy products, and address questions such as constraints that limit the flow of capital investment in the livestock industry.)

Long-term needs:

- Coordinate development of an agricultural information system for emergency preparedness;
- Expand research on disease control in animal populations; and
- Enhance research integrating production records and genomics.

Factor 5: Preservation of Investment

Goal: To preserve the investment in livestock facilities operating within generally accepted agricultural practices and in compliance with applicable federal state and local requirements.

Recommendations:

- Support legislation that strengthens Minnesota's Right-to-Farm Law (Governor's office, MDA); and
- Support and encourage education and communication programs on the importance of animal agriculture to rural communities and to Minnesota's economy as a whole (MDA, agri-business, producer and commodity organizations, U of M, secondary and post-secondary education institutions).

Additional Recommendations (Not Directly Related to the Five Factors Cited Above):

- Develop specific proposals for the Legislature based on task force recommendations (Governor's follow-up team);
- Develop additional long-term policy recommendations for enhancing the competitive position of Minnesota livestock industry (Governor's follow-up team);
- Initiate and oversee activities of LTF siting subcommittee (Governor's follow-up team); and
- Report regularly to the Governor on progress toward implementation of these recommendations (Governor's follow-up team).

Economic Snapshot of Minnesota's Animal Agriculture

Beyond its historical and cultural significance, the animal agriculture industry is a vital part of Minnesota's economy. In 2001 (the most recent year for which detailed figures are available), cash receipts from livestock production totaled nearly $4.3 billion - roughly 53 percent of Minnesota's overall agricultural sales[7]. The full economic impact of Minnesota's livestock production is greater than $10.7 billion when factoring in indirect and induced output[8]. The livestock production sector is also a major employer in the state, supporting nearly 100,000 jobs (directly providing nearly 28,000 jobs and creating business activity that supports another 70,000)[9]. Many of these jobs are in economically stressed rural areas of greater Minnesota.

This report focuses on the state's four largest categories of animal agriculture: dairy, hogs, beef and poultry. However, several other categories of livestock production make important contributions in Minnesota. These include sheep and lambs, mink, goats and others. Together, these categories contributed nearly $90 million to the state's economy in 2001[10].

1. Dairy production

Figure 1

Dairy production is the second largest economic contributor among Minnesota's livestock categories, but it is the sector posting the weakest performance. The state's share of national milk production dropped from 7 percent in 1980 to 5 percent by 2003[11]. In 2001, cash receipts from dairy production accounted for 16 percent of Minnesota's total agricultural sales. The total economic impact of Minnesota's dairy production is estimated to be $3.1 billion. This figure includes $1.3 billion in direct impact and $1.8 billion in indirect and induced impact[12]. It is estimated that each dairy cow generates $5,000 in economic activity for the state[13].

The total employment impact of Minnesota's dairy industry is estimated to be 27,402 jobs. This employment figure includes direct employment of 6,111 jobs and indirect or induced employment of 21,291 jobs[14].

Minnesota's dairy production peaked in 1983[15]. Milk cow numbers dropped 26 percent from 660,000 in 1992 to 487,000 in 2002[16]. Increases in per-cow productivity softened the impact of this drop in cow numbers, but the state's

annual milk production has declined 14 percent from 9.9 billion pounds in 1992 to 8.5 billion in 2002[17]. This decrease resulted in a loss of $238 million in farm income[18] and raises significant concerns about the long-term viability of dairy production and processing in the state. The processing and production facets of the industry are at risk of becoming obsolete in comparison to other states. As a result of this trend and the industry's uncertain future in Minnesota, producers and processors may hesitate to reinvest.

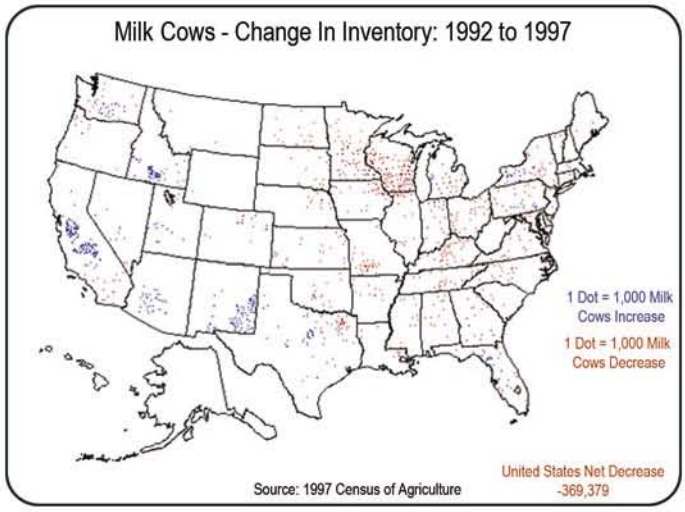


Figure 2

Much of the milk production is shifting to western states such as California and Idaho. For example, from 1997 to 2002 California added 256,000 dairy cows and 7 billion pounds of milk production. Idaho, meanwhile, added 116,000 cows and nearly 3 billion pounds of production. In that same period, Minnesota lost 82,000 cows and 752 million pounds of production[19].

The success of these western states has been credited to a number of different factors, but particular factors cited by industry observers were western states' relatively accommodating laws pertaining to business structure and greater acceptance of modern dairy operations.

2. Hog production

Figure 3

Of the four primary livestock sectors in Minnesota, hog production is the largest economic contributor and the strongest performing sector. It is also Minnesota's second largest production agricultural sector after corn. In 2001, cash receipts from hog production accounted for 17.5 percent of Minnesota's total agricultural sales[20]. The total economic impact of Minnesota's hog production is estimated to be $3.7 billion. This figure includes $1.4 billion in direct impact and $2.3 billion in indirect and induced impact[21]. It is estimated that each sow directly generates $2,000 in economic activity for the state[22].

The total employment impact of Minnesota's hog production industry is estimated to be 35,665 jobs. This employment figure includes direct employment of 10,285 jobs and indirect or induced employment of 25,380 jobs[23].

Minnesota is the third largest swine producer among all 50 states[24], and the state boasts nine of the top 40 hog operations in the U.S.[25] Minnesota's hog inventory grew from 4.7 million in 1992 to 6 million in 2002[26]. According to the Minnesota Agricultural Statistics Service, the state marketed 3 billion pounds of pork in 2002, up from 2 billion in 1992. Compared to the state's dairy sector, Minnesota's pork sector has encountered fewer obstacles to growth due in part to its greater ability and willingness to future-contract production. This provides pork producers with a guaranteed price for their product and it guarantees a steady supply of raw product for processors.

Of the 12 million head of Minnesota hogs marketed in 2003, approximately 7 million head were processed within the state of Minnesota. Hormel and Swift purchased between 85 and 90 percent of their daily requirements from Minnesota producers. More than 4.5 million hogs were transported out of the state for processing, with Tyson/IBP and John Morrell/Smithfield Foods accounting for the majority of this total. The number of hogs processed out-of-state is expected to increase with the completion of a new facility in St. Joseph, Missouri, in the autumn of 2005[27].

3. Beef production

Figure 4

Beef production is the third largest animal agriculture sector in Minnesota, and the sector has held steady over the last decade. The state ranks 11th in the country in cattle on feed[28]. The state's beef cattle inventories have remained

stable since the late 1980s, as has the average size of beef operations. According to the Minnesota Agricultural Statistics Service, the state brought to market slightly more than 1 million beef cattle in 2002, down slightly from 1.2 million in 1992. In 2001, cash receipts from beef production accounted for 11 percent of Minnesota's total agricultural sales[29]. The total economic impact of Minnesota's beef production is estimated to be $2.2 billion. This figure includes nearly $900 million in direct impact and $1.3 billion in indirect and induced impact.[30] It is estimated that each beef cow directly generates $1,636 in economic activity for the state.[31]

The total employment impact of Minnesota's beef production sector is estimated to be 21,085 jobs. This employment figure includes direct employment of 6,371 jobs and indirect or induced employment of 14,714 jobs.[32] The beef production sector in Minnesota has benefited by keeping labor and input costs – particularly feed costs - to a minimum.

4. Poultry production

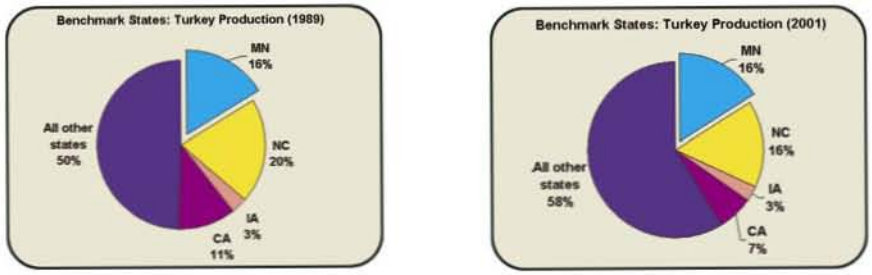


Figure 5

Comprising turkey, chicken and egg production, poultry production is the fourth largest animal agriculture sector in Minnesota and a stable presence in the state's animal agriculture industry.

In 2001, cash receipts from poultry production accounted for 7.3 percent of Minnesota's total agricultural sales.[33] The total economic impact of Minnesota's poultry production is estimated to be $1.5 billion. This figure includes $583 million in direct impact and $869 million in indirect and induced impact.[34] It is estimated that each turkey directly generates $11.68 in economic activity for the state, while each broiler directly generates $2.18.[35]

The total employment impact of Minnesota's poultry production sector is estimated to be 9,299 jobs. This employment figure includes direct employment of 1,965 jobs and indirect or induced employment of 7,334 jobs.[36]

Minnesota is second in the nation in turkey production, raising 44 million turkeys in 2002 (up from 43.5 million turkeys in 1992)[37]. The production and value of turkeys increased in Minnesota by 35 percent since 1994[38]. Broiler production in Minnesota topped 44.2 million birds in 2002, down from 45.3 million in 1992.[39] However, Minnesota's broiler production remains modest

when compared to other states. As with pork, Minnesota's poultry industry has encountered fewer growth obstacles than other sectors due in part to a greater ability and willingness to future-contract production. Minnesota's poultry sector has an advantage due to the state's significant processing capacity.

Livestock Processing

In addition to the livestock production sectors mentioned above, another major component of the state's animal agriculture industry is the processing sector. Based on recent data compiled by the MDA, processing of livestock and livestock products in Minnesota directly generates $7.4 billion annually. The total economic impact of Minnesota's livestock processing is nearly $19.7 billion when factoring in indirect and induced output.[40]

The processing sector is also a major employer, supporting nearly 133,000 jobs (directly providing nearly 26,000 jobs and creating business activity that supports another 107,000).[41]

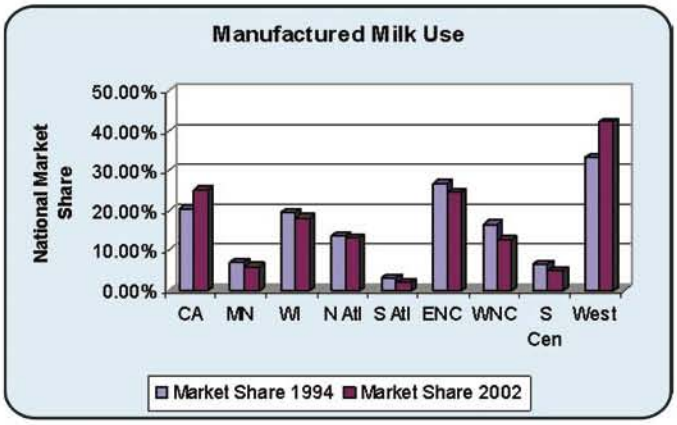


Figure 6

The importance of the livestock industry as a generator of high-quality jobs for greater Minnesota cannot be understated. There is a synergistic relationship between the processing industry and production; one industry cannot exist without the other. In fact, this relationship extends to the production of grains and forages as well. If any of these key components is allowed to wither, the entire industry falters.

Without a local processing infrastructure to support livestock production, agriculture would suffer, but so too will rural communities. This is clearly illustrated by the case of the Dairy Farmers of America dairy plant in Fergus Falls. Before its recent closure, the plant had a direct impact of $43.9 million in output, and employed 127 people.[42] This added $3.6 million in labor income to the area. If the indirect and induced factors are added into the equation this plant closing 1,116 jobs were lost, eliminating $21.4 million

from the labor income, and a total loss of $117.3 million of lost output impact of which $34.3 million was value added. [43] Unless the state takes action to reverse declines in animal agriculture production and processing, more communities will suffer losses like those experienced in Fergus Falls.

Additional Economic Impacts

Feed

In addition to the above-mentioned economic impacts of livestock production and processing in Minnesota, there are a number of important secondary impacts. From an agricultural perspective, perhaps no secondary impact is more important than feed consumption.

Minnesota's livestock industry is a major consumer of the state's top crops – corn and soybeans. For the 2002-2003 crop year, Minnesota livestock consumed 19 percent of the state's corn production and 20 percent of the state's soybean production[44]. For both corn and soybeans, livestock consumption ranks second only to export markets when it comes to end uses. The prevalence of hay in the state's crop rotation also provides soil conservation benefits. This is especially true for the more environmentally sensitive landscape in parts of southeastern Minnesota.

Hogs consumed 46 percent of the corn used by livestock in 2001, while dairy cattle consumed 19 percent, poultry consumed 18 percent and beef cattle consumed 14 percent. Of the 62 million bushels of soybeans consumed by Minnesota livestock, hogs consumed 42 percent, poultry consumed 36 percent, dairy cattle consumed 13 percent and beef cattle consumed 8 percent.[45]

Value Added/Renewable Fuels

The financial health of Minnesota's livestock industry also has a bearing on the financial standing of the state's burgeoning renewable fuels industry. For instance, the state's 12 dry-mill ethanol corn plants generate a million tons of distiller's grain each year. This is enough to supplement the annual rations of 2 million dairy cows, 30 million fat hogs or 250 million turkeys.[46] The abundance of high-quality feed components is good for local livestock production and the existence of a robust livestock industry provides a strong market for these valuable by-products of ethanol production.

The state's renewable fuels industry supports hundreds of jobs in local communities, and increases the income of local farmers – many of whom have ownership stakes in the plants. These renewable fuels production facilities combine with livestock enterprises to maintain a strong economic anchor for rural communities.

Manure

Another secondary benefit of Minnesota's livestock industry is the economic contribution of manure to the state's cropland. When properly managed and applied, manure supplies nutrients to crops, improves soil properties, and builds soil organic matter. Nitrogen in commercial fertilizer costs approximately 30 cents per pound and $5 per acre to apply.[47] As the cost of commercial fertilizer continues to rise, manure becomes a more cost-effective alternative.

From an economic perspective, the value of manure ranges from $4 per ton to $20 per ton in the first year of application, and from $2 per ton to $10 per ton in total nutrient benefit in years two and three.[48] Many livestock producers have developed nutrient management plans for their operations to optimize their use of commercial fertilizer and manure. This has resulted in cost savings for the producer, increased crop yields, and greater implementation of best management practices (BMPs).

Illustrating the potential value of manure generated by livestock, one cow can supply enough nitrogen for 1.5 acres of silage corn. The annual value of nutrients in manure from 100 lactating cows exceeds $10,000.[49]

Current Forces Impacting Animal Agriculture

Like all industries, animal agriculture has experienced significant changes in recent years. In many production sectors, overall farm numbers have declined for several decades. This is true not only for Minnesota but for many states. However, the picture varies significantly from one animal agriculture sector to another. As discussed earlier, the state's dairy sector is struggling while the pork sector is growing and the beef and poultry sectors are holding their own.

As input costs increase and commodity prices remain relatively static, profit margins for farmers have shrunk. This has forced some farmers out of business, while others have chosen to farm part-time and work off the farm to supplement their farm income. Some have chosen to switch to alternative farming methods such as organics, which offer potentially higher per-unit returns in exchange for higher production costs. Others have adopted novel marketing approaches. For example, many farmers have taken advantage of the Minnesota Department of Agriculture's recently reinstated State Meat Inspection Program to skip the "middle man" and market their meat products directly to consumers. This direct-marketing approach can significantly boost the farmer's share of the consumer dollar.

The state is also seeing a move away from "independent farming" to "interdependent farming." Previous generations of farmers prided themselves on their independence, but as the economic landscape has shifted and entities further up the food chain have increased in size, farmers have found more value in banding together to reduce costs, pool resources and increase bargaining power. This move toward interdependence takes many forms, from farmer-owned ethanol cooperatives to specialized production arrangements among producers to marketing relationships between producers

"Livestock farmers are basically small business operators the same as farmers in past generations. But now instead of competing against farmers across the county and selling to an elevator down the road, we're competing against farmers in another country and selling to consumers on the other side of the globe."

– Dana Allen, Farmer and Minnesota Milk Producers Association member

and local processors.
For some, the answer has been to modernize, increase their efficiency or focus on particular species to offset the declining per-unit returns. As profit margins dwindle and business costs and family costs increase, some farmers find they need more cows, pigs or acres of corn simply to generate a livable income. However, attempts to expand are sometimes met with resistance by individuals and groups opposed to livestock expansion.

According to a University of Minnesota Extension Service study released in April 2003, a farm family in southwestern Minnesota required the following production units to generate the average 2002 area family living amount of $51,826:

Corn	1,490 acres
Soybeans	1,064 acres
Hogs (farrow-to-finish)	8,010 head
Dairy cows	97 head
Beef (cow-calf)	1,091 head

Note: *No figures were provided for poultry production. These figures assume the production of that commodity was the family's exclusive source of income.*

1. Technological innovations

As with nearly all other aspects of modern society, technology is changing animal agriculture and those involved with it. Advances in genetics, global positioning technology, information management, communication, animal nutrition, automated equipment and other areas have resulted in more efficient, healthy animals that produce more today than even five years ago.

Adopting this new technology on one's farm requires an up-front investment that can be daunting for some farmers, especially those who are facing high debt or negative cash flow. Those farmers who have adapted in many cases are choosing to expand because of increased efficiencies and because they need to spread the costs of the technology to stay profitable. This adoption may in many cases be phased in over several years through incremental expansion. The result is a wide variety of business models and a wide range in size of operations. One of the major management challenges facing Minnesota's livestock farms (regardless of size) is how they can incorporate technology into their business to maintain efficiency.

2. Influence of globalization

While the reduction of international trade barriers and economic growth in Asia and Latin America has led to important new export opportunities for Minnesota farmers, trade liberalization has also exposed farmers to increasing pressure from global competitors. While U.S. producers are among the most efficient, producers from meat-exporting nations such as Brazil, Canada and Mexico have competitive advantages that are difficult for American producers to overcome in the short-term. These advantages include favorable exchange

rates, lower labor costs, and lower environmental compliance costs.[50] One consequence of this is that U.S. producers feel growing pressure to maximize efficiency and reduce operating costs.

Farmers also face escalating financial pressure from animal diseases as a result of increased global agricultural trade. There is an increased risk that foot-and-mouth disease, bovine spongiform encephalopathy and other diseases can enter North America from other parts of the world, causing new outbreaks in the United States and leading other nations to ban American agricultural products in order to protect their own domestic livestock industries.

The December 2003 discovery of a single case of BSE in Washington state caused 52 nations – nearly all America's leading export customers - to ban U.S. beef. This cut off American beef producers from 98 percent of the export market and forced the domestic markets to absorb millions of tons of beef that would otherwise have been consumed by foreign customers. Likewise, the February 2004 outbreaks of avian influenza in Delaware and Texas caused several nations to ban U.S. poultry. Together, these nations accounted for more than 18 percent of U.S. exports in 2003. The financial pain of these bans hit producers around the country because in many cases, the bans made no distinction between meat from the affected states and meat from states hundreds of miles away.

When animal diseases strike, farmers also run the risk of losing domestic markets. While the December 2003 BSE case had only a minor impact on domestic beef consumption, the industry might have faced more severe and long-lasting repercussions if multiple cases had emerged.

3. Environmental and social pressures

In addition to economic pressures, producers are increasingly faced with environmental and social pressures. Public concerns about the environmental and social impacts of modern animal agriculture have led to more stringent environmental rules and higher compliance costs for producers. These pressures can constrain production growth and limit investment.

Farmers and processors say these pressures manifest themselves in a number of ways. For instance, in recent years farmers looking to expand their facilities have faced increasingly difficult permitting processes and stronger, more organized public opposition. According to a January 2003 survey published by the Minnesota Agricultural Statistics Service, Minnesota dairy farmers have significant concerns about rising expansion project costs and delays associated with feedlot permitting and environmental regulations. Many farmers also reported they would have difficulty covering the costs of making changes to their facilities to comply with new federal, state and local regulations. [51]

Some involved with Minnesota's animal agriculture industry believe these environmental and social pressures are contributing to the decline of

Minnesota's dairy sector, and have a chilling effect on the growth of other livestock sectors in the state. Although environmental and social pressures exist throughout the country, there is a belief that western states are more accepting of modern, large-scale livestock facilities than states in the Midwest and East.

4. Evolving consumer demands

Animal agriculture is increasingly a consumer-driven industry. With consumer incomes rising in many areas of the world and an increased focus on health, nutrition, food safety and active lifestyles, consumers have exacting standards for food. Animal agriculture must strive to deliver products that not only meet basic nutritional standards but also meet the many varied demands placed by consumers. The diversity of consumer needs has led to a diversity of production methods and animal product offerings. Fortunately, this development has coincided with advances in technology and diversification of methods of production that allows the agricultural industry to answer consumers' evolving demands.

The impact of short-term consumer preferences is well illustrated by the Atkins diet craze, which in recent months has driven up sales of beef and driven down sales of breads and other grains. As a result, beef prices have been strong while growers linked to high-carbohydrate products like potatoes and bread have suffered.

Over the longer term, consumers are demanding a product from a reliable source that is great-tasting, consistent, safe and can be prepared in a short period of time. This has resulted in a growing value-added economy in Minnesota. For example, Minnesota is a national leader in programs that reduce food-borne illnesses. Of the 50 million pounds of ground beef irradiated in the U.S. in 2003, more than half were processed or marketed by a Minnesota company. Pre-cooked, microwaveable products, processed in one of several Minnesota companies, can be found in supermarkets and restaurants across the country. In addition, there is an increase in consumer demand for organic and antibiotic-free/hormone-free animal products.

Increasing buying power in foreign countries has led to increased demands for quality assurance. Minnesota livestock producers and processors are truly world suppliers of today's protein. This also means, however, that in order to keep the world's consumers happy, producers and processors must be willing to consider the end use of their products in all operating and business decisions.

Analysis of Minnesota's Key Competitive Factors

Minnesota's animal agriculture industry has a number of competitive factors in its favor, including inexpensive, high-quality feed, abundant water resources and a more diverse livestock sector than many other states. However, the state faces a challenging landscape and increasing competition from other states and countries. As a part of its analysis of the state's livestock economy, members of the Livestock Advisory Task Force identified five key competitive factors that potentially place the state's livestock industry at a disadvantage relative to other states.

"Farmers are like anyone else - we want an opportunity to build and maintain a viable business we can use to raise our families and pass along something for our kids."

– Lisa Heggedahl, Farmer and Minnesota Farmers Union member

Factor 1: Local Siting of Livestock Operations

In addition to applicable state regulations (including the state's 7020 Rule and environmental review), feedlot siting decisions are often subject to review by counties and in some cases by townships. This local oversight provides a forum for addressing issues that are not dealt with through the 7020 permitting process, such as compatibility of a feedlot with adjacent land uses and impacts on roads and other infrastructure. However, a number of recent cases in Minnesota demonstrate that local review can add to the unpredictability and cost of the permitting process. It can also take an emotional toll - because the decision-making is local, it can lead to conflicts and discord among friends and neighbors.

Local siting is an important factor in the competitiveness of the state's livestock sector for reasons similar to statewide permitting and environmental review — that if local siting in Minnesota is perceived to be more difficult and costly or less predictable than in other states, livestock producers and processors will be less likely to invest in Minnesota operations. Some Minnesota farmers looking to upgrade their facilities may choose to do so in another state or country.

The task force recognizes that livestock producers have a responsibility to be good neighbors and to respect the rights of others. If a producer is proposing a major change to his or her operation, neighbors should be informed. However, the task force is concerned that in some cases formal requirements that a project proposer get neighbors' approval may be used as a tool to halt or delay projects that otherwise would be allowed to proceed. Such opposition may force a producer to relocate or exit the business instead of reinvesting in their existing operation.

Local siting was recognized as an important issue in Minnesota's Generic Environmental Impact Statement (GEIS) on Animal Agriculture, completed in 2002. The topic of land use conflicts and regulation was part of the scope of the GEIS, and a literature search and technical white paper were completed as a part of the effort. The EQB adopted 12 policy recommendations from the GEIS, including the following two regarding land use and siting:

"State agencies and counties should continue the development and maintenance of GIS data layers and other monitoring and decision tools, which are critical for good siting, expansion, and operation of feedlots. This effort includes the data collection guidance and GIS data that support the sustainable land application of manure. Information needs to be regularly updated to maintain consistency and data quality."

"State agencies, recognizing the importance of local involvement in feedlot siting and land use decisions, should explore ways to enhance coordination of local government planning and zoning efforts related to animal agriculture and provide technical assistance to reduce conflict and duplication of effort. State agencies should promote the use of innovative land use and conflict management tools by local government and assist in making appropriate training available."

Local Planning and Zoning

The authority of Minnesota's local governments to site feedlots is part of their zoning authority delegated to them by the state. The authority to regulate land uses (i.e., zoning), and most other local regulations comes from the legal and constitutional concept of "police power," which is "the right and duty to regulate private activity for the protection of the public health, safety and welfare." (*Planning and Zoning for Animal Agriculture in Minnesota*, MDA, 1996). Zoning authority under police power is limited and controlled by the U.S. and state constitutions and Minnesota's planning and zoning enabling laws[52].

Constitutional issues include concepts of "regulatory takings" and "substantive due process." Substantive due process cases in the courts involve questions about whether a local government exceeded its authority in a regulatory action (i.e., whether the action is reasonably related to the public health, safety and welfare — also known as "rational basis"), or alternatively whether the action was "unreasonable, arbitrary or capricious."

Planning is also authorized and governed by Minnesota's planning and zoning enabling laws. Although the enabling laws contain standards and procedures for planning, planning is not mandatory and is not a requirement for enacting zoning. However, the data, public participation, and deliberation involved in a planning process can benefit local siting in a number of ways:

- It provides guidance for county commissioners, township board members, and other decision-makers in making siting decisions, increasing the likelihood that decisions are made according to policies thought out ahead of time rather than in the "heat of the moment" during a contentious public meeting;
- It provides a rational basis for land use controls (the zoning ordinances, zoning maps, shoreland management ordinances, etc.) that

in turn will help land use decisions survive challenges in court; and

- A well-conceived land use plan and proposed land use map, taking into account population, economic, and environmental factors, can lead to more orderly development patterns and better separation of incompatible land uses (such as residential development and farming). This can reduce controversy and acrimony over siting issues.

Challenges to Competitiveness

As with state permitting and environmental review process, the perception of an extraordinarily difficult local siting process can have a chilling effect on producers' decisions to modernize, expand, or build a new livestock operation. Some areas of concern about the local siting include:

- *Requirements that lack a rational basis*. Examples include absolute size limitations (animal unit caps), large separation distances (setbacks), and minimum acreage requirements. In one case, four townships in the same county adopted 80-acre minimum acreage requirements for feedlots based on a rationale that the townships would be liable for site clean-up if a feedlot was abandoned (this despite the fact that the 7020 rule states the owner of a manure storage area is liable for closure). This requirement prevented at least two livestock building projects from moving forward, one of which had already been granted county construction permits.

- *Extreme variability of regulations from county to county, township to township.* For example, according to a 2000 survey, separation distances in Minnesota ranged from 500 feet to 3 miles. Separation distances can have a profound impact on the ability to site livestock facilities. As can be seen in Figure 7, increases in a separation distance geometrically decrease the land area available for building or expanding feedlots.

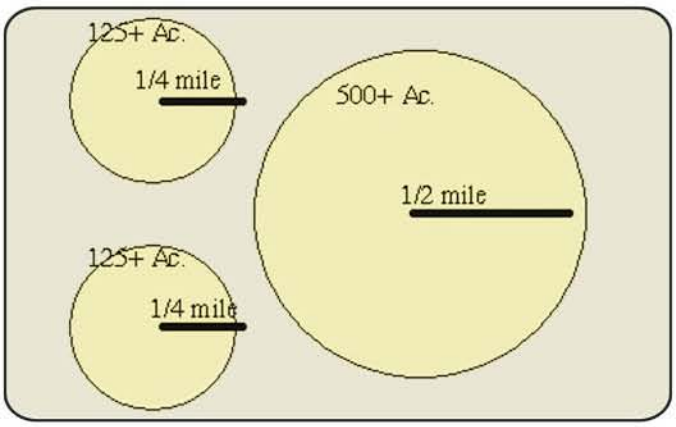


Figure 7

If a use is required to be located at least one-quarter mile from each residence, 125 acres will be off-limits for livestock per each residence in the area. If the separation distance is increased by a factor of two (e.g., ¼ mile to ½ mile), the off-limits acreage increases by a factor of four (from *Planning and Zoning for Animal Agriculture in Minnesota*, MDA, 1996)

- *Unpredictability in local siting processes*. From the standpoint of a permit applicant, a key factor is the predictability of the regulatory process — the ability to know the ground rules in advance and proceed with some certainty that a permit will be issued if those rules are followed. Related to predictability is the degree to which a decision is rationally based. Unfortunately, decisions are sometimes based on biases of the decision-makers, or on the basis of popular sentiment rather than on sound judgment about land-use compatibility or likely environmental impacts. Conditional use permits are often required for feedlots, and problems of predictability or rationality sometimes crop up in the process. Conditional use permits require public hearings and involve exercise of discretion by county commissioners and township board members. When conditional use standards are very clear and local officials are disciplined, conditional use permit decisions can be made in an orderly and predictable way. However, hearings can become emotionally charged, and in such an atmosphere decisions are not always based on rational findings and conclusions. And, as discussed under this report's section on permitting and environmental review, the tension and acrimony of the permitting process is an important dimension of a producer's decision whether to proceed with a project.

  The following cases illustrate unpredictability and lack of rationality of decision-making:

  - A producer received a conditional use permit from a county, but subsequently was prevented from building by a township-imposed interim ordinance (moratorium). The producer challenged the township action in court, but lost on appeal;
  - Contrary to state law, a county required signatures of adjacent landowners as part of a variance proceeding. This resulted in delay of construction; and
  - A county board was advised by the county attorney that the board could not proceed on a conditional use permit request due to procedural issues. After withdrawal of the application, the county adopted an interim ordinance with a 900 animal unit cap, preventing the project from moving forward.

- *Incompatibility caused by growth of non-farm development*. New residents moving into a farming area may not be prepared for the dust, noise, and odors that can accompany agricultural activity. This lack of familiarity is the source of at least some of the conflicts over animal

agriculture. Additionally, the presence of non-farm development, particularly houses, in agricultural areas, poses practical zoning issues. Even where separation distances and other land use standards are reasonable, increasing numbers of non-farm residences make more land unusable for animal agriculture (see Figure 7).

How Minnesota Compares With Other States

There has been no comprehensive survey of states in regard to the prevalence or lack of planning and zoning authority over livestock operations. According to the publication *Planning and Zoning for Concentrated Animal Feeding Operations* (American Planning Association, 1999) many states have in place agricultural exemptions from zoning that apply to feedlots. Examples include Iowa and Kansas. North Carolina repealed its exemption in 1997, but as of 1999, only two counties in that state had enacted zoning regulations regulating feedlots. According to the same report, Nebraska and North Dakota are two states that, like Minnesota, enable local land use authority over feedlots. South Dakota and Wisconsin also allow local authority.

Minnesota has attempted to address issues of local siting of livestock operations in the recent past. Funded by a livestock-related legislative appropriation in 1993, the MDA published two handbooks to provide guidance to local government: *Planning for Agricultural Land Preservation in Minnesota*, and *Planning and Zoning for Animal Agriculture in Minnesota* (1996). These efforts were featured in the American Planning Association's *Planning and Zoning for Concentrated Animal Feeding Operations.* At the time of publication (1999), Minnesota was the only state found in author's research that had published a guidebook for local planning and zoning for feedlots. Also featured in *Planning and Zoning for Concentrated Animal Feeding Operations* were the efforts of the Minnesota Livestock Odor Task Force (LOTF) of the Feedlot and Manure Management Committee. A legislative appropriation based on the LOTF recommendation resulted in the Odor from Feedlots Odor Estimation Tool (OFFSET), developed by the University of Minnesota. This tool allows estimation of odor impacts (a Total Odor Emissions Factor or TOEF) from information on a livestock facility entered into a worksheet. From the TOEF, a separation distance can be determined that corresponds to a desired frequency of odor events (or level of odor annoyance). A number of Minnesota jurisdictions, including Nicollet County, have incorporated OFFSET into their zoning or feedlot ordinances.

Since the publication of *Planning and Zoning for Concentrated Animal Feeding Operations*, Wisconsin published similar guidance handbooks (*Planning for Agriculture in Wisconsin: A Guide for Communities*, and *Livestock Guidance: Local Planning for Livestock Operations in Wisconsin*, Wisconsin Department of Agriculture, Trade, and Consumer Protection, 2002 and 2003). In 2003 Wisconsin also established a diverse 21-member Advisory Committee on Siting Livestock Operations. The Task Force issued its recommendations in November 2003, and legislation incorporating those

recommendations was adopted by the 2004 Wisconsin legislature and signed into law by Governor James Doyle in April 2004. The new law establishes standards for local government decisions on the siting of livestock facilities. Under the new law, counties and municipalities retain siting authority over livestock facilities, but must incorporate into their zoning ordinances practices and standards developed by the State of Wisconsin. Additionally, a state review board is created with authority to review local decisions for proper application of the state practices and standards.

Given the complexity, urgency and sensitivity of this issue, the task force believes there is need for more discussion and input before issuing a comprehensive recommendation to the Governor.

Factor 2: Permitting and Environmental Review Process

Minnesota was an early leader among states in environmental protection. During the same period in which the federal government adopted new environmental laws such as the Clean Water Act and the National Environmental Policy Act, Minnesota followed suit with its own laws and programs. Examples include the creation of the Pollution Control Agency in 1967, the creation of the Environmental Quality Board in 1973, and the passage of the Environmental Policy and Environmental Rights Acts, also in 1973. Polls continue to show strong public support for environmental protection.

While the state can be justifiably proud of the commitment to protecting its natural resources, it must be recognized that from a business and economic development perspective, factors that set Minnesota apart from other states or from federal policies may also pose challenges to the growth and viability of state businesses. According to the Minnesota Chamber of Commerce October 2003 newsletter, an annual survey of members showed strong concern about the length of time required to process permits in Minnesota compared with similar processes in other states. Many involved with the livestock industry have similar concerns about the permitting process for animal facilities in the state. To the extent such permitting is more difficult in Minnesota than in other states, the competitive position of the state's animal agriculture sector is weakened.

The length of time the permitting process can take is a significant concern, but it is not the only one. Other concerns identified by the task force include a lack of transparency of permitting processes and a lack of predictability. To understand these concerns, it may be helpful to provide a brief description of the state's permitting process and aspects that may have an effect on competitiveness.

"What we're really talking about is boosting the competitive ability of our livestock sector. Sure there are challenges out there, but I still believe it's within our reach to have a healthy animal ag industry while at the same time maintaining the high quality of life we enjoy in greater Minnesota."

– Gene Hugoson, Minnesota Agriculture Commissioner

The Minnesota Permitting Process

To become permitted in Minnesota, a livestock producer may need to obtain permits from both state and local government and deal with multiple processes. The typical processes a producer must work through include:

- The state Feedlot Rule process (often called the 7020 process, since it is pursuant to Minnesota Rules Part 7020, *Feedlots*);
- Local permitting under local (usually county) planning and zoning authority; and
- The environmental review process under the authority of the Minnesota Environmental Policy Act and Rule. Environmental review is not actually a permit, but rather a process to study and address a project's potential environmental issues.

Assorted minor permits may also be required (for example, water appropriation permits), but the three processes mentioned above are the most significant and are the focus of this discussion.

Local permitting is discussed under the section devoted to local siting. The 7020 process is intended to address environmental issues of a feedlot – mostly water and air quality. Land use/compatibility issues are left to local planning and zoning. The types of 7020 permits vary according to the size, scope, and nature of proposed changes to a feedlot, and the potential effects of the feedlot on the environment.

The authority to administer the 7020 process rests with the Minnesota Pollution Control Agency (MPCA), but may be delegated to counties. Fifty-five Minnesota counties have received delegated authority from the MPCA. In these delegated counties, most permits are obtained through local feedlot officers. In non-delegated counties, permits are obtained through the regional MPCA office.

Environmental review is a tool used to provide information to those responsible for making permit decisions (7020 and local planning and zoning). It is administered by a responsible governmental unit (RGU), typically either MPCA or the local government. The process is centered on a decision of whether to order an Environmental Impact Statement (EIS). This decision of whether to order an EIS depends on the findings of an Environmental Assessment Worksheet (EAW). There are size (animal unit) thresholds for whether a feedlot is subject to the environmental review process, and whether an EAW is automatically required. Environmental review can be initiated by the RGU at its own discretion or through a petition for feedlots between the exemption and mandatory EAW levels.

Challenges to Competitiveness

Permitting and environmental review issues can create competitiveness challenges to the extent that those who would make investments in the

livestock sector perceive that permitting is more difficult in Minnesota than in other states or countries. In other words, the perception of an inordinately difficult permitting process can discourage producers from modernizing, expanding, or building a new livestock operation. A November 2002 MDA survey of Minnesota dairy producers found half of the 700 respondents indicated that permitting costs and potential legal costs associated with permitting would influence their decisions to reinvest. Such a climate can also affect processors' investment decisions, because part of the business decision is whether adequate supplies of milk, pork, poultry, eggs, or other raw products will be readily available in the future.

Some areas of concern about permitting and environmental review include:

- *Transparency*. The complexity of the permitting and environmental review process can make it difficult for producers and other citizens without legal training to navigate.
- *Predictability*. Permitting and environmental review processes can be unpredictable. Sometimes there is inconsistency between different offices in their interpretation and application of regulations. There can also be uncertainty regarding what standards will apply and when. One of the factors is the discretionary nature of many of the decisions in the process — particularly in local planning and zoning and in environmental review. Environmental review is of particular concern in regard to predictability. First, although it has occurred only once, an environmental assessment worksheet can lead to the preparation of an EIS – a process that tends to be very expensive in Minnesota. (The single feedlot EIS so far – Hancock Pro Pork in Pope and Stevens Counties – cost approximately $400,000.) Given the expense of an EIS, project proposers are motivated to avoid them. This has tended to result in detailed and relatively lengthy EAWs (adding time and expense). Another feature of the environmental review process is public participation. When an EAW is released, there is a 30-day public comment period. While public comments can provide useful information for decision-makers, some observers feel the comment period can fuel additional controversy around a project (see discussion below) and provide an opportunity for inaccurate or distorted information to enter the debate. This further impacts predictability.
- *Cost in time and money*. Some specific issues include:
    - Individual NPDES vs. General NPDES Permits. Minnesota issued a General NPDES Permit in 2001 that addressed most Confined Animal Feeding Operations (CAFOs). However, when a new feedlot is proposed that incorporates technologies not covered in the 2001 General NPDES Permit, an Individual Permit is required even when the new technology improves environmental quality, as is the case with manure digesters. An Individual Permit requires more processing time and is more expensive for the producer.
    - Phased Actions. A phased action is defined in the environmental review rules as: "two or more projects to be

undertaken by the same proposer that a RGU determines: (a) will have environmental effects on the same geographic area; and (b) are substantially certain to be undertaken sequentially over a limited period of time." Decision-making about whether or not an individual feedlot is a "phase" of another facility is left to the MPCA, which is considered the RGU. A decision that a feedlot is a phase of a larger project can result in the project exceeding the size threshold for environmental review and trigger the requirement for an environmental assessment worksheet. This in turn results in greater cost and time for permitting (and potentially greater controversy).

- *Level of controversy*. Public controversy can lead to increased costs, extended timeframes and decreased predictability, but it also has an emotional cost. Opportunities for public involvement created by public comment periods (such as in the environmental assessment worksheet process) and public meetings or hearings (now required by the environmental review statute for feedlots between 300 and 1000 animal units) can provide helpful first-hand information for decision-makers. However, comment periods and meetings or hearings also can lead to acrimonious and unproductive conflict. The prospect of hostility over a feedlot proposal — contentious hearings, letters to the editor, and even harassment — can be tremendously intimidating for a producer and lead him or her to question whether to pursue investment in a livestock facility. The public input opportunity also may bring into the local debate animal-rights activists, opponents of so-called "factory farms," and others advancing economic and social agendas that may have only a tangential relationship with the case at hand.

How Minnesota Compares With Other States

Prior to the adoption of the recently revised CAFO regulations by the U.S. Environmental Protection Agency (EPA), Minnesota was virtually unmatched in its level of feedlot regulation. While many states issued National Pollution Discharge Elimination System (NPDES) permits for large new feedlot operations, Minnesota had in place feedlot regulations dating from 1974 (substantially revised in 1979 and again in 2000) that addressed new construction and expansions for a wide range of operations, small to large. Since the adoption of federal CAFO regulations, and in response to growing controversy, many other states have adopted or are now adopting new statewide regulations. However, most of those regulations still pertain to feedlots with more than 1,000 animal units, while Minnesota's 7020 rule applies to feedlots with as few as 10 animal units. Also, due to the long history of the program and the feature of feedlot registration, Minnesota is far ahead of other states in implementation and permitting.

Of the 14 other states that have state environmental review (state environmental policy acts modeled after the National Environmental Policy Act), only four require environmental review for animal feedlots. Generally, these four require environmental review only for CAFOs (facilities over

1,000 animal units). It is possible for environmental review to be required for feedlots under 1,000 animal units in California and Washington, since local permitting can trigger environmental review in those states. However, in practice, environmental review has been required for smaller feedlots in only rare instances.

New York, California, and Washington have all conducted programmatic environmental review for feedlots (see box). New York and Washington issued a programmatic environmental impact statement for general NPDES permits. Individual feedlots meeting the standards of the general NPDES permits are exempt from environmental review on an individual basis. In California, a programmatic environmental impact report (EIR) was issued for the feedlot element of a comprehensive plan. This action did not exempt feedlots from individual environmental review, but allowed adoption by reference of the programmatic EIR (a practice known as "tiering").

With the change to the Minnesota Environmental Policy Act statute in 2003, Minnesota is more consistent with the other four states that require environmental review for CAFOs. Generally, feedlots under 1,000 animal units are now exempt from environmental review. However, environmental review is required for smaller feedlots in environmentally sensitive areas.

The task force believes it would benefit the state's livestock sector if the state implemented changes to boost the consistency, scientific basis, predictability, timeliness and efficiency of the permitting and environmental review process for livestock operations. The task force believes this is a reasonable goal, and does not preclude Minnesota from continuing to have strong safeguards for our water, air and soil resources.

Programmatic and Alternative Environmental Review

One way to address environmental impacts of actions more comprehensively, and at the same time reduce the burden of environmental review on individuals, is to conduct environmental review of plans, policies, procedures, or programs (environmental assessment documents of this type of at the federal level are called "programmatic environmental documents"). Environmental review at a programmatic level can address most of the "big issues" at a "higher" level than the individual project. The "smaller," more specific, impacts of a project can then be addressed by project-specific environmental review that incorporates the programmatic review by reference (this is called tiering, again borrowing from terminology from environmental review at the federal level), or simply through permit requirements and conditions without any further environmental review.

Minnesota's environmental review program already establishes two forms of programmatic review: the generic environmental impact statement (generic EIS or GEIS), and alternative urban areawide review (AUAR). A GEIS is intended to "study types of projects that are not adequately reviewed on a

case-by-case basis" and the information in the GEIS is used by tiering in project-specific environmental review. A GEIS was prepared on animal agriculture and released in 2002.

The AUAR is environmental review covering a geographic area. A local RGU, usually a city, conducts a comprehensive planning process that incorporates elements specified in the environmental review rules, and undergoes an areawide environmental review for residential, commercial, warehousing, and light industrial development and associated infrastructure. Once the process is completed, individual projects (residential, commercial, etc.) that are consistent with assumptions in the AUAR are exempt from individual environmental review.

The Minnesota environmental review rules also provide for creation of "alternative forms of environmental review"; essentially, customized environmental review processes for categories of projects.

These concepts can be extended to feedlots. The Animal Agriculture GEIS is already available to provide information for project-specific environmental review, but the need for individual environmental review can be reduced by more specific programmatic review. One way to do this would be to create an "alternative environmental review" process for animal feedlots that are eligible for General NPDES Permits. If a comprehensive environmental review were performed for operations covered by General NPDES Permits, this could negate the necessity of project-specific environmental review of individual feedlots.

Another way to conduct programmatic review would be to conduct alternative environmental review modeled along the lines of the AUAR; essentially extending the concept of AUAR to rural areas and animal agriculture. Again, local RGUs (such as counties) would conduct comprehensive planning and areawide environmental review for feedlots. Individual livestock projects consistent with assumptions in the areawide environmental review would be exempt from individual environmental review.

Factor 3: Access to Capital

Access to capital is an important factor for the state's livestock industry because without ready access to capital, reinvestment in the state's aging animal agriculture infrastructure is unlikely to occur. Reinvestment is important for processors as well as producers, as the segments are closely intertwined and the financial health of one can greatly impact the other. Processors, for example, depend on a strong supply of raw product from the producers, while producers depend on processors as customers for their products. Processors will hesitate to reinvest in areas where production trends are weak, a fact that may help explain why Minnesota has not added a new dairy processing facility since the late 1960s.

"There's no question a healthy animal agriculture sector means more jobs and economic activity for rural Minnesota communities. That's why we need to build on what we already have and take action to encourage more growth in that sector."

– Matt Kramer, Minnesota Department of Employment and Economic Development Commissioner

Despite concerns about the relative lack of investment in Minnesota's animal agriculture sector, there is clear interest among farmers in making such investments. The November 2002 MDA survey of Minnesota dairy producers found nearly half of the respondents indicated they planned to make a new investment in their operation by 2007. While investment can and will take place on farms of all sizes, the survey showed the farms most likely to make major investment in rural Minnesota were those with 100 or more cows. The same survey showed 35 percent of the producers looking to reinvest stated a need for additional financing opportunities, and 64 percent expressed a willingness to take advantage of investment tax credits. Based on this survey, it appears there is interest among dairy farmers in upgrading their facilities if sufficient capital can be accessed.

Challenges to Competitiveness

Debt load is a key barrier to investment. Considering the price volatility to which they are exposed, livestock producers can end any given year with a profitable operation or with a mounting debt load. This debt may force them to put off upgrades due to cash flow shortages. Faced with repeated years of tight budgets and increasing debt, farmers may postpone needed upgrades and wind up working in unsafe conditions with equipment that has outlived its useful life. Compounding debt may compel farmers to tap into accumulated equity to maintain their standard of living and address debt obligations. There are marketplace tools (forward contracting, etc.) that could help farmers smooth out the fluctuations, but so far farmers have been slow to embrace them.

With such year-to-year uncertainty, agricultural lenders are cautious about loaning money to facilities for modernization or upgrade. The state has tried to address this with the Rural Finance Authority loan programs, through which the state shares loan risks with lenders. However, many of the government support programs now in place are not designed to encourage modernization or reinvestment – they simply seek to deliver short-term aid to farmers without addressing trends that help create the need for such aid. To strengthen the long-term prospects for Minnesota's animal agriculture sector, the task force sees a need for federal and state farm programs to be geared to more effectively support progressive, future-minded operations that can offer promising opportunities for current and future generations.

Compliance with the 7020 feedlot rule will also be a factor in producers' access to capital. It is estimated that 7,812 single-specie enterprises will require compliance upgrades by 2010. In addition 13,800 operations with more than 100 animals would benefit from having a manure management plan that is periodically updated. Providing 75 percent cost share to all eligible practices would cost about $157 million through October 1, 2010. This is $22 million per year more than current funding level for state and federal cost-share programs in Minnesota, assuming funding at the current levels for the period remain in place. The cost for construction of manure structures and runoff control practices for compliance with the feedlot rules would be greatest for dairy, followed by cattle and then hogs. More information about this is available on the MDA's website at http://www.mda.state.mn.us/feedlots/assessmentrevised.pdf.

Large debt loads can be powerful disincentives for reinvestment, especially for farmers close to retirement and eager to preserve existing equity. For these operations, even low-interest loans may be unappealing. In some states, farms in this position can seek an infusion of outside capital through third-party investors. However, Minnesota's Corporate Farm Law prohibits dairy producers from receiving this kind of capital infusion from anyone but family members.

How Minnesota Compares With Other States

With the exception of specific rules such as the Corporate Farm Law prohibition on dairy investment, Minnesota is generally comparable with other states on access to capital. However, there are a few notably innovative programs offered by neighboring states:

- Wisconsin has a Milk Volume Production (MVP) program, which provides qualifying dairy producers with financing necessary to fill the so-called "equity gap" that may exist when a farmer has an operating budget insufficient to cover costs incurred as a result of capital improvements. The MVP program goal is to work with local communities to increase dairy production in Wisconsin, and to date this program has helped add more than 40,000 cows to the state;
- Wisconsin recently passed a Dairy Investment Tax credit allowing producers to take 10 percent of their new investment as a tax credit. This creates income and decreases the tax burden of any reinvestment capped at $50,000 per producer. It also encourages reinvestment in operations of all sizes;
- Illinois and a few other states have programs that guarantee 85 percent of the principal and interest of the loan similar to Farm Service Agency. The guarantee provides credit enhancement and more favorable terms to the loan recipient;
- Illinois will fund feasibility studies up to a limit of $25,000 (vs. a $5,000 limit for only dairy producers in Minnesota);
- Wisconsin's early planning grant is capped at $3,000 vs. Minnesota's $5,000 cap and includes pre-engineering as an allowable expense;
- North Dakota's Ag Pace program and Pennsylvania's Agricultural Development and Ag Loan Program will buy down interest as an interest reduction program. This program is capped at $20,000 per loan;
- Pennsylvania's Clean and Green Program taxes land on its use rather than its prevailing market value;
- Nebraska also uses Community Development Block Grants to create and retain employment in rural areas of the state;
- The Nebraska legislature has created an income tax credit for new employees as well as for new investment. The Employment Expansion and Investment Incentive Act provides an incentive of $1,500 per each new employee and $1,000 for each $75,000 of new investment;
- Nebraska provides tax incentives towards renting facilities, equipment or livestock to beginning farmers for three years; and
- South Dakota offers tax incentives programs quite different than such programs in Minnesota. For example, South Dakota will reduce

property taxes on new investments and will not assess sales tax on construction.

The task force believes the state must seek out ways to encourage and enhance capital investment opportunities in Minnesota's livestock industry. The state can make progress in this regard through revisions to existing programs and the creation of new tools for encouraging investment.

Factor 4: Research & Technology

Animal Agriculture is a knowledge-based sector. Producers, processors and input suppliers increasingly must combine complex inputs including crop and livestock genetics, feed and nutrition, environmental management and technology, animal health and food safety technologies to produce wholesome, safe and convenient products demanded by an increasingly quality-discerning, environmentally conscious consumer. The task force believes that maintaining and building a competitive advantage in Minnesota requires focused investments in research and development of new technologies as well as their dissemination and application to the animal agriculture industry. This partnership effort must involve state government, the University of Minnesota, the Minnesota State Colleges and Universities (MnSCU) and the private sector.

Challenge to Competitiveness

Current challenges include reduced public funding, specifically for the MnSCU system and University of Minnesota research and extension services. This includes both direct funding of University of Minnesota budget and additional funds available for competitive grants to address the important research issues facing the livestock sector. This challenge is exacerbated by the increasingly segmented needs of animal agriculture for research and dissemination, which dilute the impact of declining resources. Commercial animal agricultural production systems have research and education needs that are quite different from those of alternative animal agriculture systems. In addition, the broader community issues of food safety, animal health, rural/urban development, and the link to human health issues increasingly affect not only animal agriculture but spill over to the broader Minnesota citizenry. This broadening palette of research needs requires consideration of innovative alliances and partnerships to leverage scarce research and dissemination resources.

The University of Minnesota is traditionally a focal point for public research and technology transfer in agriculture and will continue to be a driver of agricultural research and dissemination in the state. The private sector is playing a larger role both in developing new technologies and in disseminating them to producers. The state has a need to develop mechanisms to leverage public and private dollars with alliances between

the University of Minnesota and private industry to build stronger programs to benefit the animal agriculture industry of Minnesota. A current example includes the business incubator model proposed by the University of Minnesota for commercializing basic research in areas of health and industrial technology.

Modernization of animal research facilities is necessary if Minnesota is to conduct relevant research and provide research based information to producers. Animal research facilities have not kept up with the needs of today's producers. There is urgency in modernizing available facilities and/or developing new research animal facilities that would provide animal evaluation in the context of animal groups and move away from individual animal performance. The size of the facilities must be adequate to perform viable, applied production research while increasing their operational efficiency based on economies of scale. While adequate animal research facility infrastructure exists for swine and beef, the same is not true for dairy and turkey research.

How Minnesota Compares With Other States

Many other states and educational institutions face challenges similar to those described above. For this reason there is a need to leverage public research and dissemination funding across state and institutional boundaries. However, several institutions (Michigan, Wisconsin, Illinois, Iowa and Nebraska) have managed to generate legislative support to modernize their research infrastructure and increase funding for competitive research support allowing them to continue to contribute to the growth and promotion of animal industries in their geographical areas. The task force recognizes that public research entities such as Land Grant Universities must increasingly partner to leverage each others' comparative advantage. However, the task force also recognizes the need to develop, evaluate, and understand new technologies best suited to Minnesota's unique climate, conditions and advanced environmental standards in comparison with other states. Relevant research is important to develop intellectual capital to support Minnesota's animal agriculture needs. Projects funded and conducted in Minnesota are directed toward Minnesota issues and needs.

Financially challenged institutions cannot address all needs, so universities will increasingly need to develop centers of excellence based on their comparative advantage and find formal mechanisms to leverage other states' centers of excellence to provide needed research and development to the state's animal agriculture. Leading efforts to build these alliances can become Minnesota's competitive advantage in building a knowledge-based animal agriculture.

The University of Minnesota's competitive advantage resides in its long

"We wanted to get involved because we understand that in the long run, the vitality of our whole processing industry is linked to the vitality of farmers. A processor doesn't have much of a future in the area if we don't have farm families out there producing enough milk or pork or whatever commodity."

– Clint Fall, First District Cooperative

history of research and education to develop, evaluate, and understand cost-effective and safe technologies and strategies that enhance the environment (air, land and water), recycle nutrients, produce energy and generate efficient production systems. This research is a key to the University providing cutting edge information to innovative producers.

Factor 5: Protection of Investment

Before farmers or processors decide to invest in a new livestock production operation or reinvest in an existing operation, they must have reasonable assurance they will be able to preserve that investment. The likelihood must exist that the producer or processor will be able to successfully continue and grow the business. The more uncertain and risky such an investment is deemed in Minnesota, the more likely the farmer or processor will look elsewhere for a more inviting business climate.

Most states provide some form of protection from "nuisance" lawsuits to livestock and other agricultural operations. These laws are commonly referred to as "Right-to-Farm" laws. Other forms of Right-to-Farm laws can include prohibitions against local governments adopting regulations that unreasonably inhibit or interfere with agricultural operations (such as restrictions on operation of equipment at night or equipment noise restrictions), and requirements for notification of new non-farm residents that normal farming operations might include noises, odor, equipment operation, dust and other inconveniences. These Right-to-Farm laws may also include language barring residents in designated farming areas from taking legal action against the agricultural operation for consequences of normal farming operations. Minnesota laws provide for all three types of approaches, although the latter two may only exist in some areas that participate in agricultural land preservation programs. While recently passed legislation strengthened the Right-to-Farm laws in Minnesota, there is still an opportunity to do even more in this area.

Challenges to Competitiveness

With a declining percentage of the population having any experience with farm life, it is becoming more important for the general public and especially rural residents to understand that animal agriculture is important for the vitality of the rural community. However, education and information efforts cannot be expected to be universally effective in smoothing relations. The concept behind the protections for agricultural operations from the nuisance law is to insulate agricultural producers operating in compliance with applicable regulations and commonly accepted agricultural practices from lawsuits seeking redress for the normal sights, sounds and smells of a modern farming operation.

Minnesota has had protections for farming operations in the state nuisance law since 1982. A recent nuisance lawsuit regarding a livestock facility

in Minnesota raised the question of whether those protections continue to be adequate for those agricultural operations managed in compliance with all applicable regulations and generally accepted agricultural practices, or whether the law needs to be clarified, and/or strengthened to better protect livestock operations that are being managed in conformance with all standards.

While it may cause unpleasant odors, manure is generally considered a better fertilizer than commercially available fertilizers. This natural resource adds organic material back to the soil and produces better yields than other fertilizers.

How Minnesota Compares With Other States

All 50 states have Right-to-Farm legislation designed to protect farmers from local ordinances that would restrict normal farming practices. Some states' legislation also provides farmers with protection against private nuisance lawsuits by rural residents who object to noise, odor and other activities from a farming operation. The American Farmland Trust has reviewed 65 different cases involving right to farm laws. While it is difficult to measure their effectiveness in preventing nuisance suits, it is a part of the overall effort to ensure that farming practices in agricultural areas are given priority.

The task force believes this issue to be vital to the long-term stability and growth of the livestock sector. Few producers will make significant investments in their business unless they feel a measure of security in that investment. With that in mind, state leaders must work to ensure that producers have the tools they need to preserve their investments in livestock operations so long as they are operating within generally accepted agricultural practices and in compliance with applicable federal state and local requirements.

Finally, the task force believes there is a clear need for non-farm residents in both urban and rural areas to develop a deeper understanding of the value of the livestock industry to the state. Although some commodity groups and public organizations have implemented campaigns to reinforce the importance of animal agriculture to the state economy, more extensive and better coordinated work needs to be done in this area.

Sources

(Endnotes)

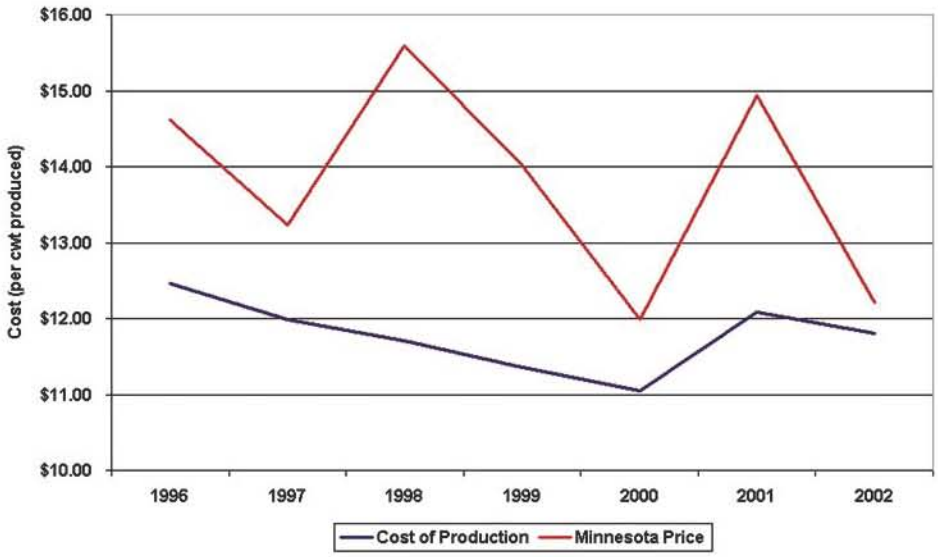
[1] Minnesota Agricultural Statistics Service, 2003
[2] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[3] Ibid
[4] Brian Buhr, University of Minnesota
[5] Minnesota Agricultural Statistics Service, 1993, 2003
[6] Dairy and Food Division, Minnesota Department of Agriculture
[7] Minnesota Agricultural Statistics Service, 2003
[8] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[9] Ibid
[10] Minnesota Agricultural Statistics Service, 2003
[11] USDA, NASS (National Agricultural Statistics Service)
[12] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[13] Buhr
[14] Su Ye, Minnesota Department of Agriculture
[15] Minnesota Agricultural Statistics Service, 2003
[16] Minnesota Agricultural Statistics Service, 1993, 2003
[17] Ibid
[18] Ibid
[19] National Agricultural Statistics Service information published by Hoards West dairy magazine, April 25, 2003
[20] Minnesota Agricultural Statistics Service, 2003
[21] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[22] Buhr
[23] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[24] Minnesota Agricultural Statistics Service, 2003
[25] Buhr
[26] Minnesota Agricultural Statistics Service, 1993, 2003
[27] Minnesota Pork Producers Association, 2004
[28] USDA, NASS (National Agricultural Statistics Service)
[29] Minnesota Agricultural Statistics Service, 2003
[30] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[31] Buhr
[32] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[33] Minnesota Agricultural Statistics Service, 2003
[34] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[35] Buhr
[36] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[37] Minnesota Agricultural Statistics Service, 2003
[38] Buhr
[39] Minnesota Agricultural Statistics Service, 2003
[40] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture

[41] Ibid
[42] Su Ye and Harold Stanislawski, Minnesota Department of Agriculture
[43] IMPLAN analysis of agriculture's economic value to Minnesota, Su Ye, Minnesota Department of Agriculture
[44] Su Ye and PRX (The ProExporter Network)
[45] Ibid
[46] University of Minnesota, Department of Animal Nutrition
[47] Ontario Ministry of Agriculture and Food, 2004
[48] Ibid
[49] Analysis of Separated Manure Solids, Oregon State University
[50] "Global Livestock, Meat and Poultry Competition: Potential Impacts on North American Production and Trade," Sparks Companies, Inc., 2003
[51] Minnesota Department of Agriculture Dairy Producer Opinion Survey, January 2003
[52] For counties; the enabling law is found in Minn. Stat. Ch. 394; for cities and towns, in Minn. Stat. Ch. 462.

Data provided by Dave Bullock														
Year	Dairy	Cow-Calf	Calf Finishing	Hog, Farrow-Finish							Dairy	Cow-Calf	Calf Finishing	Hogs
1996	$12.46	$97.06	$69.48	$52.57		$11.78	$82.00	$68.88	$41.95		$14.62	$50.30	$57.80	$54.56
1997	$11.99	$64.74	$68.96	$48.07		$11.78	$82.00	$68.88	$41.95		$13.23	$64.00	$61.10	$53.36
1998	$11.71	$81.59	$70.58	$40.82		$11.78	$82.00	$68.88	$41.95		$15.59	$68.80	$57.30	$33.25
1999	$11.35	$82.92	$62.31	$33.42		$11.78	$82.00	$68.88	$41.95		$14.02	$79.70	$58.50	$32.23
2000	$11.05	$77.26	$69.56	$38.38		$11.78	$82.00	$68.88	$41.95		$11.98	$94.80	$62.20	$44.67
2001	$12.09	$80.72	$72.87	$40.00		$11.78	$82.00	$68.88	$41.95		$14.94	$95.20	$65.90	$44.93
2002	$11.80	$89.69	$68.41	$40.37		$11.78	$82.00	$68.88	$41.95		$12.22	$85.40	$60.00	$34.44
Average	$11.78	$82.00	$68.88	$41.95										
											$13.80	$76.89	$60.40	$42.49
											$13.80	$76.89	$60.40	$42.49
*Cost of production includes direct expense, overhead, operator labor and management.											$13.80	$76.89	$60.40	$42.49
											$13.80	$76.89	$60.40	$42.49
											$13.80	$76.89	$60.40	$42.49
											$13.80	$76.89	$60.40	$42.49
											$13.80	$76.89	$60.40	$42.49

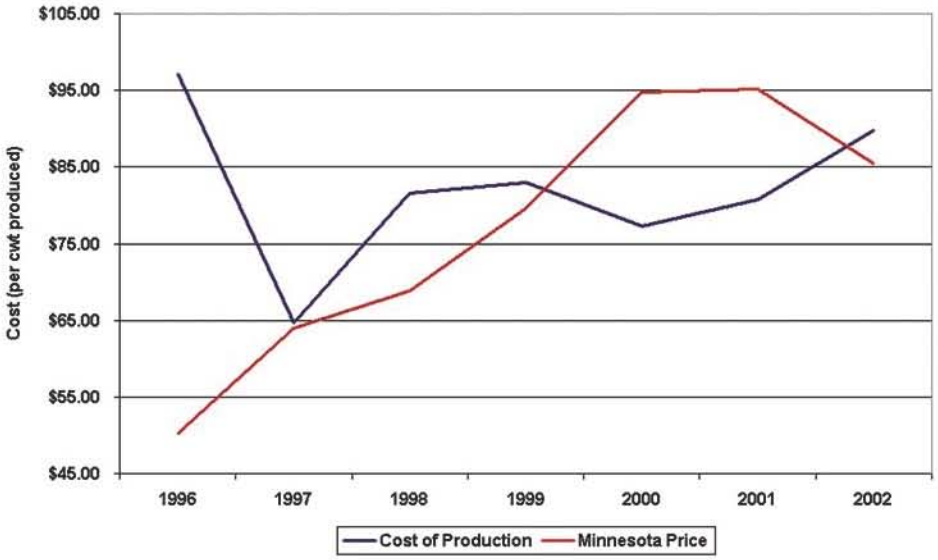
Cost of Production and Prices Receive, Minnesota Milk

Sources: University of Minnesota Center for Farm Financial Management, Minnesota Ag Statistics Service



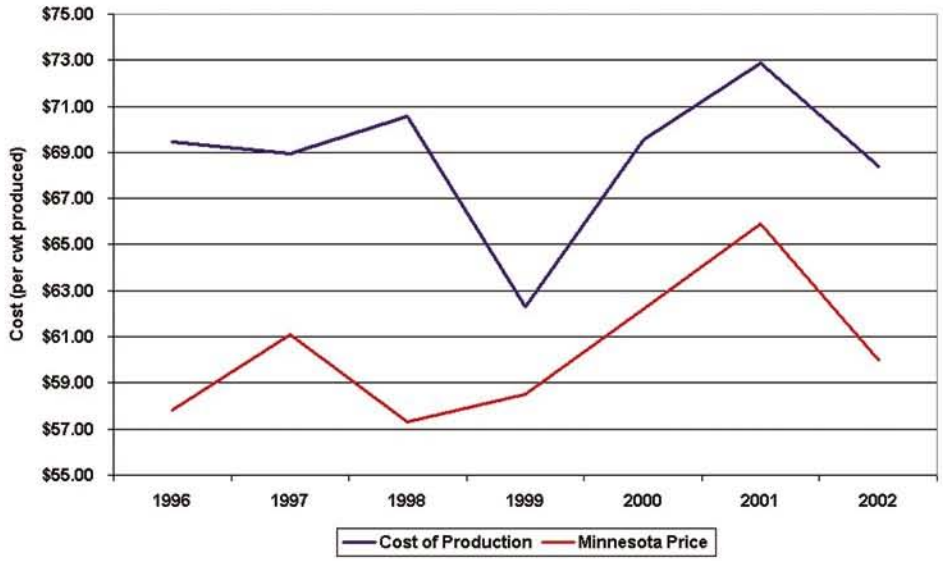
Cost of Production and Prices Receive, Minnesota Beef Cow-Calf

Sources: University of Minnesota Center for Farm Financial Management, Minnesota Ag Statistics Service



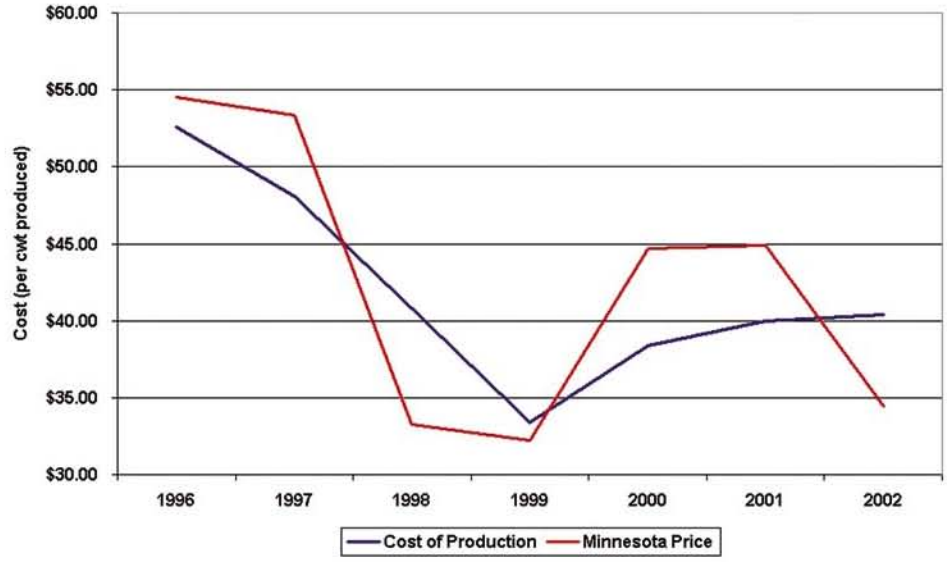
Cost of Production and Prices Receive, Minnesota Beef Calf Finishing

Sources: University of Minnesota Center for Farm Financial Management, Minnesota Ag Statistics Service

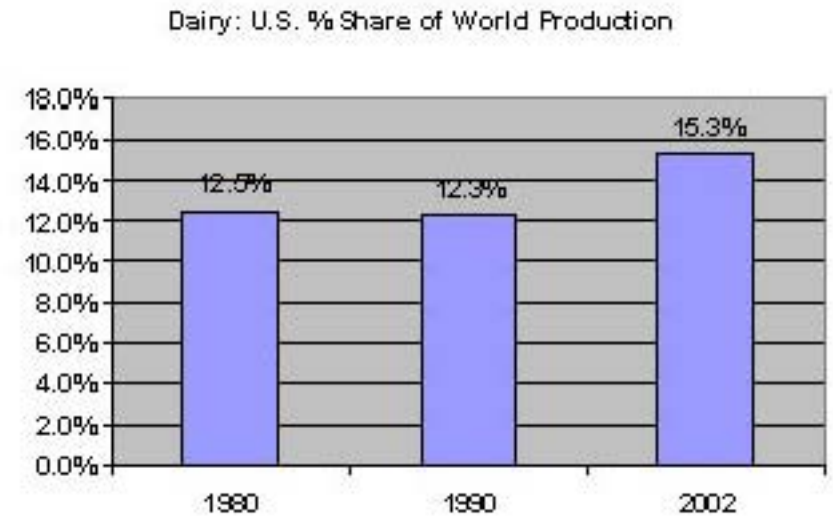


Cost of Production and Prices Receive, Minnesota Hog Farrow-Finish

Sources: University of Minnesota Center for Farm Financial Management, Minnesota Ag Statistics Service

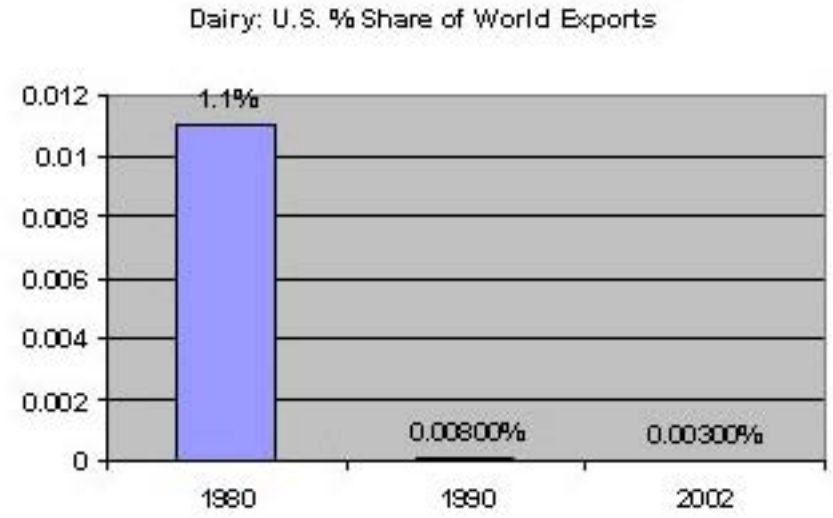


Appendix 2



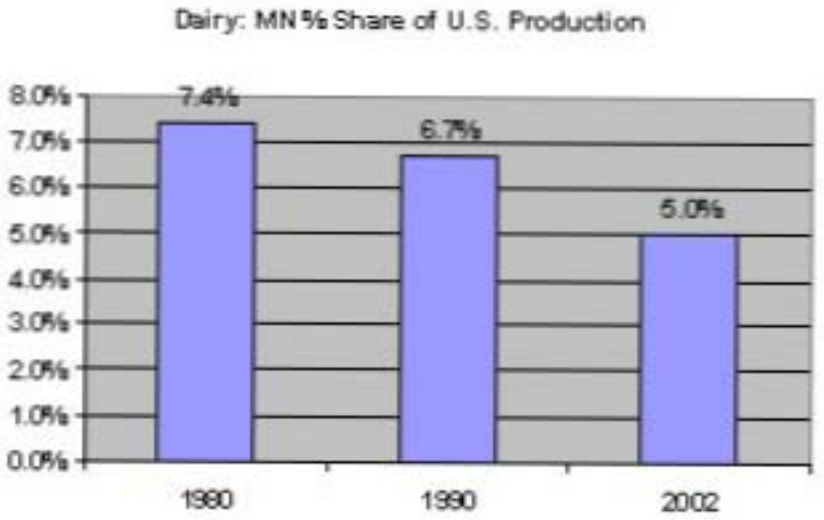
U.S. Rank and Share in Dairy Production

	U.S. Production Ranking in the World	U.S. % Share of World Production
1980	2	12.5%
1990	2	12.3%
2002	1	15.3%



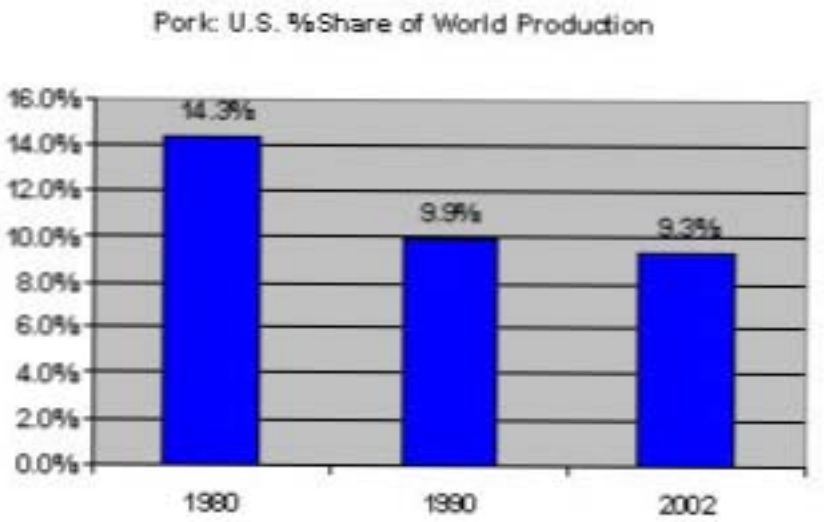
U.S. Rank and Share in Dairy Export

	U.S. Export Ranking in the World	U.S. % Share of World Exports
1980	7	1.1%
1990	10	0.008%
2002	20	0.003%



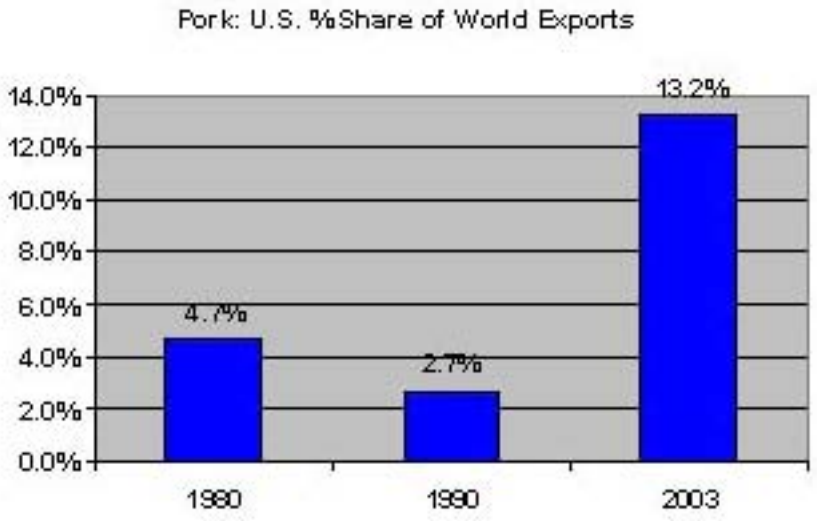
Minnesota's Rank and Share in Dairy Production

	MN Production Ranking in the U.S.	MN % Share of U.S. Production
1980	4	7.4%
1990	4	6.7%
2002	5	5.0%



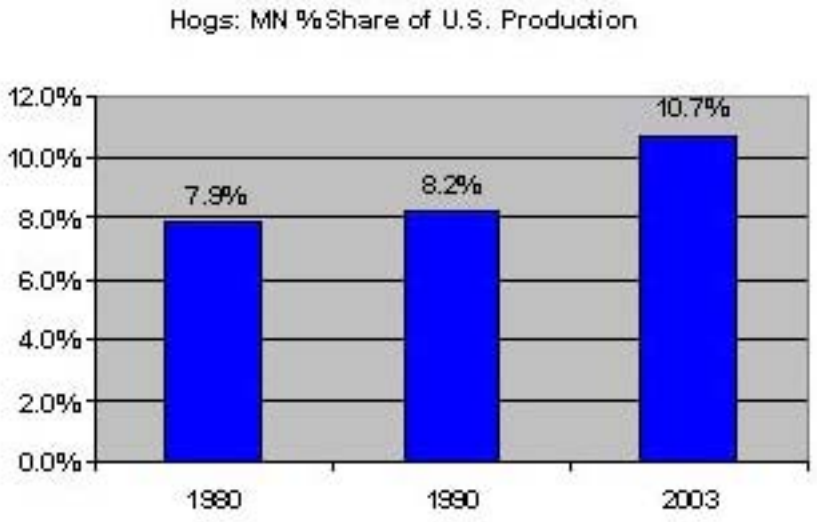
U.S. Rank and Share in Pork Production

	U.S. Production Ranking in the World	U.S. % Share of World Production
1980	2	14.3%
1990	2	9.9%
2002	2	9.3%



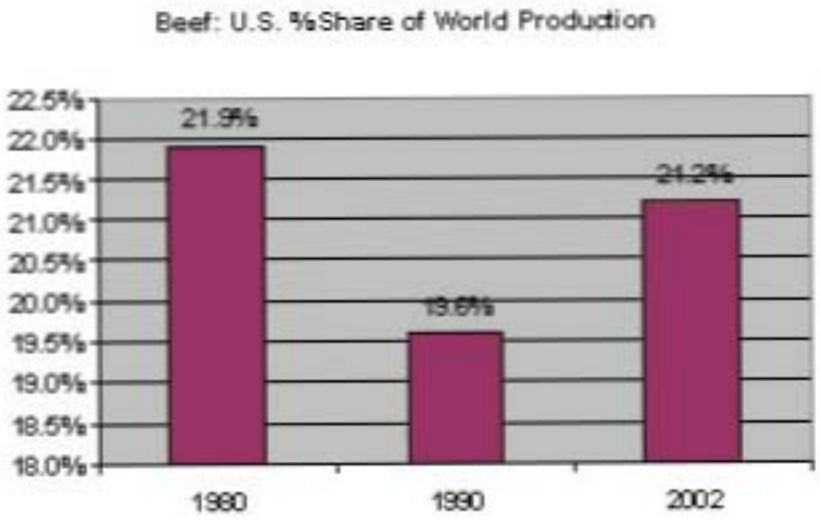
U.S. Rank and Share in Pork Export

	U.S. Export Ranking in the World	U.S. % Share of World Exports
1980	**7**	**4.7%**
1990	**9**	**2.7%**
2002	**2**	**13.2%**



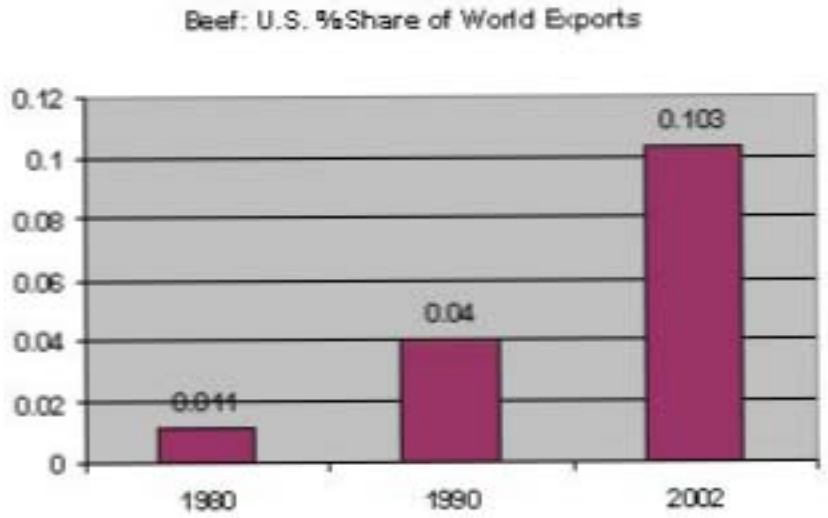
Minnesota's Rank and Share in Hog Production

	MN Production Ranking in the U.S.	MN % Share of U.S. Production
1980	**3**	**7.9%**
1990	**3**	**8.2%**
2002	**3**	**10.2%**



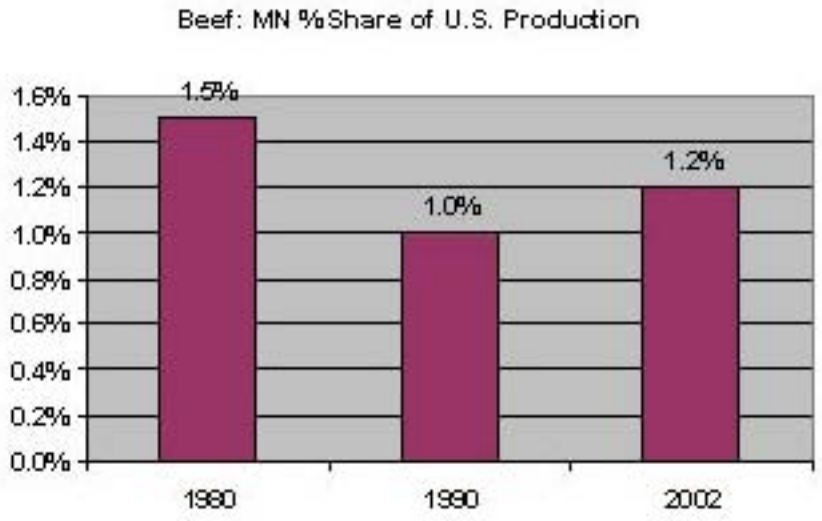
U.S. Rank and Share in Beef Production

	U.S. Production Ranking in the World	U.S. % Share of World Production
1980	1	21.9%
1990	1	19.6%
2002	1	21.2%



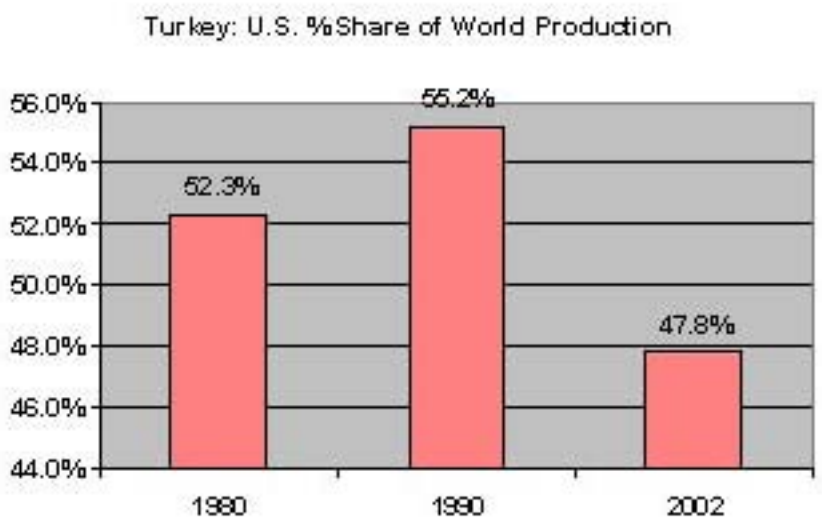
U.S. Rank and Share in Beef Export

	U.S. Export Ranking in the World	U.S. % Share of World Exports
1980	17	1.1%
1990	7	4.0%
2002	2	10.3%



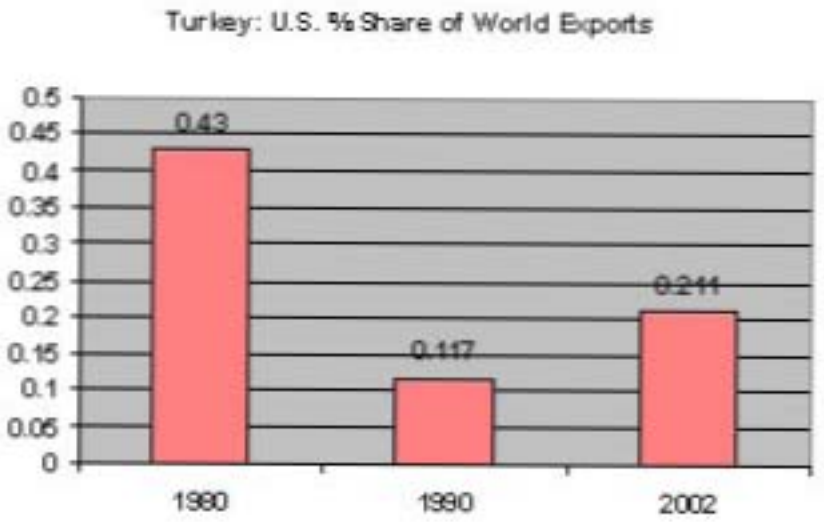
Minnesota's Rank and Share in Beef Production

	MN Production Ranking in the U.S.	MN % Share of U.S. Production
1980	10	1.5%
1990	11	1.0%
2002	11	1.2%



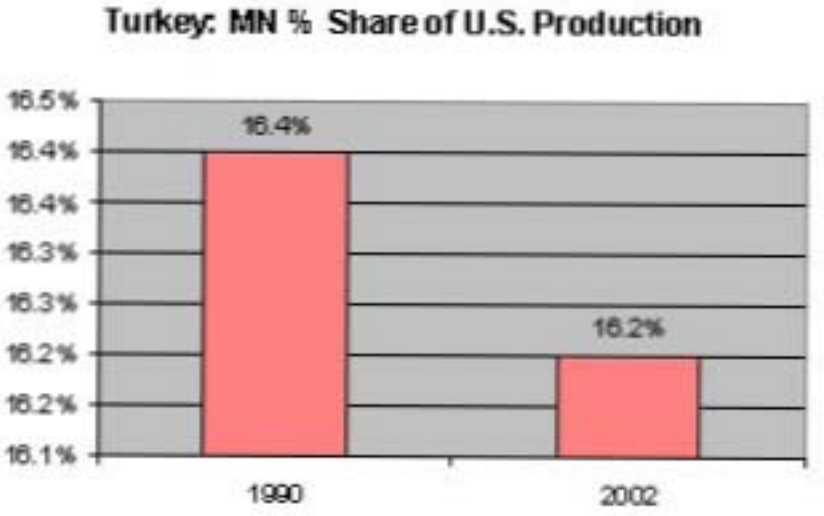
U.S. Rank and Share in Turkey Production

	U.S. Production Ranking in the World	U.S. % Share of World Production
1980	1	52.3%
1990	1	55.2%
2002	1	47.8%



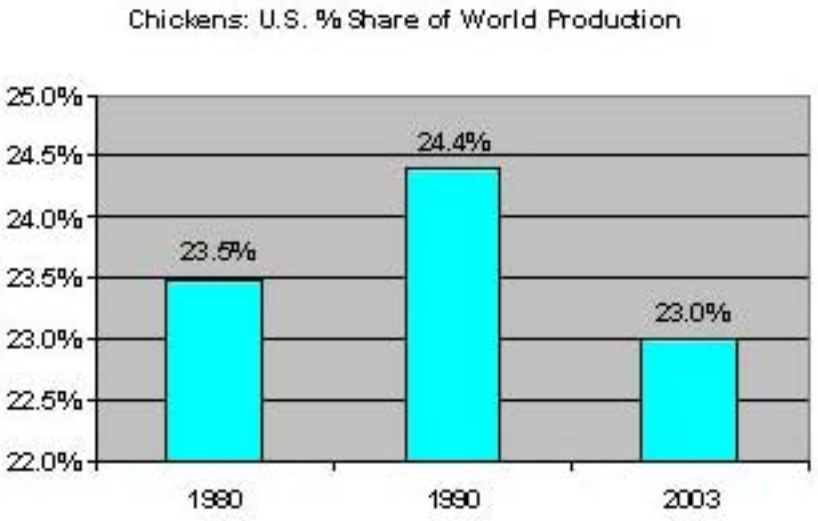
U.S. Rank and Share in Turkey Export

	U.S. Export Ranking in the World	U.S. % Share of World Exports
1980	1	43.0%
1990	3	11.7%
2002	2	21.1%



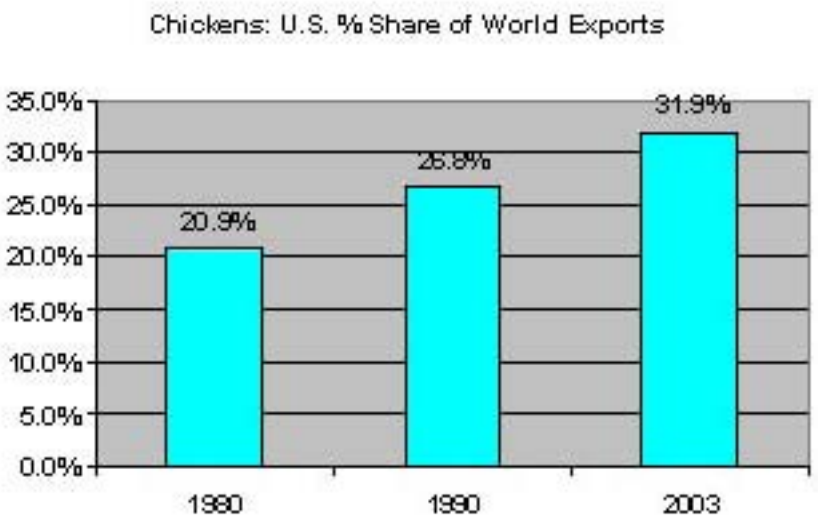
Minnesota's Rank and Share in Turkey Production

	MN Production Ranking in the U.S.	MN % Share of U.S. Production
1980	1	
1990	2	16.4%
2002	1	16.2%



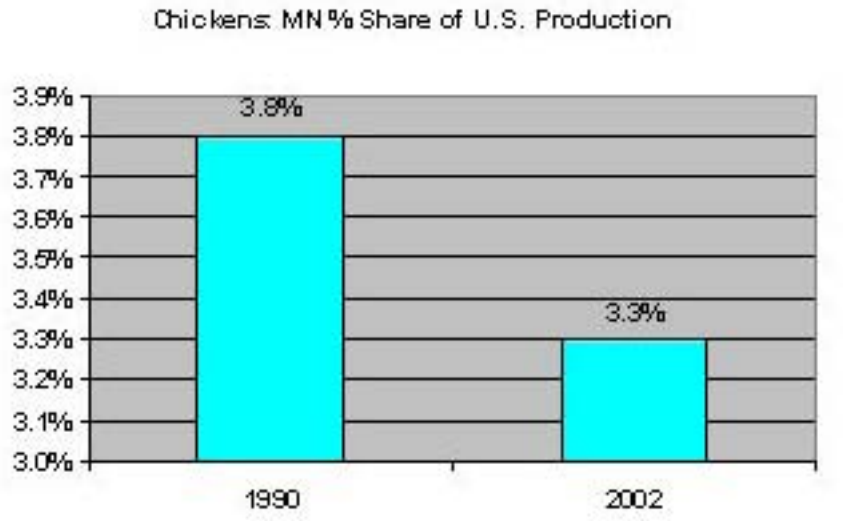
U.S. Rank and Share in Chicken Production

	U.S. Production Ranking in the World	U.S. % Share of World Production
1980	1	23.5%
1990	1	24.4%
2002	1	23.0%



U.S. Rank and Share in Chicken Export

	U.S. Export Ranking in the World	U.S. % Share of World Exports
1980	1	20.9%
1990	1	26.8%
2002	1	31.9%



Minnesota's Rank and Share in Chicken Production

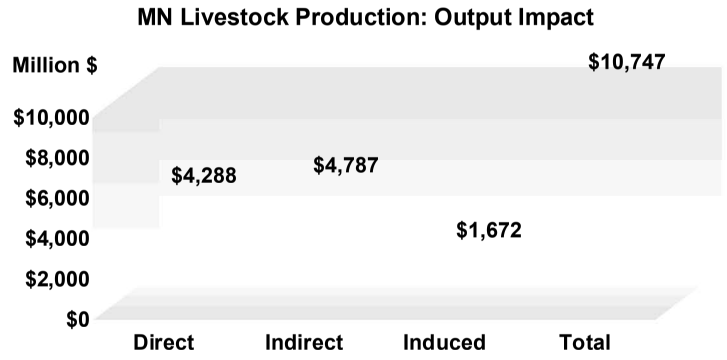
	MN Production Ranking in the U.S.	MN % Share of U.S. Production
1980	10	
1990	11	3.8%
2002	11	3.3%

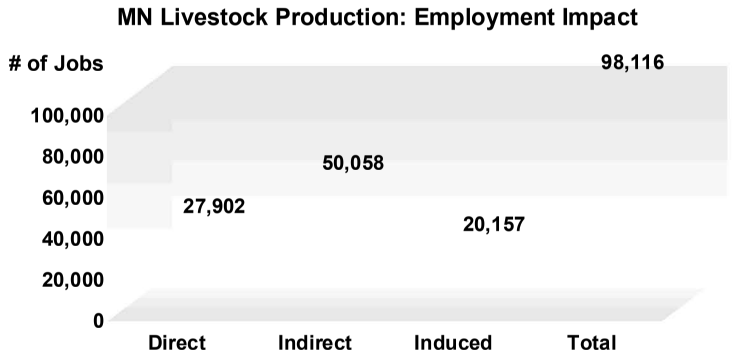
Economic Impact of Minnesota's Livestock Industry

Estimated Output & Employment Impacts

Updated 2-03

Livestock Production Sector	2001 Marketing	Output Impact				Employment Impact			
		Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
	Million $		*Million $*				*# of Jobs*		
Hogs	1,416.93	1,416.93	1,805.01	507.81	3,729.74	10,285	19,257	6,123	35,665
Dairy	1,297.34	1,297.34	1,246.63	569.77	3,113.71	6,111	14,421	6,870	27,402
All cattle	890.84	890.84	968.81	356.13	2,215.78	6,371	10,420	4,294	21,085
Poultry & eggs	583.42	583.42	671.58	197.18	1,452.17	1,965	4,956	2,378	9,299
Sheep & lambs	11.50	11.50	12.19	4.79	28.48	538	193	58	789
Misc. livestock	88.41	88.41	82.52	36.03	206.96	2,631	811	434	3,876
All Livestock	**4,288.44**	**4,288.44**	**4,786.74**	**1,671.71**	**10,746.85**	**27,902**	**50,058**	**20,157**	**98,116**



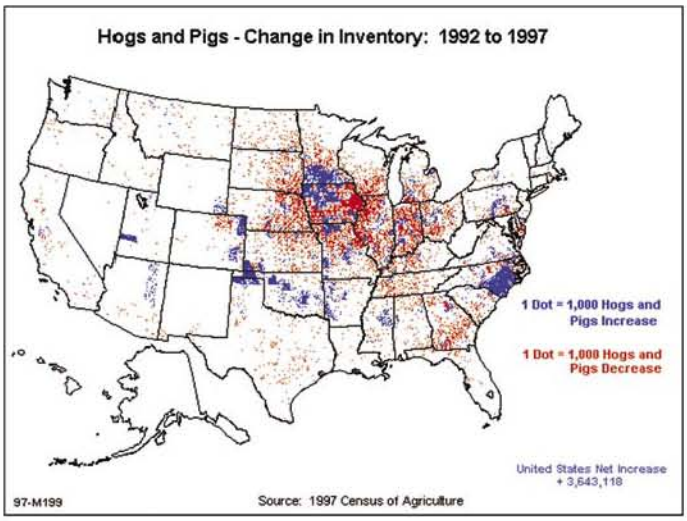


Direct *impact represents the response in production output of an industry.*
Indirect *impact represents the response by all local industries affected by the above-mentioned output due to purchases between industries.*
Induced *impact represents the response by all local industries caused by the expenditures of new income generated by the direct and indirect impacts.*
Total *impact is the sum of direct, indirect and induced impacts.*

Source: Agricultural Marketing Services Division, Minnesota Department of Agriculture.
The IMPLAN economic impact model is use for the analysis.

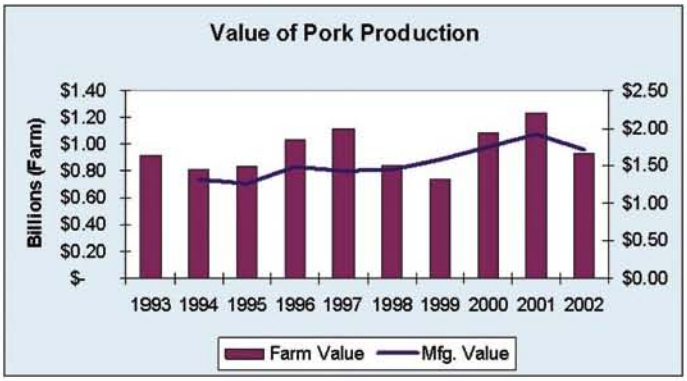
Appendix 4

Geography of Swine



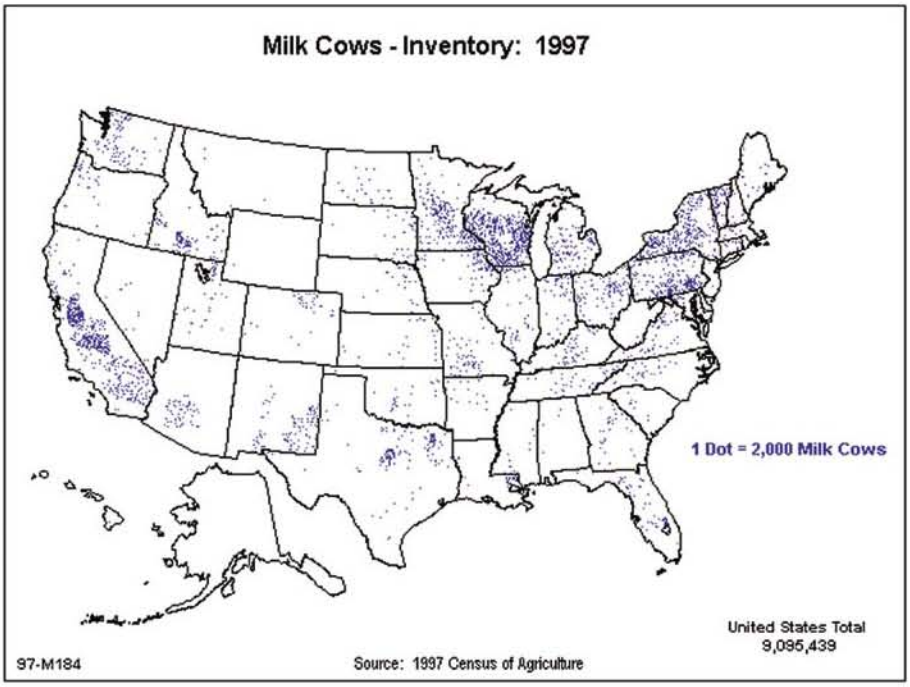
- Move to "fringe corn-belt".
- Higher feed costs, lower other costs through production systems approach.
- N. Iowa and S. MN maintain advantage of "best natural hog region".
- Meat Packing and Processing Capacity is key to location shifts.

Vertical Value Trend: Swine



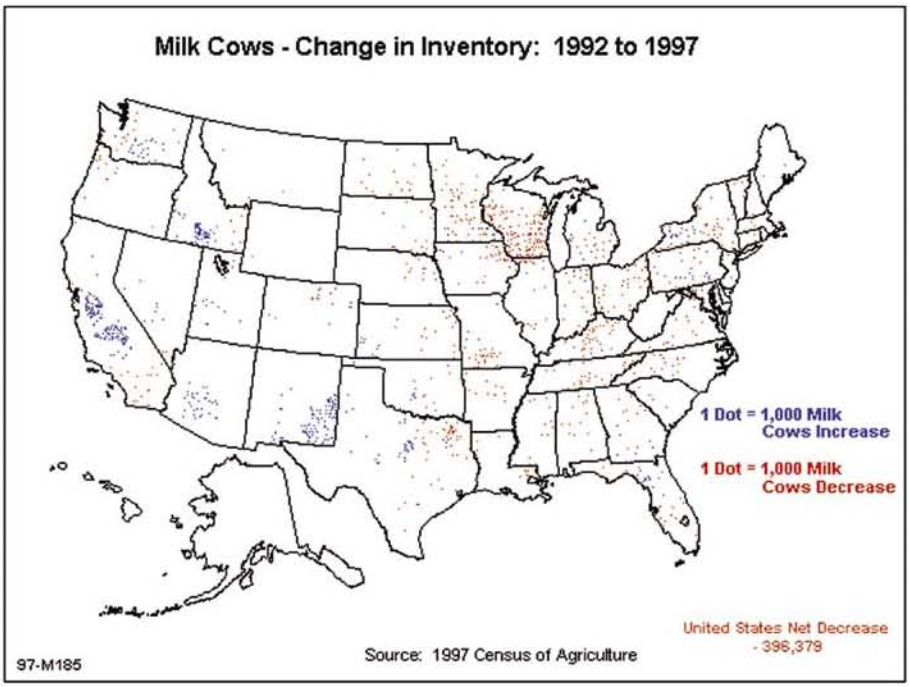
- Pork Growing Market Share and Value.
- Producer/Processor Coordination Innovator.
- Excellent Human Capital – Vet. Clinics and Others.
- 9 of national top 40 swine operations in MN.

Dairy Farm Geography Shifts:



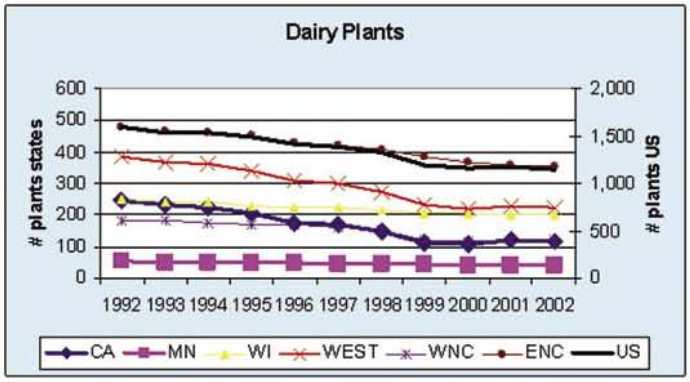
Move West:

- Favorable climate.
- Proximate demand
- New/Modern investment.
- Lower costs of production



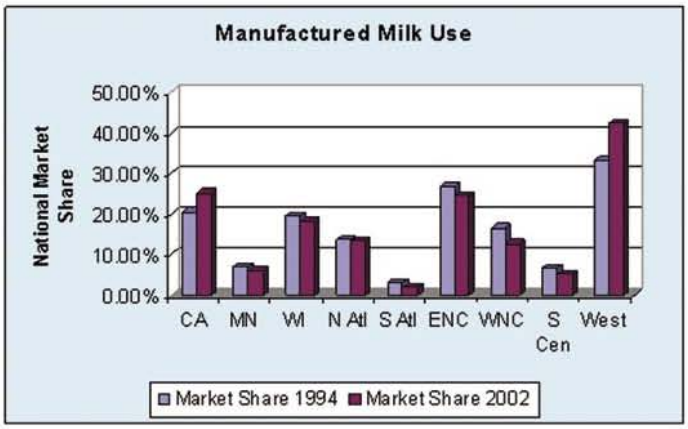
...and Processing Follows?

Processing Trends Mirror Farm Trends – Larger/Fewer



MN Plant Numbers Hold Their Own:

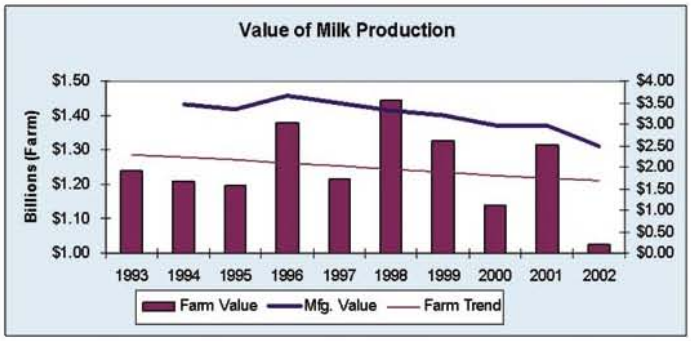
- US dairy plants decline 28%
- MN plants decline only 21%
- CA plants decline 52%



However, processing share declines:

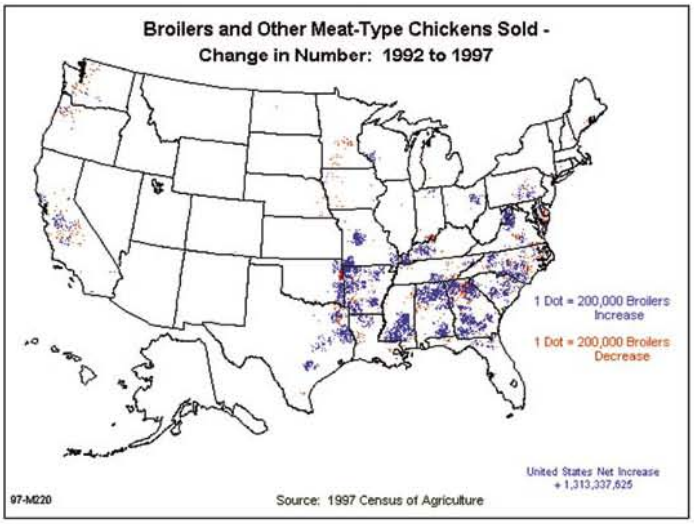
- CA increases share by 5%
- West region increases 9%
- Rest of U.S. decreases 7.5%
- Size of modern plants increases:
- Avg. Size 1980 = 57 mill. Lbs./yr
- Avg. Size 2002 = 161 mill. Lbs./yr
- Since 2000, ~ 30 mill lb/yr new cheese Capacity in the West!

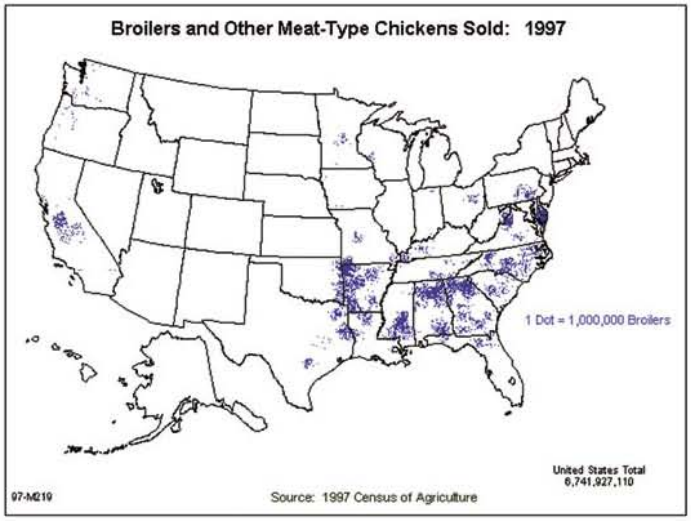
Vertical Value Trend: Dairy



- Dairy faces decline in processing and farm.
- Producer/Processor coordination needed.
- Modernization of facilities critical.
- Human capital infusion needed.

Broiler Geography





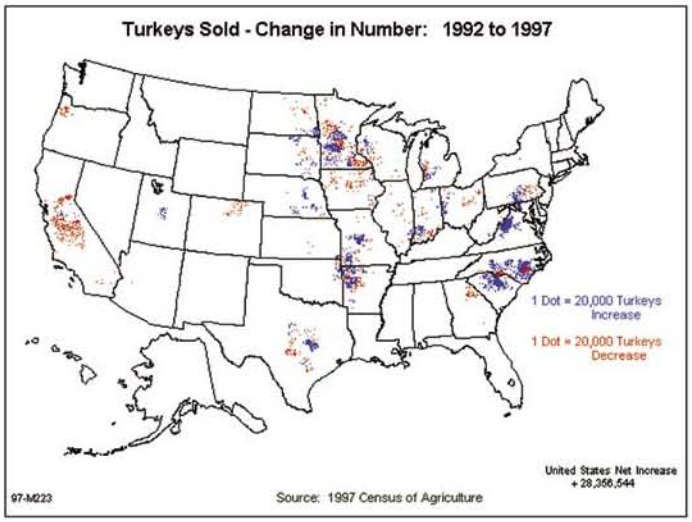
- Southeast region dominates

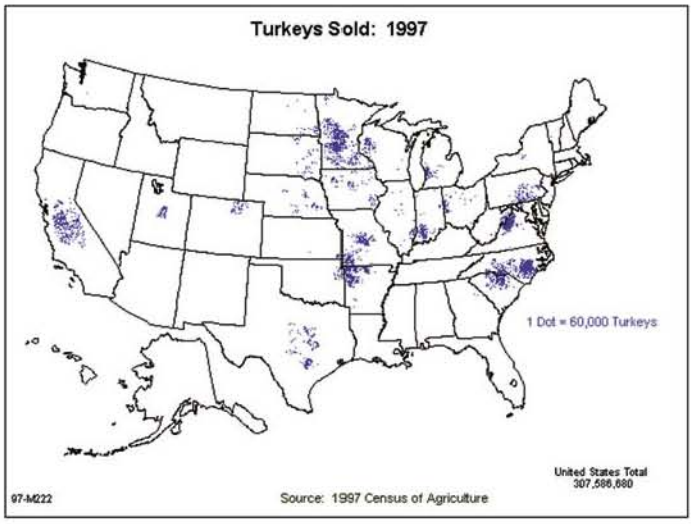
Regional concentrations are identified by company.

- Tyson = AR
- Foster Farms = CA
- Purdue = Maryland

Turkey Geography:

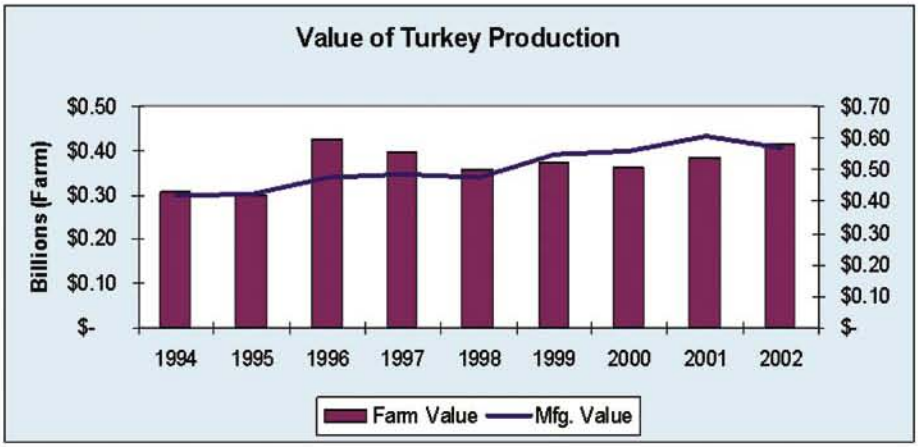
- MN grew internally
- Cargill Operates in AR
- Regional concentrations also associated with companies





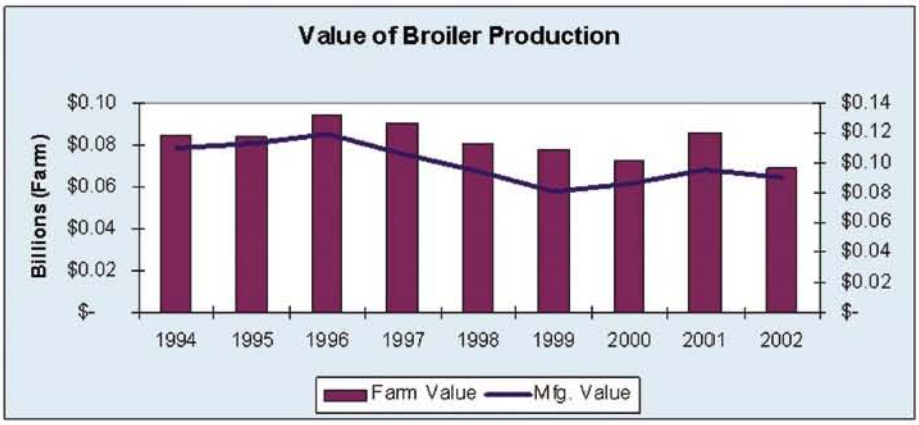
Vertical Value Trend: Turkey

- Turkey Growing Market Share and Value
- Producer/Processor Coordination Critical
- MN leads turkey production – Jennie O Turkey Store
- Success outside major poultry regions.



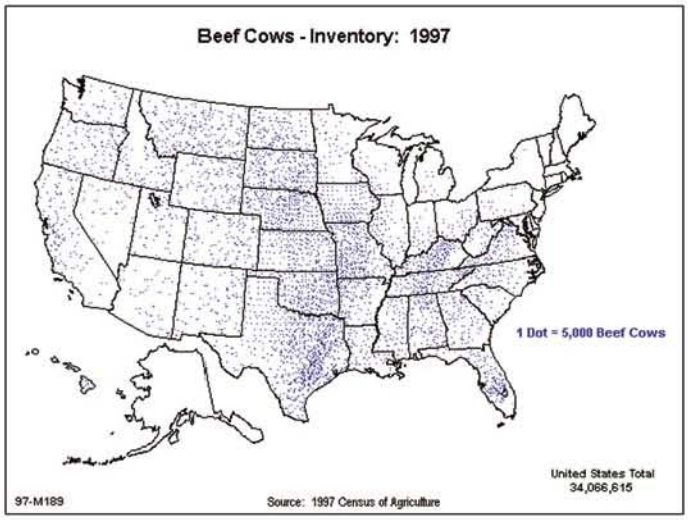
Vertical Value Trend: Broilers

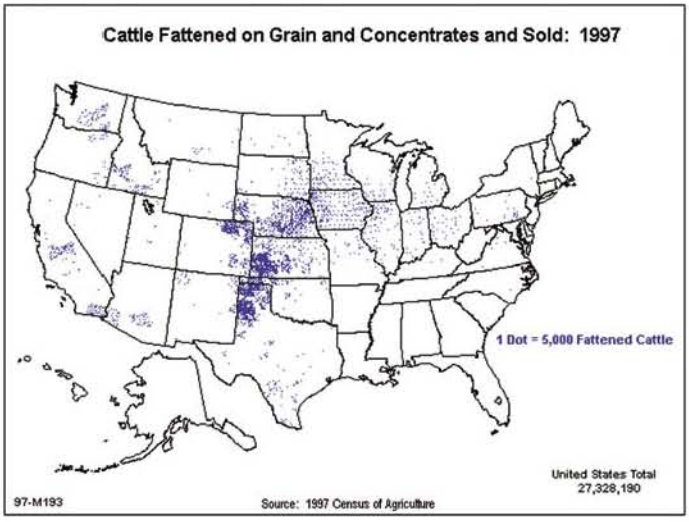
- Broiler decline since 1994 due to Campbell's closing.
- Recent Growth is positive trend.
- Value belied by high efficiency of broiler production which has allowed chicken to lead meat consumption.



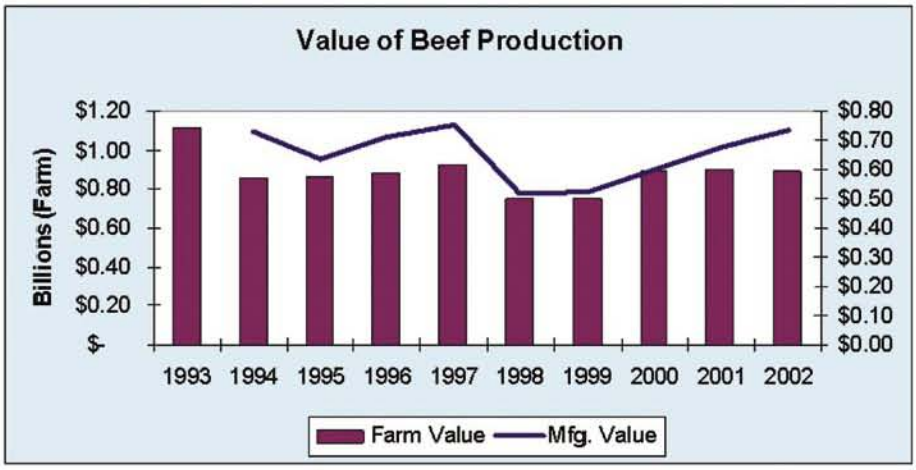
Cattle Geography:

- Beef cows are the most geographically dispersed of all livestock.
- Linked to grassland and lower valued cropping land.
- Cattle feedlots highly concentrated in Southwest Plains region.
- Arid conditions are conducive to outdoor cattle feeding.
- Movement occurred in 1970s'
- Packing plants have located near feedlots.





Vertical Value Trend: Beef



- Beef relatively stable share and value.
- Affected heavily by price cycles.
- Beef cows have not moved as other species.
- Operations frequently not primarily dependent on beef.

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