Managing for Today's Cattle Market and Beyond

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Prescriptions for a Healthy Beef Industry

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Background

The title suggests that there have been problems in the beef sector or that it has somehow been "ill." Actually, that is the case. The data show that demand for beef decreased each year from 1980 through 1998. The reasons for that longstanding decline have been widely discussed and widely documented, and they are no mystery at this date. But the problems did persist over a long time period, and we saw a pattern of forced disinvestments and forced downsizing as the industry lost over 30 percent of its market share compared to the mid-1970s.

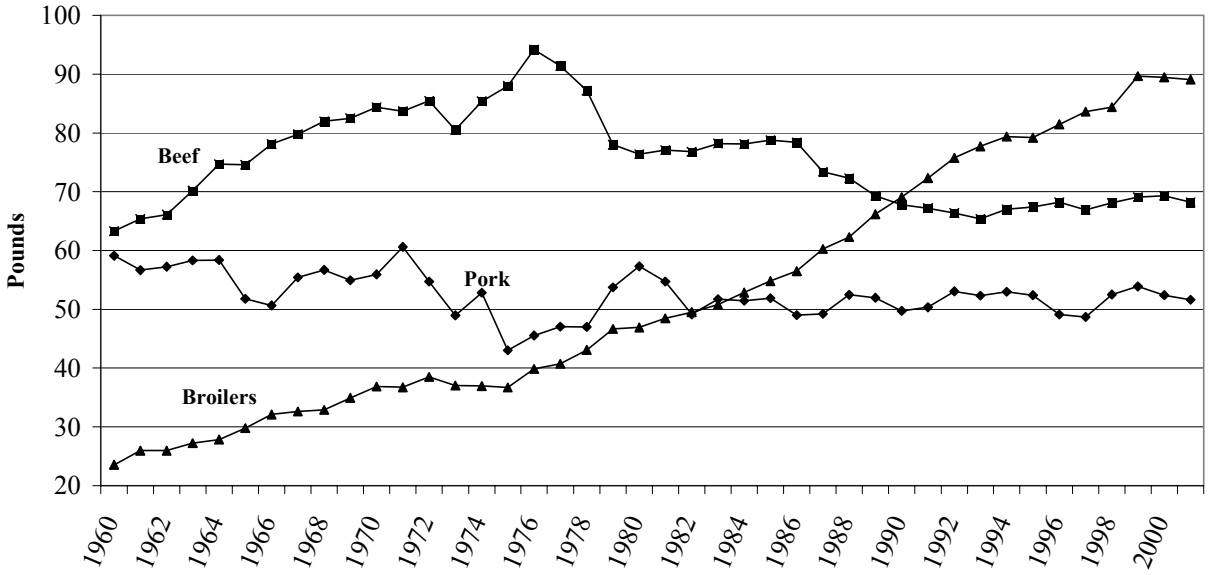
In the business world, where a particular commodity sector has been and what it looks like today are important determinants of what its future is likely to be. Long-term trends are hard to reverse. In the process, then, of formulating a vision of a beef industry that would be economically healthy, viable, competitive, and would offer an efficient entrepreneur at any level in the system a decent chance to make a profit, it is worthwhile to spend time looking at where we've been and why those trends occurred.

The methodology being employed in this forward-looking effort will involve three related steps. First, the long-term trends and tendencies in this industry will be documented and discussed. These are the base-setting phenomena that have determined where the industry is today. Secondly, it is important that there be a rigorous examination of why any negative trends that emerged and persisted did in fact have such longevity. If demand decreased each year from 1979-80 through 1998, why did this occur and why were the causal factors not identified and corrected before a downward spiral that ran for nearly 20 years was completed? Third, and related, it is important to take into account what has developed in the past, why past trends and emerging developments were so difficult to change or correct, and then employ that reasoning as a base on which to build a vision for a competitive, efficient, and potentially profitable industry for the future.

The Historical Picture

Figure 1 documents what has happened to the beef sector in an aggregate sense. The plot of per capita consumption is a plot of per capita supply or per capita availability since the available quantities of perishable product will be consumed at some price. When you look at the pattern presented by the beef sector and see the decline from some 95 lb in 1976 to the 65 lb level in the early 1990s, it is apparent that resources have been pushed out of beef production. On a per capita basis, there was something in excess of a 30-percent reduction in offerings across that time period. There has to be an economic reason for that dramatic development. The reason can come from either the supply or the demand side. For example, if resources were earning a much higher investment in some alternative application, they would tend to be taken

Figure 1. Per Capita Consumption of Beef, Pork, and Broilers, 1960-2001



out of the beef sector and put into more profitable use. Without question, some of that has happened across time, but that development still begs the question. What was the catalyst for the lack of return on investment in the beef business and the consequent reduction in resources committed to beef production, distribution, and marketing?

This pattern in beef per capita availability suggests the possibility of some difficulties on the demand side. Clearly, supply has been reduced on a per capita basis, but it is important that we find the reason for that reduction. Economists talk about an issue called "identification," and in simple terms, identification deals with what is happening when price traces out a path over time. Are those changes in price due to changes in supply or changes in demand or in both? In other words, there is a need to "identify" what the catalyst is for any significant move in prices over time.

Figure 2. Per Capita Consumption and Inflation-Adjusted Prices (CPI, 1982-84=100) for Beef, 1960-2001

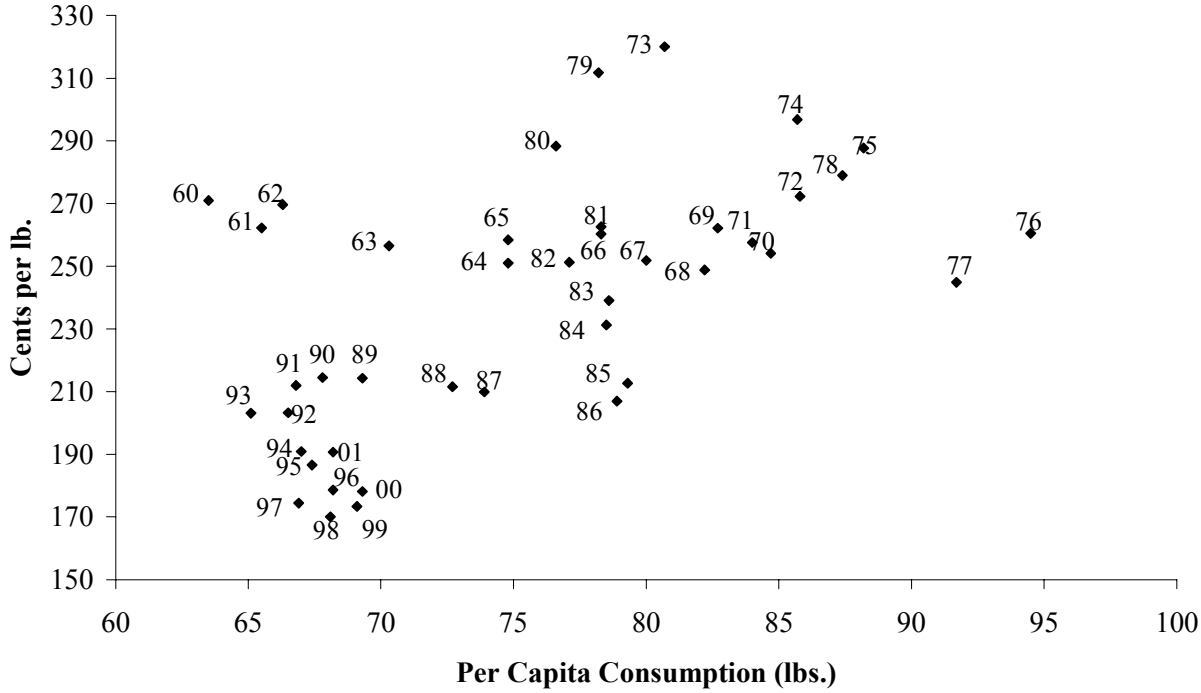
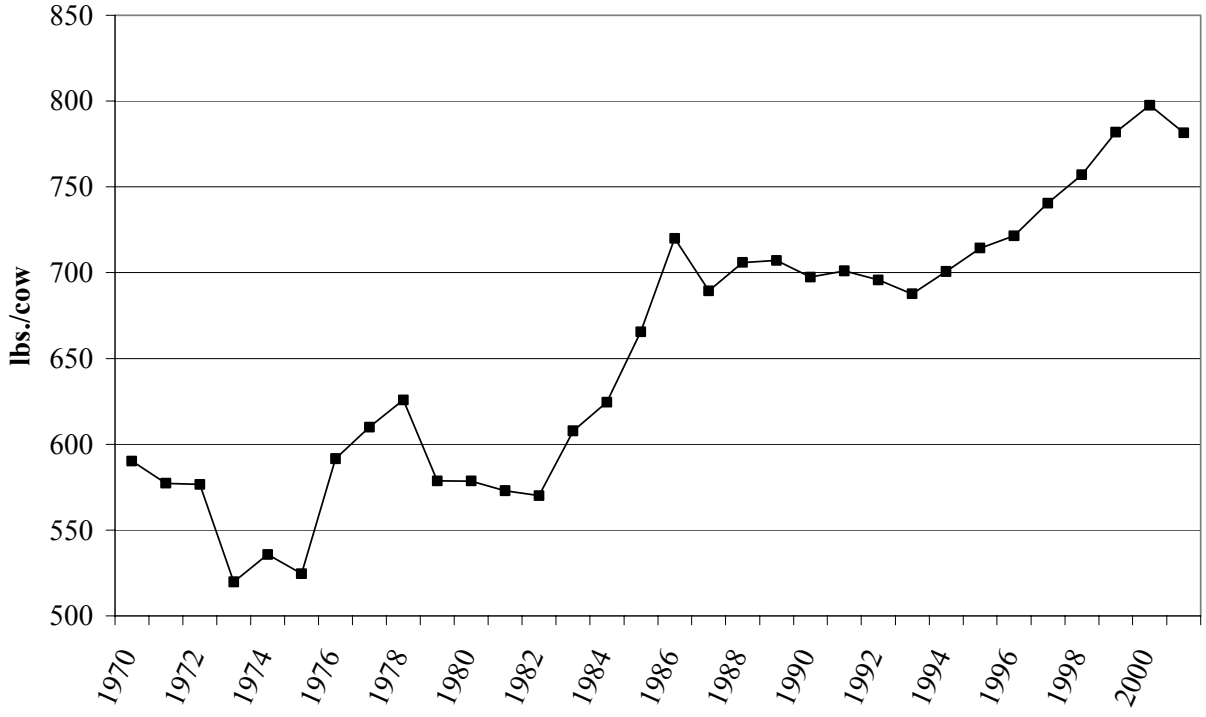


Figure 2 is a scatter plot of inflation-adjusted prices from 1960 to date against per capita consumption of beef. Each year is identified in the plot. Picking up in 1979, it is abundantly clear that since that time period, the movement on the surface of the graph has either been down or down and to the left. Note that from 1979 through 1986 with per capita offerings of beef, and therefore per capita consumption, largely constant around 78 lb, the inflation-adjusted price declined over 30 percent. After 1986, the pattern was more nearly a movement to the left as price was maintained by reducing offerings, and that pattern continued in the early 1990s. More recently, we have seen the early 1980s pattern start to evolve again as per capita offerings have been relatively constant in the high 60s in terms of retail weight pounds, and prices declined through 1998. Decreases in both price and quantity or decreases in price with quantity constant are clear cases of decreases in demand.

These decreases have been confirmed in a number of studies. The recent work done by economists at Kansas State University for the Cattlemen's Beef Promotion and Research Board confirmed the significant and prolonged decline in the sector.[1]

A somewhat more simplistic statistical modeling of beef demand involves a single equation model that explains the quarterly beef prices since 1960 as a function of quarterly per capita quantities of beef, per capita quantities of pork, per capita quantities of chicken, inflation-adjusted disposable per capita income and seasonal dummy variables to account for factors causing variation in price not explained by the traditional supply-demand measures. If this model is estimated starting in 1960, by 1980 you start to see a non-random pattern in the statistical error terms, which suggests that something significant is happening that is not being picked up or explained by the traditional price shifting variables in the statistical model. Some other important explanation variable is apparently missing. Adding a 0-1 shift variable for the quarters of each year measures the magnitude of the shift in the intercept of the model in each year, shifts not explained by the other explanatory variables in the model. Those shift variables on a quarterly basis were consistently more and more negative through 1998 and reached a magnitude that was often over 100 percent of the inflation-adjusted mean price in the data set. Something other than the traditional price moving factors was acting on the beef sector.[2]

Figure 3. Beef Production Per Cow, 1970-2001



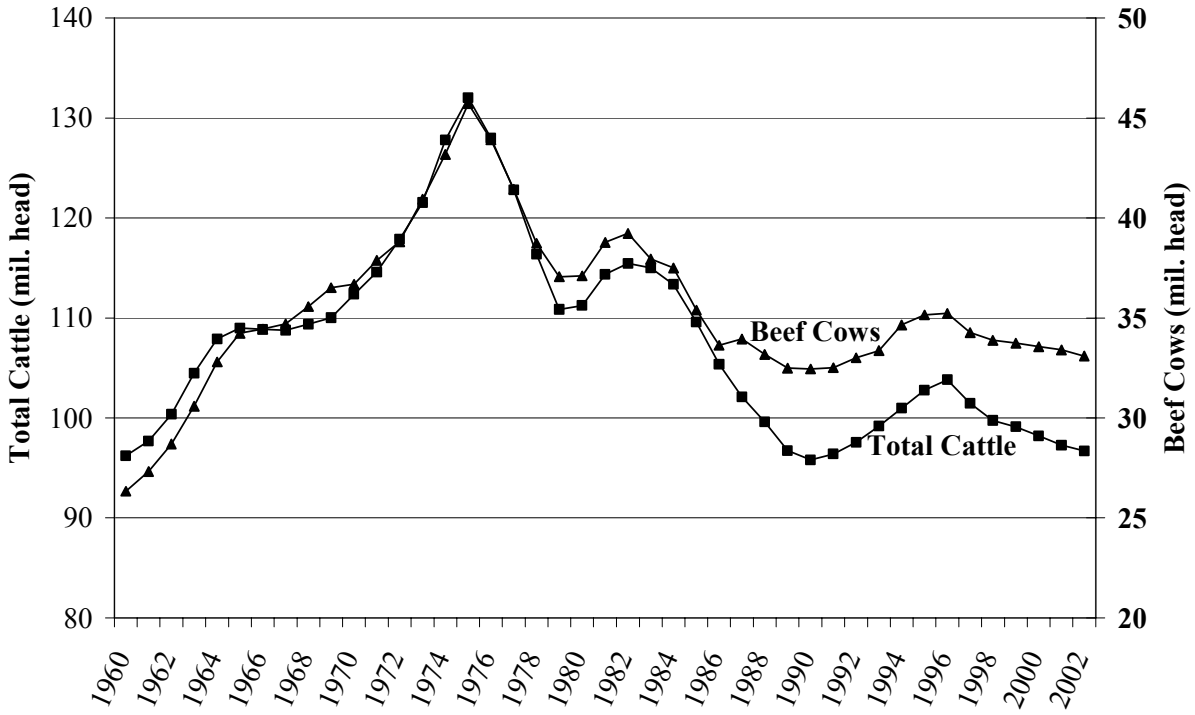
As industry leadership finally recognized that demand problems were persisting, an effort was launched in 1997 with a demand study group under the auspices of the Cattlemen's Beef Board, and requests were made to develop a simple measure of what was happening to demand. The response to those requests is an index of beef demand that uses an elasticity of -.67 and calculates the cumulative percent departure in price each year from the demand constant price using 1980 as a base year. Yearly and quarterly indexes have been broadly distributed. An annual index that shows cumulative decreases of almost 50 percent from 1980 through 1998 is being used by industry committees in efforts to revitalize demand. The indexes can be accessed by staff from the National Cattlemen's Beef Association, from those who staff the Cattlemen's Beef Promotion and Research Board, or they are available on the Internet at www.aaec.vt.edu/rilp.

What we have to this point, then, is a picture of dramatic and sustained decreases in demand constituting an economic "hit" on the beef industry that is virtually without parallel for any other food or fiber product. In response to that downward pressure on price and the squeezing of profit margins, we would expect the initial reaction by producers to be one of trying to reduce costs and keep the production resources in use. The dramatic vertical decline in price in Figure 2 suggested this would be the case. Recall that per capita offerings were maintained around 78 lb even though price was declining over 30 percent as we moved from the late 1970s into 1986. After that time period, there is indirect evidence on that same scatter plot that resources were being rapidly pushed out of production as the ability to keep quantity up in the face of declining prices reached its limits.

The reaction of the industry is apparent in Figure 3. It shows a phenomenal increase in output per beef cow during the early 1980s. We have seen another, but less impressive, surge in the 1990s coming from consolidation of operations and economies of size at the cow-calf level, and continued upward trends in average carcass weights.

Figure 4 clearly shows that many in the industry were not able to withstand the pressures from downward spiraling prices and the tendency for costs of equipment, feed, labor, fertilizer, and other inputs to increase. The graph shows total January 1 inventory numbers and records the significant decline from above 132 million head in 1975 down toward the 95 million head area in the early 1990s. The beef cow herd is also shown on the plot with a decline from around 46 million to the 33 million head level.

Figure 4. January 1 Cattle and Beef Cow Inventory, 1960-2001



What we have, then, is a picture of an important industry going through a 20-year period of dramatic forced change. As the demand problems accumulated, beef producers were not able to push costs down enough to stay in business. Beef production at the cow-calf level, where the cow-calf entrepreneur is a residual claimant on what is left after the consumer determines the value of the beef product offering and the middlemen extract operating margins, was not profitable.

That assertion leads to the next obvious question: Why did these negative conditions persist for so long, and if attempts were made to correct an obvious disequilibrium in the marketplace, why were they not successful? There are two ways to stay in business and maintain or even grow market share when selling prices are being pushed lower. One is to increase operating efficiency and reduce costs enough to allow the industry sector to maintain or even grow in spite of declining prices. That is not an impossible model, and it is one that we have seen in evidence across the past 20-30 years in the poultry sector. Since the early 1980s, per capita offerings for poultry have tended to increase, and they have often increased in the presence of declining inflation-adjusted prices. There were enough efficiencies to be gained and sufficient opportunities to reduce costs to keep the integrated poultry operations profitable even when there was no positive incentive in terms of better selling prices. But in spite of what are clearly Herculean efforts to increase output per unit and keep costs down, the beef industry was simply not able to reduce costs enough to keep resources in business.

The other approach to correcting the disequilibrium and keeping producers in business is to do something about the continuing decreases in beef demand. The data suggest that whatever was done during the 1980s and much of the 1990s in either or both of these areas was not sufficient. You either have to get costs down enough to have a chance to be profitable or you need to do something about pushing selling price up. It is worth looking at both as possible solutions and, in the process, discuss why the solution was so difficult to achieve.

Cost of Production

There are huge variations around the country in the cost of producing a weaned calf. The paper by Rodney Jones at www.aaec.vt.edu/rilp under "publications" documents some of these variations and attempts to model some of the causal factors in terms of the huge range in cost. It is important to recognize, then, that there is still a big potential for improvement coming from increased efficiency and reduced costs.

One of the reasons this cost variation has resisted correction and reduction is the huge differences in the objectives of those who own the beef cows. The large operator who is working hard at record keeping, buying genetics from outstanding herds, and trying to move efficiencies up and keep costs down has made significant progress across the past 20 years. Sophisticated and computerized monitoring systems and identification systems have been employed, and record keeping systems that bring back performance data from the feedyard and the fabricating room have allowed many of these large operators to modernize their genetics and move the efficiency of their operation to a significantly higher plane. Against this, however, is the much smaller owner of a significant percentage of the beef cows in the United States who is less attentive to technology and to efficiencies and is often earning the bulk of the family income from off-farm employment. The beef cow enterprise tends to become a secondary enterprise that uses hours of labor on evenings and weekends, and there is less concern about efficiency and cost reduction.

In spite of widespread efforts by the Extension Service in virtually every land-grant university in the United States to encourage record keeping and better management, there are still a large number of beef cows in the United States that have a bull in the pasture year-round with sporadic and unplanned calving programs and little or no attention to the genetics that would be needed to improve efficiency and modernize the beef product offering. At least partly as a result, there has not been enough progress on the cost side of the profit equation to keep market share near the levels the beef sector achieved in decades past.

The Demand Considerations

It's on the demand side of the profit equation that the data suggest much of the blame for lack of profitability has to rest. The dramatic declines in inflation-adjusted prices leave no room to buy high-cost machinery and new technology, and there hasn't been enough improvement on the efficiency and cost

side to keep the cow-calf operators in business. As the price that consumers were willing to pay spiraled downward, even on a smaller per capita offering, virtually all of that economic pain gets passed back down to the cow owner. Packers, processors, and retailers are margin operators, and increasingly the feedyards would like to be able to buy feeder cattle at a price that allows them to lock in a margin by forward pricing the finished steer. This pain is compounded, of course, if the middleman's margins are expanding. All this suggests an immediate interest in examining the nature of the demand-side problems and then looking at why they were not corrected.

The difficulty started in the late 1970s when consumers started paying more attention to dietary intake and putting more emphasis on cholesterol and fat levels in meats. This was, and continues to be, one of the reasons for the prolonged decline in demand, but it certainly is not the only one. Surveys indicate that in recent years, the big problem that has been present and persists until today in the consumer-level fresh beef offering is lack of quality and lack of consistency in quality. Tenderness is a major factor in the level of satisfaction in the beef eating experience.

The beef quality audits conducted in 1990 and again in 1995 by leading meat scientists showed that quality and concerns about quality and quality variation were of increasing interest to the consumer.[3] As more and more women moved into the workplace and the majority of homes now have two wage or salary earners working outside the home, the demand and need for convenience in meal preparation grew, and grew on a sustained basis. There was little that was done about this during the 1980s and well into the 1990s. Technical problems in precooking beef had not been resolved to make beef microwavable, and there were very few cooked beef offerings available for modern consumers who were showing an interest in a more convenient line of food products and were willing to pay for added convenience.

What was developing, then, during the 1980s and growing in importance during the 1990s was a divergence between what the changing consumer wanted and was willing to pay for and what the beef industry was offering. That divergence was obviously growing at an exponential rate when we moved into the 1990s as the product offering continued to remain the same, and the consumer continued to change.

The question of why this obvious market disequilibrium and the imbalance were not corrected is an interesting one. Part of it is attributable to the way the beef sector is organized, but that issue can await attention. The more pressing need is to reflect on why price did not prompt a change in the nature and quality of production to stay aligned with a changing consumer.

The Failed Pricing System

Historically, the beef industry has been structured with separate ownership and a separate profit center at each of the various functions that have to be performed along the supply chain. The cow-calf producer has sometimes moved into the stocker phase and readied calves for the feedyard, but generally that part of the supply chain is operated as a separate profit center as compared to the feedyard where some feedyards take ownership of cattle. Then, beyond the feedyard, there is a slaughtering function that is increasingly combined in large operations with the fabricating function. As the product moves beyond that level, it may go directly to retail, or it may go to a purveyor who does some value-added further processing, getting it ready for an institutional outlet. The key point is that there are several profit centers between the decisions that determine genetics and the quality of the beef offering and the consumer who is buying the product.

Historically, the coordinative mechanism that was relied upon was the price system. You can find, in many of the older marketing textbooks, elaborate explanations of how the price system would correct any problems. Theoretically, the consumer generates price signals, either premiums or discounts, and those signals get sent down to the producer to communicate a message of change.

In practice, this system has failed miserably. There has been no effective communication from consumer to producer, primarily because the USDA-administered public quality grades have been outdated and outmoded for at least 20 years. Quality grades are based primarily on marbling scores. Marbling is one determinant of tenderness and palatability and the enjoyment of the eating experience, but it is not a very good indicator of palatability and eating satisfaction. Tenderness, in

particular, has been identified as a major problem, and this problem has been documented in many places including the beef quality audits of 1990 and 1995. Meat scientists using sheer tests found that 20 to 25 percent of Choice steaks were so tough that it was virtually impossible to chew them.

In theory, that situation calls for a rather obvious correction. Put technology in place and put five categories of tenderness in the Choice grade, and allow the consumer to buy Choice tenderness 1 or Choice tenderness 3, or whatever they prefer to pay depending on the price presented to them and the intended end-use for the product. That would have created signals that would have given some incentive to the producer to change genetics and move more nearly toward breeds, breeding programs, and management techniques that were designed to produce tender beef. That simply has not happened. In late 2001, fed cattle tend to be sold in a time window of about two hours each week with virtually all of the steers and heifers coming out of the feedyards bringing the same price.

If we accept, and we must, that the price system has failed to accomplish the vertical coordination across functions along the supply chain and to provide any semblance of quality control for anyone who wanted to offer a quality controlled product, then we have to reflect on why improvements were not made in the heterogeneous product offering that was being presented. Here, the structure of the industry and the proliferation of different profit centers along the supply chain become an issue. Even though it was increasingly recognized that the product offering was out of date and needed to be modernized with value-added further processing, nobody in the prevailing industry framework saw fit to make those needed investments.

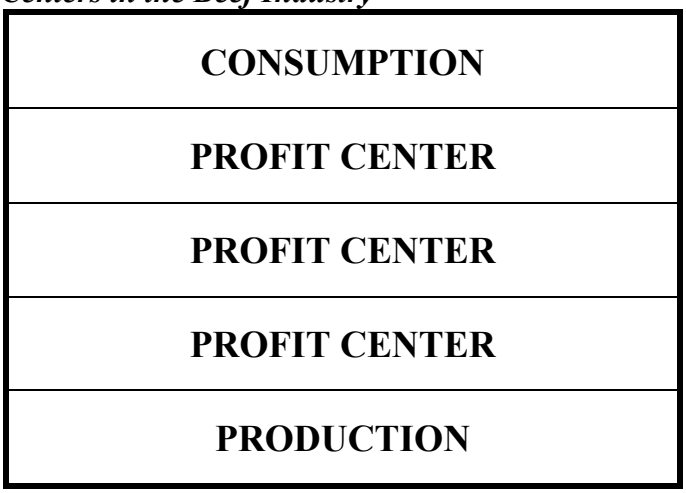
The Profit Center Paradox

Figure 5 is a useful schematic against which to think about these issues. At several points between the producer and consumer, there is a profit center that has its own goals and objectives and its own ideas as to what it needs to do to maximize short-term profits to the business. If you combine these short-term profit motivations from several separately owned and operated profit centers along the continuum, any chance of getting a vertically coordinated program for the beef industry as a whole that would generate quality controlled products is purely coincidental. It is widely known that many of the relationships between buyer and seller along that chain have been adversarial. In the midst of this mode of operation, there is no one in the system that has been willing to make the much-needed investments in modernizing the product offering.

As the receiver of residual values passed down through the supply chain from the consumer, it is the producer that has the most to lose if nothing is done. The middlemen tend to be margin operators, and they are not always inclined to worry about the long-term well being of the industry as long as they can extract an operating margin that covers their costs and yields some acceptable return on investment. For decades, producers and producer groups were prone to point to the packer or even the retailer and say, "It is not our job to do product development work--they should be doing it." As a point of fact, "they" didn't do it. That is at least partly because beef was a generic commodity product with no labeling and little or no product differentiation. It is very difficult for a business firm at the packing level, for example, to justify $250 million or even $500 million to start and complete the process of rolling out a new product offering and try to get it introduced so that it will be widely accepted when there is no brand identification involved and no brand allegiance at the consumer level. The result is that, in the presence of an increasingly heterogeneous product offering in terms of consistency, quality, and in convenience in preparation, the industry drifted for years with no one in the system willing to make the needed investments.

There was early talk at the original National Livestock and Meat Board in Chicago when the Board was located there and the National Cattlemen's Association (NCA) that was representing producers and producer groups. Indeed, a demand strategy conference was started at the summer meeting of the NCA in Charleston, South Carolina in the late 1980s.

Figure 5. Demonstration of the Various Profit Centers in the Beef Industry



By the early 1990s, however, there was considerable grumbling among the elected leaders in the NCA about the cost of the demand strategies conference and growing complaints that the conferences were taking too much time away from their valuable committee work. The elected industry leadership was not willing to accept that the beef product was running into major trouble and that producers and producer groups needed to face up to the realization that they needed to try to make sure that needed product development work did, in fact, happen.

Glancing ahead without getting into detail of what logically comes later, it was when contracts, captive supplies, and vertical alliances with their various price grids started to show up in the mid-1990s that things started to change. It is impossible to generate a product line in beef or pork that will go into a discriminating market like Japan unless you have significant quality control. It is impossible to grow and build the domestic market for consumers who have dollars in their pockets but want a consistent, high-quality eating experience and want convenience in preparation unless you make some progressive changes in what you are offering that same consumer.

With a still heterogeneous offering of beef products, the way to start identifying some different market segments and doing things like aging or in other ways enhancing tenderness was to get involved in non-price means of coordination. Contracts, captive supplies, vertical alliances, and occasionally even vertical integration came on line. It was against this backdrop of growing realization of how desperate the situation had become that changes were finally starting to occur as we came into the latter half of the 1990s. It is important that we recognize that these non-price means of coordination were ways to accomplish the aligning of the functions along the supply chain in such a fashion that a predictable product matching consumer preferences would come out at the top. That coordination is what the failed pricing mechanism was not accomplishing.

Turns in Beef Demand

If we look at the beef demand index on a quarterly basis (Table 1), there is growing and accumulating evidence that something has, in fact, changed. The fourth quarter index level for the year 2001 is 15.46 percent above the 100 level assigned to the fourth quarter of 1997. If that level of improvement in demand can be sustained for several years, there is a very high prospect that more consistent profitability can be restored to the beef sector. A 10 percent improvement in consumer demand, assuming anything approaching reasonable behavior and reactions in terms of middlemen's operating margins, adds $5.00-8.00 per hundredweight to a $70 fed cattle market and probably adds $10-15 per hundredweight to the weaned calf. Cattle-Fax estimated that improved demand added $40 to $50 per head to fed cattle in 1999, and another $35 to $40 in 2000.[4] If this improvement can continue, we will see $80 fed cattle markets again in the near future.

There appears to be two primary catalysts for the positive change. First, there has been a significant and growing change in the product offering in the domestic market. Very large packer/processors that just a few years back were oriented to being the low-cost commodity operator have turned to a merchandising mode and are looking to expand margins on value-enhanced product. Once those investments in cooking technology and in modernized packaging technology are made, they are not easily reversed, and they will not go away in the short run. There is, therefore, reason to expect this resurgence to continue. The investment dollars have to be coming from for-profit, private firms because if all of the industry's check-off dollars were spent on product development, there would still not be nearly enough money to make much progress. What has happened is a program of product development work with the

new National Cattlemen's Beef Association and the Cattlemen's Beef Board serving as catalysts for product development. Check-off dollars have been moved into efforts to bring together the right for-profit firms and to facilitate cooperation up and down the supply chain. It is significant, for example, when a steak sandwich goes on the menu of every Dairy Queen outlet in the United States, and this is one of a number of success stories for this program.

I see a changing product offering, one moving more toward consistency, quality control (even if it means reformulating the consumer product), and convenience in preparation as one of the factors in the change in beef demand. Since this move is still in its infancy, and it is certainly expected to grow, I expect the domestic component of demand growth coming from an improved and modernized product offering to be a significant factor for years to come. Modern consumers have money in their pockets to spend if the product is right, and every economist who has ever looked at consumer behavior understands that the income elasticity for convenience is very high.

Table 1. Quarterly Beef Index for 1980-2001

	Quarter 1		**Quarter 2**		**Quarter 3**		**Quarter 4**	
Year	***1980=100***	***1997=100***	***1980=100***	***1997=100***	***1980=100***	***1997=100***	***1980=100***	***1997=100***
1980	100	202.8719	100	179.9934	100	190.5221	100	201.609
1981	93.74988	190.1922	92.90148	167.2166	101.8138	193.9779	88.69112	178.8093
1982	83.41986	169.2355	90.39086	162.6976	93.253	177.6676	84.88101	171.1277
1983	82.85526	168.0901	90.18853	162.3334	90.9415	173.2637	81.00816	163.3197
1984	82.05223	166.4609	85.92873	154.6661	82.80115	157.7545	81.02885	163.3614
1985	76.30916	154.8099	85.23209	153.4122	82.90996	157.9618	73.10532	147.3869
1986	72.05904	146.1876	81.64863	146.9622	81.41323	155.1102	71.49042	144.1311
1987	66.91679	135.7554	73.81453	132.8613	74.09044	141.1587	66.82913	134.7335
1988	67.02789	135.9808	73.97573	133.1514	72.44845	138.0303	64.77995	130.6022
1989	63.2419	128.3001	69.34434	124.8153	66.52813	126.7508	64.19675	129.4264
1990	60.92563	123.601	69.90953	125.8326	65.57541	124.9357	62.93019	126.8729
1991	60.38459	122.5034	67.83538	122.0992	64.85114	123.5558	58.53338	118.0085
1992	57.57119	116.7958	63.74106	114.7297	60.96577	116.1533	56.7405	114.3939
1993	56.15307	113.9188	61.74775	111.1419	60.53451	115.3316	55.94812	112.7964
1994	54.99929	111.5781	60.1328	108.2351	57.59109	109.7238	54.31535	109.5046
1995	53.25004	108.0294	58.61526	105.5036	58.30027	111.0749	53.63333	108.1296
1996	53.47108	108.4778	58.08509	104.5493	53.77013	102.444	51.7067	104.2453
1997	49.29218	100	55.55758	100	52.48734	100	49.60097	100
1998	48.9202	99.24535	54.11852	97.40978	52.5777	100.1722	50.15056	101.108
1999	48.88672	99.17744	56.4942	101.6859	54.66578	104.1504	52.78435	106.418
2000	52.17043	105.8392	58.1876	104.7339	57.60904	109.758	52.70459	106.2572
2001	53.71918	108.9811	61.1292	110.0285	59.32156	113.021	57.27094	115.4633

Updated using per-capita consumption and retail beef price data from the Livestock Marketing Information Center website (http://lmic1.co.nrcs.usda.gov/), updated on February 20, 2002.

The second big factor in the resurgence in beef demand is the export market. Trade that involves imports of some cattle and considerable volumes of primarily processed beef is always controversial among some producers and producer groups. But the other side of the "trade equation" is the high-quality exports, which have grown to the equivalent of nearly 10 percent of domestic production. Recent analysis that was conducted for the Cattlemen's Beef Board suggests that export activity during the 1990s, when the analysis is conducted in the presence of imported product as well, has had a significant and positive impact on the domestic industry. Prices are higher and the industry is bigger than would be the case had we not seen the growth in export activity reflecting growing export demand during the 1990s. There are several published references to this work on the World Wide Web at www.aaec.vt.edu/rilp. These export activities are encouraged by the U.S. Meat Export Federation, which is partly supported by check-off dollars.

Any progress that has been made in beef demand is thus built primarily on the investment dollar of the for-profit firm. This is true in both the

domestic and export markets. There is a related issue that is becoming an increasing concern of analysts who recognize the importance of these investment dollars. The recent, current, and growing tendency to try to regulate the concentrated marketplace, ostensibly to protect the economic position and well being of producers, may become a factor in determining whether or not those investment flows will continue and will grow. It is useful, then, to take a look at what is involved in this growing clamor for regulation of the marketplace in the meats.

Legislating Solutions to Economic Problems

It was within the public arena in the mid-1980s that the Justice Department allowed the last round of mergers and acquisitions that pushed the 4-firm concentration ratio in the fed cattle activity from around 40 percent up toward the current 80-81 percent. At the time, representatives of the Justice Department referenced the importance of economies of size and the ability of large firms to keep costs down and to, therefore, generate a solution that was of benefit to consumers. Not much attention was paid to issues that are now of growing concern, issues like market access and an opportunity to produce with anything approaching an independent, entrepreneurial attitude in an increasingly controlled supply chain. Out of this arena have come various efforts to control and regulate the marketplace, presumably to improve the situation for producers. Those efforts have had varying degrees of success and may generate varying and even unpredictable implications.

As the trends toward contracts, captive supplies, and vertical alliances grew coming out of the 1980s and into the 1990s, some producers and producer groups became increasingly concerned about implications at the producer level. Arguably, the most visible of the requests for rulemaking that would regulate how buyers and sellers can do business in the livestock sector is the Western Organization of Resource Council's petition that was submitted to the Secretary of Agriculture in 1996. A lengthy and rather exhaustive set of proposed regulations was included, and the primary challenge was to contract arrangements as those arrangements developed between seller and buyers representing the larger beef packers. The petition proposed that any contract be barred unless it has a specific base price included in the contract that has been determined in an open and competitive marketplace. Although it is not immediately clear as to what an "open and competitive marketplace" would require, there would presumably be some way to discover a price within a price discovery mechanism that everyone had access to and would be widely visible to the publics on all sides of these issues. It remains to be seen as to whether or not anything like this will evolve, but in the meantime, contracts and captive supplies and the percentage of cattle moving through vertical alliances, where no price discovery is involved at the live animal level, continue to grow.

This is a controversial and often emotional issue, and there is no attempt to prescribe solutions here. In a paper written during 1999, this issue was dealt with in more detail, and that paper, "White Paper on Status, Conflicts, Issues, Opportunities, and Needs in the U.S. Beef Industry," is available on the web at www.aaec.vt.edu/rilp.[5] Some of the mechanisms for scheduling cattle through processing facilities and some of the formula price arrangements do appear to have perverse incentives. An example is the type of contract that prices the cattle placed on a formula, where the base price in the formula is tied to the cash market in which the buying packer is active or to weekly averages, weekly highs, or some such measure of prices paid by the packer. The incentives are wrong in this type of system. There are ways to accomplish the scheduling, which appears to have substantial ability to reduce processing costs, without getting into such arrangements. Basis contracts, for example, could accomplish the same "scheduling" with the pricing decision left in the hands of the cattle owner, or marketing agreements with no base price needs could be used.

Strenuous efforts to block long used and apparently widely accepted ways of doing business between buyer and seller in the livestock business could have several unintended and negative consequences. First and most widely recognized, and now documented, is the cost-reducing impact of the ability to schedule cattle through a slaughtering and fabricating facility. The research by Anderson and Trapp indicates that even a modest reduction in the daily variability of cattle moving through the plant can reduce costs of slaughtering and fabricating by $10 per head.[6] These cost savings actually exceed the average per-head profit margins at the packing level estimated by some industry analysts

for the entire decade of the 1990s. Anything that blocks the ability of the packer to work with sellers and schedule cattle through their facilities could impose a significant cost on the industry in general, and on sellers in particular, if these scheduling opportunities were outlawed. The unintended and unexpected ramifications of proposed legislation to regulate this marketplace need to be identified and brought more thoroughly into the discussion of any legislative moves that would be good for the industry longer term.

A second possible cost or unanticipated consequence might be the reluctance of the large packers/processors to make investments in new product or new market developments in an industry in which how they operate is increasingly constrained and controlled. Packers, for example, are heavily involved in many of the producer-initiated vertical alliances. The intent of the producers in these alliances is often to circumvent the failed pricing system and find a way to be compensated, albeit not by a visible price, for the value in their cattle. Packer ownership is often involved here, and another widely suggested control that Congress is encouraged to legislate is one prohibiting packer ownership of slaughter livestock.

Such legislative efforts may put the future of vertical alliances in doubt. The large processing firms are low margin operators and tend to yield a low investment compared to the rest of the food industry. Stock prices for the publicly traded operations languish and struggle. The large firms are not likely to be anxious to continue investing multiple billions of dollars in product and market development in an environment where how they operate, how they buy, and how they try to achieve coordinated activity and quality control are controlled by legislative actions and market regulations.

Characterizing the Current Situation

What we see as we move into the new millennium is the possibility of a significant change in a longstanding demand problem. Three years of observation do not make a trend, but if the attention to quality control and modernization of the product offering that started to evolve in recent years in both domestic and international markets continue, there can be a longer-term trend in growth in beef demand.

We also see increasing recognition that the historical and traditional pricing system has failed. The fallout has been ominous to the sector as it drifted for the better part of two decades without any economic incentive to ensure alignment between production and consumption. There is growing recognition that if the pricing system has any chance to compete as a coordinative mechanism with the increasingly pervasive non-price means like contracts and vertical alliances, then something has to be done about the quality grades. A product attribute like tenderness that is not identified in a grading process cannot have a price signal attached to it. It is clearly the case, then, that the consumer has no way to communicate to producers how important they consider tenderness to be and to stimulate the producer to change. Research done by Kansas State University scientists indicates, in a carefully designed experiment, that consumers will pay significantly for guaranteed tenderness.[7]

It would appear that there is no reasonable chance for a comeback of the price controlled and price coordinated system unless USDA policies that preclude changes in quality grades are changed. One of the most important policy moves that could come out of Washington, therefore, is the willingness to modernize the grading system and initiate changes in grades without requiring a consensus for change from the industry. With the perverted incentives that exist in the industry with many producers selling low-quality cattle at prices above their value, it is hard to imagine why the industry would bang on the doors of the Agricultural Marketing Services in the USDA and demand a change in the grades. Much more progressive and forward-looking leadership is going to be needed if the grades changes are to be effected. If they are not changed, then we can anticipate the continuation of a current phenomenon: friction between the opponents and proponents of non-price means of vertical coordination such as contracts, captive supplies, and vertical alliances.

Caught up in and paralleling all this is the increasing tendency to clamor for legislative controls and legislative solutions for economic problems. The mandatory price reporting legislation that was passed in the 2000 session is an example of legislation that is intended to improve things at the producer level, but it is also legislation that may have innumerable unintended consequences. If you recognize that a very large percentage of cattle prices, beef prices, meat prices, etc., were already

being reported under the voluntary system, then the only way that price levels paid to producers are going to be changed by more exhaustive and more extensive reporting is if there were, in fact, significant "deals" in the prior system that were not being reported. A widely quoted example is a buyer of cattle saying, "I will pay you $.25 more for this pen of cattle if you will not report it," or a buyer of a load of meat saying, "I will bid this up $1.50, but I don't want this to be reported (because it might raise the entire price level)." There is much talk about these things, but it is difficult to imagine how and why such covert strategies could have been operated without them becoming widely known. But there has to be some source of added value coming from the required price reporting to give any net improvement to producers. There *will* be significant added costs in the system.

With the extensive data management and reporting requirements imposed on packers and processors, costs will go up in the middle of the system. The packers/processors will, other things equal, have to extract a larger operating margin to cover those increased costs. This is really no different than what happens over time when their energy, packaging, or labor costs go up. The price spreads reported by the USDA have continued to trend up across the years and will continue to do so. Middlemen will try to compensate for rising input prices by extracting a larger margin, and this new reporting requirement will be a cost increase and it will earn the same response. Hopefully the improvement in the pricing process with better and more frequent prices being reported at several levels will compensate, will improve price discovery, and will give some benefits to help offset the problems associated with the added costs.

The current situation, then, is one that is full of change, full of controversy, and full of well-intended efforts to correct perceived ills in the system. Good research and good analysis need to be employed in looking at policy changes and in proposed legislative moves to regulate the marketplace.

Looking Ahead

The outlook for the beef sector can be quite positive. The long-standing declines in demand are finally being addressed. Whether the current and much improved scenario will be stretched into the future may well depend on within-industry reactions to some often-controversial topics.

A prescription for a healthy and potentially profitable beef industry in the future will require

- Further improvement in production efficiency and in keeping production costs down. There is too much variation in costs of production to be healthy for the industry.
- Either improvement in the chances for the price-based system to be effective in prompting vertical coordination and quality control or continued growth in vertical alliances and effective contracting arrangements. A reasonable degree of vertical coordination and quality control must be achieved, or there will be no effective alignment with consumer demand and the fledging growth in beef demand will not be continued. It is important that this be broadly understood and that market regulations not be extended to such a level that, in a continued absence of grade changes and effective price-driven coordination, the non-price means of coordination and quality control will be blocked. If that occurs, the threat of a return to a growing divergence between what is produced and what consumers want will loom large.
- Continued investments in new product and new market development from the large for-profit processors. Those investments have started, and they are the important base on which the demand picture is being turned from very negative to positive in both domestic and export markets. Regulation of buying and selling processes to include such as bans on packer ownership of cattle (which might threaten vertical alliances) or bans on all contract buying arrangements might threaten this flow of investments.
- A broader and more open perspective on trade. A significant part of the demand improvement from 1998 to date can be traced to export growth. Efforts to close off imports with the intent of protecting the U.S. industry from competing supplies of meat are not only short sighted but might prompt retaliation by important buyers of U.S. beef like Mexico and Canada. Both rank well behind Japan as buyers, but both Mexico and Canada are in the top four buying countries.
- Continued support for the check off program and a willingness to move more dollars from mass advertising to product development and demand-enhancing work. The check off related program

is serving as a catalyst to new product development. The program cannot replace the private sector investments, but it has helped prompt those investments and is therefore very important.

- Pricing of fed cattle on an individual carcass merit basis. The pricing on averages is bad and blocks any effective price discovery. Cattle moving through alliances and via contracts with price grids are designed to get around this problem. If the price-driven system is to have any chance to compete, it must move to technology to detail value and move to pricing on an individual head or carcass basis. (This will be difficult because the current system involves a massive transfer of wealth from the sellers of the high-quality cattle to the sellers of the low-quality cattle in the current "on averages" pricing system.)
- Elected leadership of state and national cattlemen's associations must hire well-trained and competent professional staff and listen to them. Elected (state association) leaders who were publicly berating the large processors for exploiting producers during 1997 and 1998 "in the presence of record high beef demand" are a threat to the future of the industry. Producer groups with a particular agenda can expect much of their rhetoric to be overlooked, but when the President of a state cattlemen's association says things about demand, his or her position tends to lend a degree of credibility. Such elected leaders have a responsibility to understand what is actually happening in the marketplace and not talk about "record high demand" when the industry was still in a 20-year sustained decrease in demand.

Overall, the key will be to remember that the industry is providing a consumer product and that the only dollars financing the various players along the supply chain are the consumers' dollars. Keeping the need to be always "consumer driven" in mind will help ensure the industry has a positive and healthy future because it will apply the right orientation to all programs and policies. The system in its entirety is healthier from an economic viewpoint when all participants have a decent chance to make profits and all are pulling together toward a common goal of serving the consumer.

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[1] The results of this research can be found at http://www.agecon.ksu.edu/.

[2] See "Measures of Changes in Demand for Beef, Pork, and Chicken, 1975-2000" at the Research Institute on Livestock Pricing website: www.aaec.vt.edu/rilp.

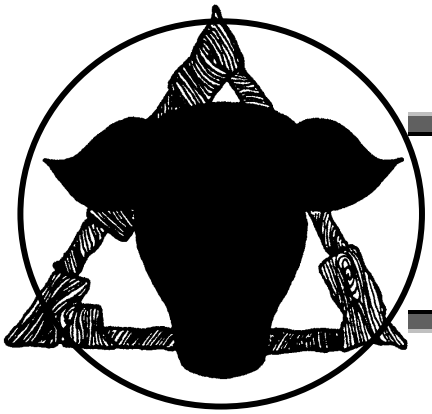
[3] For access to the beef quality audits, contact Rich Otley at rotley@beef.org or Chuck Lambert at clambert@beef.org.

[4] *Cattle Fax*, Long-Term Outlook, December 10, 2001 and December 8, 2000.

[5] See "White Paper on Status, Conflicts, Issues, Opportunities, and Needs in the U.S. Beef Industry," at the Research Institute on Livestock Pricing website: www.aaec.vt.edu/rilp.

[6] See "Estimated Value of Non-Price Vertical Coordination in the Fed Cattle Market," by John D. Anderson and James N. Trapp under "Publications" at www.aaec.vt.edu/rilp.

[7] See "Will Consumers Pay for Guaranteed Tender Steak?" by Lusk, Fox, Schroeder, Mintert, and Koohmaraie at www.aaec.vt.edu/rilp.



Managing for Today's Cattle Market and Beyond

March 2002

The New Beef Industry: What Will It Mean To Feeder Cattle Producers?

By
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Forces Changing the Beef Industry

One can rarely pick up a livestock magazine or a cattle-related article without reading some reference to how the beef industry is changing. This of course is not a new message. We live in a changing world, and the beef industry must continually change to meet the ever-changing demands of the marketplace. What is new, is the magnitude of the potential changes and their impacts on the way feeder cattle producers do business. The potential impacts of the looming changes in the cattle industry are large because the market is moving toward selling differentiated products rather than a commodity. This would represent a huge fundamental change in how feeder cattle are produced and marketed since product quality control would start at the ranch level.

The Forces of Change

Producers and academics both expressed concerns regarding the impacts of shrinking demand and structural change in cattle markets during the 1980s and 1990s (Purcell 1989; Bastian et al. 1996; Mintert et al. 1996; Barkema et. al. 2001). As demand declined the beef industry lost market share at the retail counter to poultry. The result was that smaller, higher cost processors were forced out of business, the beef processing industry consolidated, and processor concentration increased. The 1990s also saw significant consolidation in the food retailing business when the market share for the four largest food retail firms doubled from 17% to 34% (Barkema et al. 2001).

Many of these structural changes were a result of changing (declining) consumer demand which forced beef processors to increase cost efficiency to remain competitive with other meat products. One of the reasons the demand for beef was declining during the last two decades of the 20th century was a lack of convenient, easy to prepare beef products. Today's consumers continue to prefer more convenience-based products that require short cooking times and have consistent quality. In the beef industry, cost efficient firms are usually those that survive over time. A need for different types of beef products coupled with technological innovations are setting the stage for the transformation of the beef industry from marketing just a commodity to a market environment driven by product proliferation and differentiation.

This new market environment is continuing to evolve and we can expect that increasing pressure will be placed on processors and cattle producers to produce beef products that meet the needs of the changing market. One potential benefit of consolidation in the beef industry is that fewer firms

are in the market and this contributes to a higher probability that those firms will require coordination along the marketing chain. Efforts to increase coordination along the marketing chain may result in products that are better at addressing consumer needs than beef products have done in the past. Vertical coordination means firms can forward contract, draft marketing agreements, and manage supplies without necessarily owning other firms up or down the marketing chain. Declining U. S. cattle numbers, increased price uncertainty, consumer demand for more consistency in beef products, and pressure to reduce transaction costs associated with purchasing and storing beef supplies have each provided an incentive for vertical coordination among firms in the beef industry.

When firms coordinate their efforts they can select a target retail market and begin to demand cattle that meet the specifications for products that will be sold in the targeted market. This in turn means cattle buyers will begin to purchase and price cattle based on the characteristics of the beef produced by the animals that closely match the product needs of the targeted market rather than basing purchase decisions on cattle types or breeds. Feeder cattle producers will be required to provide documentation on how their cattle have been treated, fed, medicated, their expected performance in the feedlot, and finally how the characteristics the meat from their cattle match the specifications of the targeted market. This is in fact the essence of value-based marketing.

The move to value-based marketing is made feasible throughout the supply chain via electronic technology. Electronic ear tags that store information about individual animals regarding origin, feeding and health programs, and animal performance, along with handheld computers and portable ear tag readers are being used by many alliances and firms (Reisland 2001). This technology makes feeder cattle a differentiable product for cattle buyers and sellers, and it gives firms selling beef products the information they need to insure feeder cattle will deliver the meat characteristics they advertise.

Beef and Cattle Marketing Changes

The transformation from commodity marketing to differentiated beef product marketing is occurring rapidly. More than 40 marketing alliances have come into existence in the last six years (Peck 2001). Cattle-Fax estimates that 15 percent of the cattle in the U.S. are now marketed through some type of alliance or integrated program, and more than 50 percent of fed cattle are marketed using a contract, grid, or formula price (Peck 2001).

Grid-pricing techniques, alliances, producer-led cooperatives and increased branding of beef products are all indicators of the beef sector's current evolution (Barkema et al. 2001; Gordon 2001; Lusk 2001; Roybal 2001). Grid-pricing techniques attempt to provide incentives to cattle feeders that produce a type of carcass the packer is trying to market. Alliances and producer-led cooperatives are moving toward supply chain management and capturing consumer market share. Companies branding beef products are using labels and packaging to communicate to targeted consumers that their product has desirable characteristics. All of these changes require tighter coordination in the supply chain with a goal of providing a consistent set of beef product characteristics to consumers (Ishmael 2001).

Why are these changes more likely to meet consumer needs? Most consumers are not aware of or do not understand information being conveyed about product quality via USDA grades for beef marketed in traditional ways (Cox et al. 1990). Characteristics such as convenience, tenderness, and food safety are important to consumers (Barkema et al. 2001; Lusk et al. 1999). These characteristics are easier to communicate to consumers using a brand name than using traditional Styrofoam-tray-wrapped, generic, meat products.

How are alliances or vertically coordinated firms making sure branded products deliver the characteristics they promise? One example of how an alliance can deliver a consistent quality, branded beef product is found in Future Beef Operations plan (FBO). Regardless of the success of FBO the model they proposed illustrates how coordination could occur within an alliance. FBO's proposed partners include five packing plants, 100 genetic seed stock suppliers, 1,000 cow-calf producers, 20 to 25 stocker cattle producers and five feedlot partners (Roybal 2001). FBO will collect and share performance and value data among its partners on all program cattle, and the cattle will be individually tracked and source identified. The goal of FBO's program is for cattle

to meet the following carcass specifications: 1) carcass weight range of 650 to 800 pounds; 2) ribeye area of 11.5 to 16 square inches; 3) 63.5 percent dressing percentage followed by a hot fat trim yield of 92 percent; 4) quality grade of mid-Select or marbling of Slight 30; and 5) no more than 3 percent outliers (Roybal 2001). Partners will receive economic incentives to provide program cattle meeting specifications. FBO also will implement multi-site electrical stimulation and new aging technology to guarantee tenderness (Roybal, 2001). Moreover, FBO is planning to supply 1,700 Safeway stores in North America with its beef products. Thus, FBO's overall plan is to coordinate genetics, production and processing coupled with cutting edge technologies to deliver consistent, high quality beef products tailored to a major chain of retail stores. The goals of many other alliances or coordinated firms will likely mimic FBO's concept with varying degrees of success for other target markets. To achieve their goals, alliances will need to focus on communication among partners, have strong quality specifications and procedures, provide incentives to hit alliance targets, and provide risk management tools and profit sharing to its partners (Peck 2001).

What Will This New Differentiated Product Orientation Mean to Feeder Cattle Producers?

In the future, feeder cattle producers will be asked to provide information relating to the characteristics of the beef they produce. Buyers will penalize feeder cattle producers that do not have performance data, carcass merit data, and/or health program histories for their cattle. At a minimum this means that feeder cattle producers may need to participate in an alliance. In any case, they will need to gather and communicate information to buyers about the specific characteristics of the beef they produce or face market penalties in the future.

It is probable that feeder cattle producers will need to make serious choices about who they are going to sell their cattle to and closely manage their production accordingly. The marketing alternatives they will face in the future include opportunities with alliances, marketing agreements or forward contracts with buyers for vertically coordinated firms, joining a new generation cooperative targeting its own market set by producer members, and niche marketing. Marketing the traditional way may mean that producers are relegated to the lowest-priced markets since their cattle may be seen as generic beef that doesn't have verifiable characteristics. Once a marketing alternative is chosen, feeder cattle producers will need to tailor their production to the quality specifications desired, record required data, and continually monitor potential production practices and/or markets that will improve ranch profits.

The new beef industry will likely involve a significant change in the way feeder cattle producers will conduct business. For some the loss in independence will be a negative, but the new beef industry may mean a chance at increased profits and reduced income variability. The incentives for producers to evaluate results of their management and marketing choices at the retail counter will increase. Ultimately, the beef sector may enjoy stronger demand and market share after the transition from a commodity-based market to a differentiated product market. Like all change, this will mean opportunities for some and painful adjustment for others. The key to success will be continuous market assessment and managing resources to produce the appropriate product at the least cost.

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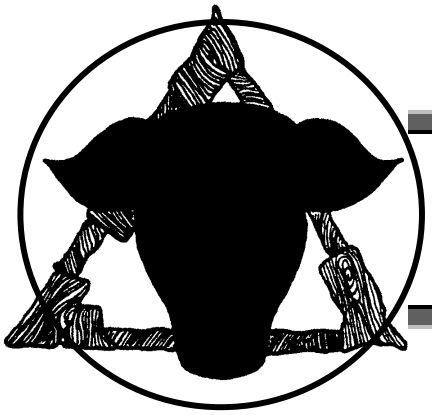

Managing for Today's Cattle Market and Beyond

March 2002

Niche Marketing of Cattle/Beef

By
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Niche marketing has been defined as servicing a unique market, or a unique portion of a common market, that is not already served. Some niche markets begin with an individual filling a personal desire that is not being met with existing products. Other niche market opportunities are sparked by an observation that a specific consumer preference is not being met, and a business venture develops in response to that preference. Most niche markets are much smaller than commodity markets, although some have grown into multi-million dollar businesses.

Most livestock and meat products are marketed as commodities, based on a common set of standards or grades. When produced for a commodity market, the product only needs to meet the specifications of the commodity and the seller needs to be satisfied with the price. Production decisions such as breed and market weight are left to the producer.

When marketing niche products, customers expect the marketer to cater to their needs and be responsive to their desires. This means producing products with unique characteristics and using those characteristics as a basis for marketing. Under this form of "product" marketing, the goal is to create a product that is different from other items on the market. Differentiated products must still meet consumer expectations, but they operate in an environment that is less competitive due to the unique product characteristic(s).

All meat products can be placed on a continuum based on how they are marketed. At one end are generic commodities and at the other end are niche products. As products become more unique, they move across the continuum, away from the commodity end. There are two primary niche market categories that exist in the market place. First, there are large alliance niches that offer producers an opportunity to tap into a market that has already been discovered. Oregon Country Beef, Laura's Lean Beef, and Coleman Natural Beef fall into the large niche category. These two niches provide an option to producers, but the producer is only responsible for meeting the program specifications; marketing is left to the alliance. These programs are serving markets that are too large for an individual to serve.

The second category of niche market is the "micro-niche." A micro-niche can be served by an individual on his/her own. Producers reach micro-niches in many ways, including selling meat at farmers markets, specialty retail stores, and through freezer trades. Micro-niches tend to be located in specific geographic areas where the producer can reach a specialized market. There are advantages and disadvantages of both these options.

Why Consider Niche Marketing of Beef?

The key niche marketing successes tend to be captured by those who penetrate an untapped market.

Other reasons for niche marketing of beef are when producers want to add value to their cattle by changing the type of product. Alternative production systems may allow farmers to better utilize feed resources produced on the farm to lower the cost of production. Niche marketing can also add profits for farmers who have skills in marketing and customer service. They can carry out some of the functions normally performed by others. Too often, producers only consider the increased income from delivering niche beef products to the market. It is critical to consider additional costs of production such as finishing, advertising, arranging processing, and additional time commitment.

Current Niche Beef Markets

There are several markets for beef that might be considered niche markets; these would include lean, organic, and natural. Large packers and meat processors, operating as alliance-type niches, attempt to capture their share of these niche markets through production verification programs, value added processing, and nutrient labeling. Programs such as Certified Angus Beef are a hybrid form of this type of marketing. The products sold through these programs can receive a premium on the market and are less vulnerable to substitution because they have characteristics that make them appeal to a specific type of consumer.

Evidence of these marketing strategies can be seen in grocery stores. Pre-wrapped commodity beef is displayed in the meat case with little identification to show where it was produced or processed. The alliance niche products will be mixed together in another part of the meat case, promoted with color pictures featuring positive attributes of the product. Micro-niche products are seldom sold in regular grocery stores, but when they are, tend to be in a special section. Labels for micro-niche products are dominant, proudly indicating the origin of the product.

Key Categories of Niche Beef Markets

Lean Beef is one potential niche market. Much attention has been given to increasing demand for low fat foods in recent years. Due to health concerns, consumer preference is shifting away from meat products with a fat content. However, most of the beef sold into niche markets demanding lean beef also tout other attributes as well. Those attributes might include the cattle being raised without artificial hormones or medicated feeds. The term "lean" carries a specific definition. Sellers using the term lean on their labels must verify fat content through laboratory tests. Laura's Lean Beef is one of the more successful lean beef production and marketing programs. That firm focuses on providing lean beef products, but also offers attributes such as the ones described above. Interested persons may want to visit the company's web site: www.laurasleanbeef.com/cattleprogram/

Consumer concern about additives in meat products has sparked a great deal of interest in ***Organic Beef.*** In order to use the term "organic," the program must be certified by an accredited state or private agency. The USDA issued their final ruling on organic meats in December of 2000, and is currently in transition to the new standards. The standards are described at the web site: www.ams.usda.gov/nop. Prior to December, meat could only be labeled as "Certified organic by" followed by the name of the certifying agency. Many of these programs are still in place. Farmers and handlers have 18 months to comply with the new national standards. Organic beef may have some of the following characteristics:

- The calf must be born of a certified organic cow.
- The calf must be fed organic feed from 30 days of age.
- 100% of the feed must be certified organic.
- The animal must be treated humanely at all stages.
- Antibiotics, wormers, growth promoters, or insecticides not on the program's list of approved natural products are not permitted (animals requiring antibiotic treatment must be marketed through conventional channels).
- The animal must be clearly identified, so as to be traceable from birth to slaughter.

The same type of consumer that prefers organic meat products also brought about interest in natural beef products. ***Natural Beef*** may carry the "natural" label if it contains no artificial ingredients (color, flavor, preservatives, etc.) and is minimally processed based on current USDA policy. The label must explain the use of the term natural and production methods must be documented through a protocol approved through the USDA. The term natural commonly refers to beef that has been raised

mostly on pasture, without routine use of medication. The feed is not necessarily organic. Coleman Natural Meats in Colorado is the nation's largest producer of certified all-natural beef. The company contracts with 600 ranchers throughout the West to produce beef without hormones or antibiotics, and the vacuum packaged cuts are marketed across the country in many mainstream and natural food stores. For additional information see their web site at http://www.colemannatural.com

Freezer Beef may be natural, organic or lean, but in this case refers to conventionally produced beef that is fed locally and parceled out to consumers in small quantities such as sides or quarters. It may be sold live or hanging weight with the seller arranging for the processing of the animal. This beef is most commonly marketed directly to consumers. If the meat is to be sold as cuts to consumers, it must be processed at a Federally Inspected facility. In many states sellers may use "custom exempt facilities" provided the animal is sold before it is processed. This allows the customer to specify how the meat is to be processed.

Should You Participate In An Existing Niche Market?

Livestock producers have two very different options for niche marketing. The first is to participate in one of the niche marketing alliances that have been spoke of, such as Oregon Country Beef, Coleman Natural Beef or Laura's Lean Beef. By participating in an existing niche market, one can capitalize on the expertise of others who have risked market development, investment, processing arrangements. For producers who have cattle and a production system that fits with the requirements of these programs, it can be a low-risk means to reach a niche-market.

The other way that producers can participate in niche marketing is to develop a micro-niche of their own. This is more complicated but has the potential for greater rewards. The economic maxim of the relationship between risk and reward potential is very evident in niche marketing decisions. Of course the profitability of participating in another's niche market, may not be as great as developing a new one. However, the risk of business failure in attempting to develop a niche market is something to be seriously considered and evaluated.

Starting A Niche Market For Your Beef

Regardless of how you select which niche to explore, careful planning, budgeting and thought are necessary before venturing into a niche market. First, try to identify the specific niche market you want to serve and its characteristics. These might include the types of people, their location and income levels, pricing structure, costs of servicing the niche, expected obstacles and required licenses or fees.

Secondly, write down a set of goals for your family and occupation. Decide if becoming a niche marketer is compatible with those goals, and refer back to these goals as you move forward. Evaluate what resources you have available such as land, risk capital, labor, knowledge, special skills or talents. Determine what skills you do not have and decide how you will make up for them. If this self-assessment leads you to "no", then there is no need to explore the idea further.

Third, develop a clear business/marketing plan. This is a statement to your family, business partners, and others about projected performance. It is also a statement to your banker or other lender about credit worthiness. It should contain the following: 1) A general description of the proposed business, qualifications and your reasons for starting the business; 2) A market analysis – A statement describing the product, the estimated size of the market in terms of volume, the segment of the market and geographic area to be served. 3) A mission statement, objectives and strategies; 4) A marketing plan; 5) a description of the operational aspects such as location, facilities, materials and personnel needed. 6) The projected sales schedule and volume. 7) A financial plan, including the projected income statement, cash flows, balance sheets, loan repayment schedules, statement of owner equity and breakeven analysis; 8) A sensitivity or risk analysis that estimates the financial effects of different sales prices and quantities produced and sold.

It is usually better to start small and build on successes, than to go deeply into debt before you have developed a proven product and a market for that product. If at all possible have the beef animals processed at an existing plant, even if it requires greater transportation expense. The idea of building a dedicated processing facility should be evaluated as

an enterprise of its own. Small packing plants are very expensive to build due equipment costs, building requirements and the many regulations that must be met. Processing facilities require high volume to succeed and have little salvage value if the business should fail.

Summary

There are many successful niche markets for beef. Thorough planning and thought beforehand can help insure the success of a niche market venture. Networking with others who have succeeded in the type of business you are considering can be beneficial. Those niche marketers who operate some distance from you will be more likely to share their successes and failures. A complete and inclusive business plan is an essential first step. Tap into all available resources, especially your Extension Service and the Internet and make sure that you are honest with yourself.

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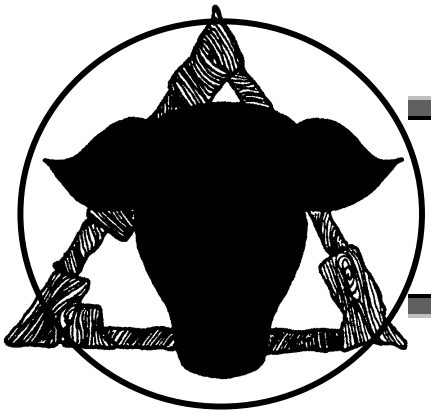

Managing for Today's Cattle Market and Beyond

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Cattle Marketing and Food Safety

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Introduction

Common sense suggests and statistical research confirms that lapses in the management of food safety along the cattle-beef supply chain create many negative consequences for society. Consumers are put at a higher risk of foodborne illness or other types of contamination and may suffer symptoms that range from the inconvenient to the fatal. Those who suffer no personal damages may still undertake costly preventative measures and may even stop preparing, serving, and eating certain cuts of beef that they formerly enjoyed. Individual firms that trigger food safety lapses often receive tremendous negative attention and see their firm's market value dramatically decrease (Salin and Hooker).

Closures of slaughter and processing plants tainted by food safety outbreaks may decrease the number of outlets available in a geographic area. This decreases farmers' local access to customers and depresses local prices (Raper, et al.). Finally, all farms and firms that produce or distribute cattle or process and sell beef suffer because food safety recalls depress aggregate demand for beef, reducing profitability for all involved (Schroeder, et al.).

We focus on two related but distinct classes of food safety issues that currently vex the cattle and beef sector: ***drug residues*** and ***microbiological contamination***. Potentially harmful residues occur when veterinary or animal husbandry treatments are used improperly during the lifetime of an animal such that residues of the drug or hormone remain in the animal's system and emerge in the muscles or organs that are consumed by humans. Microbiological contamination occurs when pathogens such as *E. coli., Salmonella*, or *Listeria* grow in or on processed cuts of beef. These pathogens, in particular *E. coli.*, are known to exist in the digestive tract of cattle, which is often the source of the microbes that appear on meat. However, the potential remains that pathogen-free cattle transported or co-mingled with infected cattle prior to slaughter, or previously "clean" carcasses, may become tainted with pathogens due to some form of environmental or cross contamination.

These two classes of food safety issues are alike in that both have their genesis during the "cattle" portion of the cattle-beef chain. Producers may introduce drugs or hormones either directly or through feed for numerous reasons and at various ages of an animal's life. Conversely, pathogens, such as *E. coli.,* may form in the digestive tract of cattle as they reach slaughter age. While residues (mostly antibiotics) remain a problem in high-risk cattle (cull, dairy, and veal calves), generally the industry has been successful in assuring compliance with best management practices and withdrawal periods (USDA). These chemical and microbiological hazards, along with concerns over physical hazards, are the focus of slaughter and processing plants when preparing their Hazard Analysis and Critical Control Point (HACCP) plans. Most frequently these plans

require a critical control point at the receiving dock, with increasing attention being placed on the plants' ability to determine the relative hazards placed on their system by different supplies of cattle.

Various farm-level efforts can be employed in an attempt to influence the food safety profile of cattle. These include feed and water controls, manure utilization, genetics/husbandry, the use of vaccines, housing, transportation, and herd management strategies as part of a broader quality assurance (QA) program. These system elements can affect the prevalence of drug residues, pathogenic, and spoilage organisms. As processors require more of their suppliers in a HACCP environment, so an enhanced level of information transfer must be incorporated into cattle marketing systems. Without such evidence, feedlots and farmers risk the rejection of whole lots or herds due to food safety concerns.

These two classes of food safety issues are also critically different with regard to at least two aspects. The first aspect is the potential for ***information transparency***. Drug and hormone residues are introduced to the animal's system by its handlers; hence, if proper record keeping is maintained, this information should be transparent to all future owners of this animal and its meat products. Microbiological agents arise organically within an animal but not necessarily in response to any particular action taken by the animal handler. While scientists are currently trying to isolate management techniques that could reduce the probability of such digestive tract growth, it is unlikely that any handler will be able to provide perfect information to future owners concerning the status of microbiological activity of an animal's digestive tract. Marketing tools, therefore, must accommodate these information differences while aiding in the communication of the unique production techniques adopted by pro-active farmers or feedlots. Further, these marketing tools should provide feedback on the impacts of these QA programs on the meat-processing sector. For example, if a certain withdrawal period or feed regime provides the slaughter or processing plant with more flexibility in scheduling or utilizing capacity, this benefit needs to be shared with those producers able to assure such a level of quality. Thus, such marketing practices need to consist of more than the ***risk shifting*** element of "traceback"— often considered a negative term by producers—by facilitating true ***risk sharing*** via "traceforward" or ***identity preservation*** (Hooker, et al.).

Second, these two classes of food safety issues are different because the impurities have ***different dynamics*** along the cattle-beef chain. Once drugs or hormones are introduced into a system, for example, the level of the undesired substance that stays with the animal follows a predictable pattern in which residue levels initially increase from the substance-free state to a state of maximum saturation. For most drugs, after some critical time period, the substance leaves the system. Hence, the amount of the substance that will appear in particular beef cuts is largely predictable and the misuse of injected drugs is often detectable to the processor. The introduction of microbiological agents into an animal's system, however, is not so predictable and the processor does not easily detect microbiological activity. The size of the population of pathogens in an animal and on a particular beef cut or in ground beef is subject to many parameters such as temperature, pH, and salinity. So, the population of microbes could either grow or shrink through time depending on subsequent actions. Furthermore, environmental contamination within a slaughter or processing plant could introduce more or new pathogens onto the carcass, making it difficult to forecast the growth of different populations and the ambient risk faced by a final consumer of a product. This also makes it more difficult to pinpoint which link along the cattle-beef chain was at fault if contaminated product does emerge. Finally, many low to moderate levels of microbiological contamination may be effectively eliminated by the end consumer with proper preparation techniques, while such remedies do not exist in the case of drug residues.

Issues surrounding animal production food safety in the cattle and beef sectors are particularly difficult to resolve because of the interconnected nature described in the previous paragraphs. QA efforts along the cattle-beef chain to the consumer's plate are only as good as the quality control provided by the ***weakest link,*** but all the players along the chain may suffer if that weakest link breaks. Therefore, resolution of QA issues requires a systematic approach, but such a solution is difficult to coordinate because ownership transfers many times along a typical production/processing chain. Furthermore, particularly in the case of microbiological concerns, identifying the weakest

link is difficult because there may exist missteps at each link in the chain and accurate information concerning the exact status of the product at each step is usually not available. Conversely, this makes it difficult for players along the chain to obtain a premium for their individual QA efforts.

Buyers may induce appropriate QA activities of suppliers by using ***incentives*** for desired actions or by imposing economic ***sanctions*** on those found to have poor quality control. Both mechanisms require information to assess quality. In the case of incentives, the information usually takes the form of records that document and certify the handling procedures used by the supplier, such as the date, type, and location of any drug or hormone injections. If veterinary and animal scientists can identify and validate management practices that reduce digestive tract *E. coli.* populations, such certification procedures may also be the basis of QA incentive premiums to the supplier. In lieu of such preventative management practices, the only alternative for incentive payments would rest with the testing of incoming cattle by the buyer. Testing of all animals is unlikely to be cost effective; hence, some type of random sampling may be used.

Imposition of penalties for poor quality is the alternative incentive mechanism. This requires a slightly different type of information. It involves some mechanism which

- identifies the QA problem at some point in the chain (e.g., random testing of carcasses for *E. coli*. or residues or traceback from a reported foodborne illness outbreak),
- links the defective product to each handler along the cattle-beef chain (e.g., DNA "fingerprinting" techniques), and
- distinguishes the individual that introduced the contamination into the product (e.g., electronic ear tag records).

Any such mechanism would have a large data requirement and, quite possibly, would require some alteration to the processing chain to avoid the intermingling of product sourced from different suppliers.

Existing Quality Assurance Programs on Farms and Feedlots

One way to categorize the early efforts in producer-level QA programs is by asking who is taking the lead—is the program in the public or private realm? To date we have seen a range of programs adopted by producer groups or agribusinesses independently. For example, a particular cattle-beef chain may require certain feed withdrawal periods prior to delivery at a slaughterhouse, restrict allowable feedstuffs and growth implant treatments, or conduct on-site verification activities of residue management programs. These activities are generally designed around the Beef Quality Assurance (BQA) program of National Cattleman's Beef Association and are largely voluntary, though some are also established by particular branded beef chains and are mandatory (e.g., Laura's Lean Beef).

The BQA program originated in 1986 as a voluntary initiative. A major reason for its implementation was to regain the trust and confidence of the consumer and to maintain product accountability. The program was developed by producers for producers, which is probably the cause for its overwhelming success. This success is demonstrated by the fact that 98% of animals coming out of feedlots and 90% from farms are from states with BQA programs. The National Cattlemen's Beef Association provides technical support and national leadership; however, the program is implemented on a state-by-state basis. Each state has its own unique BQA program. Different states began their programs at different times, usually when funding for a state beef council or state cattlemen's association allowed.

Generally, the BQA program uses handbooks, videos, workshops, and demonstrations to stress the importance of developing safety and quality guidelines for producers. Education on proper animal health product use, environmental management, record keeping, and feed additives are all important aspects of the BQA program. Some states require that producers complete two or three levels of training to be BQA certified while others have only one level of certification. Within the BQA program, all producers are educated on the importance of proper and safe animal drug use, on adherence to product label withdrawal periods, and on record keeping for animal product use, drug inventories, and animal treatments. This is all intended to reduce the occurrence of drug residues in beef products.

Table 1. National Cattlemen's Beef Quality Assurance Program Overview and Example Guidelines.

Management Areas Covered	Example Guidelines
Feedstuffs	Maintain records of any pesticide/herbicide use on pasture or crops that could potentially lead to violative residues in grazing cattle or feedlot cattle.
Feed Additives and Medicines	Operator will assure that all additives are withdrawn at the proper time to avoid violative residues.
Processing/Treatment and Records	All processing and treatment records should be transferred with the cattle to next production level. Prospective buyers must be informed of any cattle that have not met withdrawal times.
Injectable Animal Health Products	No more than 10 cc of product is administered per intra-muscular injection site.
Care and Husbandry Practices	All cattle will be handled/transported in such a fashion to minimize stress, injury and/or bruising.

However, the BQA-based programs only require that producers have undertaken certain (individual) education courses and these programs remain voluntary. Voluntary programs, in practice, do not induce farmers to vigilantly comply with all program guidelines. For the argument raised above, it appears likely that some form of third party certification will be required as we see an increasing attention placed on pathogen reduction strategies on-farm. These third party agents may be veterinarians or extension agents. This aspect is likely to become increasingly important in securing market access for our exports (USDA).

A second useful tool to categorize QA programs is by the hazards addressed. As discussed earlier, the two primary food safety concerns in the cattle-beef chain are chemical and microbiological. However, at the same time, one should not forget about the physical hazards that may either influence the safety of the final food (e.g., contamination with needle fragments from drug treatments). The focus of the large majority of QA efforts, to this stage, is violative chemical residues. It is relatively easy to implement and monitor a residue program, and most producers have become well versed in the benefits of close cooperation with slaughter plants. Injection site protocols and withdrawal periods have reduced physical and chemical hazards in slaughter cattle while enhancing other meat attributes (e.g., reduced bruising and a closer tracking of eating quality measures). It is less clear what QA efforts are effective in addressing microbiological hazards. However, as controls (e.g., pathogen specific vaccinations and pathogen minimizing handling and feeding practices) become viable, we can expect add-ons to the BQA program that provide guidance on what farmers can do to help minimize the occurrence of these hazards.

The Benefits and Costs of Quality Assurance Programs

Once the administrative structure and goal of the QA program has been determined, it is vital that the degree of specificity in production practices be assessed, for this will be a key factor in forecasting the costs of the program. The majority of required alterations to meet BQA program specifications are those of record keeping and proper animal health product usage. Record keeping requires not only extra materials, either in paper or computer space form, but also time and managerial attention. Some of this time and effort may be discretionary; i.e., it does not compete with time and effort the producer currently dedicates to work cattle. At least some of the additional effort and time will directly compete with cattle handling time and inevitably slow the handling and movement of animals unless large capital expenditures are made to fully automate data collection and to streamline processes to verify that all animals have met BQA standards. Furthermore, if a producer currently relies upon off-label use of certain animal health treatments or feed additives that would not be approved under BQA programs, or if

the producer follows unapproved drug injection practices, changes must be implemented to follow approved practices and uses.

For a successful QA program that can be enforced at all levels of production, an effective animal identification program is necessary. Currently, the level of cattle identification is simply through eartags that are tamper-resistant and provide unique identification of the animal conforming to the alphanumeric National Uniform Eartagging System or bear a valid premises identification number that is used according to an individual producer's livestock production numbering system. These eartags serve to identify the animals, but animals tend to have many different identification numbers for purposes on the farm, which can lead to confusion of identification. The USDA is currently working on a program to improve livestock identification for interstate and international trade, food safety, genetic evaluation, and animal health purposes. This program will likely use a universal identification system reducing the need for multiple identification methods.

Regardless of the efforts made by farmers or feedlots to address microbial hazards, and even with complex animal identification systems that are able to identity preserve production characteristics, many additional problems can still arise prior to slaughter. Many lots of cattle are co-mingled during the marketing process, either in traditional terminal markets, during transportation to or from a feeder, or at the holding pens of the slaughter plant. Certain aspects of this supply chain are currently being assessed for their impact on microbiological hazards (e.g., distance to slaughter plant and shedding rates for *E. coli*., which can increase the pathogen presence on hides). It appears likely that many conventional cattle marketing practices increase microbial hazards, and therefore require further evaluation. Solutions may include direct delivery, increased segmentation of lots, different transportation logistics, or simply closer monitoring of hide cleanliness prior to slaughter.

Given the "weakest link" argument made above, it is clear that the tighter control of effective production or in-distribution practices that can reduce the occurrence of food safety hazards will lead to a set of pooled benefits for all associated agribusinesses in the cattle-beef supply chain. By promoting QA programs, societal goals of a safer food supply and more efficient monitoring activities, and industry goals of enhanced reputation, secured market access, reduced recall, lower insurance costs, and product waste can all be met.

A valid concern of many cattle farmers is that if the benefits of such enhanced animal production food safety systems are mostly at the societal level (through reduced foodborne illness or adverse reactions to chemical contamination) then why are so many costs borne by their segment of the supply chain? Evidence from the swine industry may suggest that this should be anticipated. The pork quality assurance program is now considered by many "the cost of doing business" or a *de facto* standard. Producers have little choice but to adopt the Pork QA program if they wish to serve the mainstream supply-chain. However, while certain recurring and variable costs may rise for producers when complying with a BQA-based system, so too will costs for slaughter and processing plants. The technical ability of transfer of identity from cattle to the carcass and on to individual cuts of meat will require substantial fixed and variable costs. Electronic scanners, labels that can be attached to carcasses and cuts, information management systems, and potentially larger labor requirements are likely to arise. Therefore, when assessing the chain-wide impacts of responses to food safety challenges, one must aggregate over all of these costs, and not simply focus on a single sector. Once each of these costs is considered, a larger final (consumer) premium must exist and be sufficient to make the process viable.

Potential Directions and Implications of Future Programs

We believe that there will be an increasing demand for QA programs as slaughter and processing plants recognize that such programs increase their ability to respond to changing consumer demands and to reduce costs and losses during food recalls. One implication of this growing importance of QA is that it is likely to lead to greater vertical coordination along the production chain and, hence, the continued circumvention of terminal markets. The increased reliance on "captive" or contract supplies appears inevitable, as we require so much more information to be transferred between producers and their customers. This dynamic will clearly drive a wider wedge between prices in the "live" and "quality" market, perhaps causing more concern over the

current reliance on a relatively "thin" open market structure to discover prices for these contracts.

Furthermore, QA programs serve as a primer for other types of programs that producers might choose to follow in order to market products to niche markets. For example, the American Humane Association now offers a "Free Farmed" certification program that identifies animal products originating from animals farmed under a set of production guidelines that satisfy animal welfare concerns. The standards are based upon the British-based Royal Society for the Prevention of Cruelty to Animals Guidelines and the Federation of Animal Science Societies Guide and involve issues of environmental stewardship as well as animal welfare. This program was introduced in September of 2000 and involves third-party certification of production practices that is paid for by the producer via a one-time certification fee and per-animal fees. USDA's Agricultural Marketing Service verifies that the third-party certification is legitimate by re-inspecting a percentage of all producers. Guidelines have been issued for beef cattle production, as well dairy, broiler, and egg production, and typically require strict minimum limits for per-animal feeding and living space. The method of verification—a producer-funded, third party, on-site inspection validated by USDA spot checks—may foreshadow the verification system for all future QA programs.

The ability of QA programs to influence the country of origin of beef offered to the US consumer and other nations' efforts to use country of origin as trade barriers for US beef exports needs to be further assessed. Current proposed legislation in Congress would implement country of origin labels on most raw food products. Will this help or hurt the move towards QA programs? Would such regulations be challenged under the World Trade Organization? What will the resultant trade flows look like? These difficult questions need to be answered.

Animal identification issues are discussed in another paper in this section, so we do not expand upon them here other than to state that many food safety programs rely on identity preservation. However, there remain many technical limitations to physically transfer the identity of cattle from carcass to beef cuts. The high (fixed, non-recurring) costs of identity preservation may not be justified by a single quality attribute or offset by any premiums made available in the short-run. Therefore, only a vertically coordinated system may be able to collect enough short- and long-run benefits from all segments of the production and marketing chain to justify the costs associated with the private implementation of an identity preservation and quality control program.

Conclusions

We have provided a brief overview of the importance of food safety in cattle marketing today and our forecasts of its increasing role and forms in the coming years. Many cattle producers have demonstrated a desire and ability to address chemical residue concerns by voluntarily adopting producer-designed QA programs. We anticipate future activity will expand to encompass microbiological hazards once proven control methods emerge. We believe this will quicken the current trend in which fewer cattle are exchanged in traditional terminal markets and more cattle are transacted via contractual arrangement. Such a trend facilitates quality control efforts because production history is transferred with the cattle and facilitates reward sharing among all participants in the cattle-beef chain.

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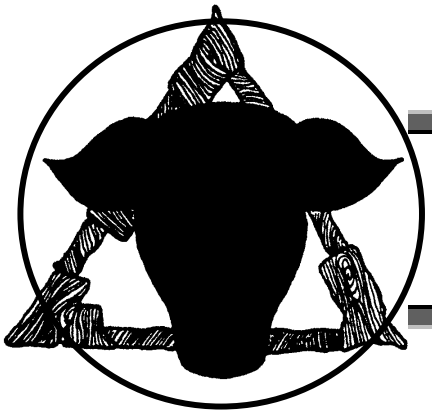

Managing for Today's Cattle Market and Beyond

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The Evolution of Identity Preservation in Red Meat Markets

By
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Introduction

Agriculture is challenged by the fact that product from many producers is routinely co-mingled prior to sale. In this environment there is little incentive to innovate, or to differentiate and often a counter-incentive to improve quality. Producers cannot individually benefit from product improvements because they compete on price, and packers and processors who co-mingle products from many producers cannot create credible branded images. As long as agricultural production chains rely on co-mingled products, those who buy the products might desire product improvements. But, co-mingling inhibits the ability to pay a premium for those who produce superior quality at the farm or ranch level.

Identity preservation, or "traceability" as it is often called, offers the potential for addressing many problems associated with the co-mingling of red meat and, consequently, also has the potential of accelerating the development of brand-name red meat products. Traceability is an important emerging issue since consumers have become increasingly concerned about the processes (inputs and methods) used to produce food. Many different claims can be and are made about what inputs or absence of inputs exist in food products. These claims may be problematic since, for example, a product may claim to be free of Genetically Modified Organisms (GMOs), produced with sensitivity for animal welfare, produced using environmentally "friendly" processes, or "low-fat" and the potential for fraud exists if no credible system is in place to support these claims. Traceability can establish or affirm the reputations of producers and suppliers by communicating either positive or negative information to consumers. Since these issues relate to the inputs and methods used in food production, they must necessarily be concerned with being able to trace food and food inputs to their sources.

Traceability is obtained through a system of records and certifications that allow a product to be traced back to its origins. Currently most red meat is traceable back to the processor but not to the farm level. Establishing traceability prior to processing would require a system that is currently not in place in the United States. Such a system would need records of when animals were born, progeny of animal, when they were sold, the types of medications administered, feeding and handling regimes, slaughter location, grading information, shipment dates, location of retail outlet, and any other information handlers or consumers might desire. This will likely best be handled through electronic systems and such systems are currently being developed. These systems will also require

third-party certification. It is conceivable that in the near future any consumer questions about the origin, management, or processing procedures of a red meat product could be tracked all the way back to the farm or ranch where the animal was born (Coe).

Roots of Traceability Programs

Efforts to establish traceability have their roots in the *Bovine Spongiform Encephalapathy* (BSE)[1] scare in the United Kingdom in 1996. BSE is a disease found in cattle that may be linked to a possible variant of a potentially fatal human disease called Creutzfeld Jacobs Disease. Two additional EU food crises occurred almost simultaneously with BSE. One of these outbreaks involved *Salmonella* contamination in Danish pork and the other *E. coli.* that was traced to Scotland. The *E. coli* outbreak resulted in the deaths of 21 people (Liddell). These food scares coupled with a lack of confidence by EU consumers regarding government regulation of food safety has led to the establishment of traceback systems in Europe. Food safety and quality assurance characteristics are used in marketing efforts in the EU to differentiate food products as being safe, environmentally friendly, animal friendly, etc. Consequently, traceable systems have been developed in Europe to address the demand consumers have for expanded information about the food they consume.

Denmark has recently switched to full traceback in a plant capable of slaughtering 10,000 hogs per day (Meat International). Germany has successfully implemented traceability in at least part of its beef chain (EAN, 9/2000) and many smaller plants in the U.K. have begun to offer full traceback to producers. The Swedes allow retail consumers to use scanner information imprinted on retail pork packages to find a picture of the pork farmer and farm site via the World Wide Web (Swedish Farm Assured). In an aggressive initiative, the Australians (EAN, 6/2000) are establishing a track-forward/trace-back chain for beef with emphasis on both management and food safety. Their scope is from breeding to consumption and they have reported successful implementation through a demonstration project of most key components of this chain in the past 18 months.

While EU markets and consumers are different from US markets and consumers, the development of traceable systems that provide expanded information about how food was produced and processed should be of interest to US red meat producers. If nothing else, the development of these systems may be a means for competitors to further differentiate their products in export trade. The development of domestic traceable systems may also offer new market opportunities here in the United States.

Overview of US Red Meat Market

The US beef and pork industries had farm-level sales of $36.1 billion and $13.2 billion in 1997, respectively (U. S. Department of Agriculture) representing over 24% of the annual gross income received by US farmers and ranchers. These two commodities are produced in virtually every state and are an integral part of most state's agricultural economies.

Structural changes in both the beef and pork marketing channels have generated considerable concern from producers. The market share for the four largest firms (CR_4) slaughtering steers and heifers rose from 30% in 1978 to over 80% by 1994 while the CR_4 for hog slaughter was 46% in 1994 (USDA, GIPSA). Vertical coordination in both the US cattle and hog industries has also concerned producers, especially in the hog industry where the number of hogs grown under contract is approximately 25% of the total market (Hayenga et al.). Increasing concentration raises questions about whether prices paid to farmers are competitive or not. But increasing coordination in the market channel also raises concerns about future market access, especially for small and medium-sized producers. Developing niche markets should increase the opportunities these farmers have to access markets for their products if farmers are aware of these opportunities and produce products in the form(s) desired by consumers.

Most pork and beef quality assurance/certification efforts in the US have their genesis in producer groups. These programs have materialized because producers have recognized that significant niche markets exist for consistent-quality beef and pork products and that other niche markets which address emerging consumer needs can be successful (e.g., Niman Ranch Pork).

Initial market tests by the Pig Improvement Company (PIC) suggest it may be possible to link genetic development to retail marketing schemes in

both the EU and US. That is, genetic development efforts could be directed at developing branded retail products (Brown). Such a move could have enormous implications since different genetic strains could be developed for specific markets and/or retailers resulting in revolutionary changes in pork marketing channel dynamics. The potential effects on producers and processors are obvious since producers would become directly linked with retailers by default. That is, when a farmer chose a specific genetic line he/she could potentially be limited to selling in a specific market or to a specific retailer. Opportunities for small and medium-sized producers may actually expand in such an environment since, rather than a single commodity market, the marketplace could become more of a blend of different niche markets. Products with traceable characteristics would be a key element of this type of marketing system because of the direct link between production and final product.

Structure of Traceability Programs

The development and speed of traceability programs for red meat in the US and elsewhere have been different. The reason for this is that different incentives have existed in different locations to implement traceability. In the EU, traceability programs materialized in reaction to food scares many European consumers believed were poorly handled by European governments. European consumers believed they were given slow and in some cases incorrect information about the potential dangers posed to them. As a result, private certification has become an important part of European traceability systems from the perspective of food safety. In general, Europeans are also more concerned about animal welfare than US consumers and quality assurance programs[2] have evolved simultaneously with food safety issues as incentives for traceability in Europe. In the US traceability has been primarily a food safety issue with traceability generally established back to the processor but not to the farm level.[3] US consumers generally have greater confidence in government inspection than European consumers and, as a result, little third-party private certification is done in US red meat markets.

Table 1 is a synopsis of information gathered by Liddell on pork market certifications in selected countries (the beef market is similar). A "High" rating in Table 1 indicates a large level of involvement for certifying that pork meets certain food safety or quality assurance standards.

Table 1 illustrates a higher level of involvement on the part of the private sector in the UK and Denmark than in the US, Canada, and ANZ in certifying food safety and quality assurance characteristics. Liddell also produced an overall rating system for traceability systems in selected countries including the UK, Denmark, Japan, Canada, ANZ, and the US. His findings suggested Denmark's pork system had the highest level of traceability while the US had the lowest.

Table 1. Structure of Pork Market Food Safety and Quality Assurance Certifications in Selected Countries.

Food Characteristic	Private Certification	Public Certification
Food Safety	US – Low UK - High Denmark - High Canada - Moderate ANZ* - High	US - High UK - High Denmark - High Canada - High ANZ - High
Quality Assurance	US – Low UK - High Denmark - Moderate Canada - Low ANZ - Low	US - Moderate UK - Moderate Denmark - High Canada - Moderate ANZ - Moderate

* ANZ=Australia and New Zealand.
Source: Liddell.

While traceability has not been a central issue in red meat markets in the US, it has in the EU during the past four years. As a result, the EU systems have evolved at a faster rate than the US system. However, the traceability systems of other competitors, i.e., Canada and ANZ, also appear to be developing more quickly than the US. The consequences in the US may not be felt immediately, but the potential of the US losing market share in red meat markets in the future exists if competitors can successfully differentiate their products based on real or perceived food safety and quality assurance characteristics that can be certified and traced.

Conclusions

The US is lagging competitor countries in developing a traceback system for its red meat industry. Also, traceability is not a central issue being addressed by the US red meat industry at this time. Reasons for this are varied. For example, US consumers place more confidence in government inspections than consumers in other countries and the US red meat industry is less export-dependent than competitors that have developed sophisticated traceability programs. Consequently, US producers have been under less pressure to develop traceability programs than competitors. In some cases, US meat processors have not encouraged traceability programs because they have sometimes been perceived as "country-of-origin" programs. However, world markets are evolving toward more traceable systems because consumers appear to be demanding additional information about the food they consume.

The development of traceability systems in the US seems inevitable. US red meat producers and processors should be examining methods to provide more traceability in the US meat system not only from the perspective of reducing liability (e.g., tracing the source of food contamination), but also from the perspective of expanding both domestic and export markets.

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[1] Also known as "mad cow" disease.

[2] Quality assurance is used here to denote non-intrinsic characteristics in food such as animal welfare concerns or environmentally-friendly products.

[3] Processors also view traceability as a means to limit liability.

Managing for Today's Cattle Market and Beyond

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Cattle Identification – The Canadian Experience

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Canadian experience with new trace back requirements in the beef and dairy industry is just beginning. Canadian beef and dairy producers are implementing a national identification ear-tag program capable of tracing animals from the retail sector back to the original cowherd. The mandatory cattle identification program will be in place on January 1, 2001. Processing plants will be required to read tags and maintain trace back of the carcass as of July 1, 2001. Monetary penalties for non-compliance with the cattle identification program will be imposed on July 1, 2002 (CCIA, 2000a).

Cattle identification is expected to give the beef meat industry the ability to trace meat back (often referred to as traceback) through the market channels from beef and dairy animals to the original farm or ranch of origin. This will be accomplished through a cattle-tagging program. Various bar coded tags have been tested and recommended by the Canadian Cattle Identification Agency (CCIA), a new agency developed to implement the identification program. Producer industry organizations such as the Canadian Cattle Association and the provincial cattle associations have been actively involved in leading the development of this program. While individual cattle producers have expressed reservations about the program, their elected representatives on their provincial associations have supported mandatory cattle identification.

Food safety is the key reason given for implementing a cattle identification program. The Canadian beef industry depends extensively on export markets and exports over $2 billion (Cdn) annually. International markets, in particular the United States are major destinations for Canadian beef and cattle. Consumers in Canada are concerned about food safety. Identification will provide the industry with the ability to respond quickly to any disease or health problems that could impact on the viability of the industry. The program is designed to assure consumers and importers of Canadian beef that the beef is safe and that any problems can be quickly traced back to the source (Glen, 2000).

Background

Cattle identification is not new in Canada (CCIA 2000b). Starting in the 1920s, all cattle were identified with a metal ear tag that provided a unique identification number. Agriculture Canada, a federal government department, managed the program. This program was instrumental in containing an outbreak of Foot-and-Mouth diseases in the province of Saskatchewan in 1952. However during this outbreak, Canadians were unable to export cattle and this had a devastating impact on price and the cattle industry. This earlier identification program was also used to eradicate Bovine Brucellosis and Tuberculosis. With the

eradication of these diseases from the Canadian herd mandatory trace back was discontinued in 1985 and the ability to trace back dropped from 95% of all cattle to 10% of all cattle.

Concerns about the ability of the Canadian beef and dairy industry to manage outbreaks of disease surfaced again in 1993. Canada's only case of Bovine Spongiform Encephalophathy, (BSE or "mad cow disease") was diagnosed in a single cow imported from the United Kingdom (CCIA 2000c). All offspring from the cow, herd mates of the cow and other cattle imported from the UK were destroyed. Even with these actions, several international customers halted imports or were prepared to halt imports. The single infected cow was a purebred and this provided the industry with detailed records of the movement of the cow and offspring. In short, the system was able to "trace back" and "trace forward" the animals that had been in contact with this cow and the offspring from this cow. If this cow had been a "commercial" cow, the industry would have experienced much greater difficulty in tracing the cows contacts and offspring. This episode, along with further observations on the devastating impact of BSE on the UK beef industry lead to industry action to reintroduce trace back into the beef and dairy herds. Food safety, preservation of export markets and industry reputation for quality were the important drivers for developing a new trace back program.

Identity Preservation Program

Two types of cattle identification present today are source and process verification. Process verification has been the most prevalent means of tracking animal movement, and usually begins with the aggregation of calves into feedyards. Identification at this stage is largely a means for sorting out animal health and feed management protocols. Processors and retailers view this as an essential component for managing the processes and treatments of beef cattle. With the degree of cattle aggregation (co-mingling) present in the feedlot sector, process verification does not allow for complete trace back of meat.

Source verification is central to the cattle identification issue. Identifying beef animals at the source facilitates the tracking of product movement from the point of origin – the ranch or cowherd – to the end product. Source verification ties in nicely with the birth-to-retail (or conception-to-consumer) concept of value chains, a likely trend in the meat industry in the future. Capturing the value from this information is one of the topics discussed in the article entitled, “Industry Opportunities and Issues for Value Based Marketing”, a part of this information series.

The Canadian Cattle Identification Agency (CCIA) is an industry-led, nonprofit organization charged with the task of creating a cattle identification trace back program for Canada. This is a source verification program. Producer associations, industry and government have shared start-up costs for the CCIA. A database to track the herd of origin of tags is being developed with enforcement of the program falling under the jurisdiction of the Canadian Food Inspection Agency (CFIA), an agency of the federal government. A number of tags were tested and those recommended are expected to have been retained at least 95% of the time. Each tag is barcoded with the herd of origin. Selected electronic tags have also been approved.

The online database managed by CCIA will receive and store the tag numbers and corresponding producer information. When final information is received from the processor about the demise of the animal, the number will be retired. In the event that there is a problem, then the CFIA, will be provided with information on the herd of origin of the animal and the movement history of the animal will be traced back through market channels to the herd of origin.

Producer Issues

Negative reaction by producers to mandatory cattle identification has focused on liability issues, the cost of tagging animals, need for national identification system, and the lack of opportunity for debate. Some industry producers perceive a herd-of-origin trace back system as unduly targeting the cowherd as the source of food safety liability issues, which may or may not be within their control. The CFIA already has the ability to trace diseases back to the source, just that more herds need to be tested and it is much more difficult to accomplish. National identification would speed up the process, be less intrusive on producers and will be more reliable.

For now, the ability to pass on the costs of a tagging program seems limited for producers. That is, the producer is bearing most of the cost of the tagging program and there is an ongoing debate about who should pay to implement the program. Processors also have invested significant resources in verifying identification tags. Weighing these producer costs against the benefits of maintaining a world-class high health beef production system has lead the industry organizations in Alberta, Saskatchewan, Manitoba and Ontario as well as the national cattle organization to strongly support mandatory cattle identification. The goal of the CCIA is to keep tagging costs under a dollar per head.

Producers have also raised the issue of the lack of debate over a "mandatory" program. Concerns over confidentiality and operational guidelines have been identified. The industry response is that elected representatives of industry have supported this initiative. CCIA is providing assurances about the confidentiality of the database of tag numbers and related producers. Only when a problem is identified will the CFIA have access to the specific cattle data.

The need for national identification has also been called into question given that the majority of live cattle and beef exports are destined for United States, which currently has no national cattle identification system. However, the USDA Animal and Plant Health Inspection Services has served notice that they would like to have a national identification program in place within three years (CCIA 2000d). Canada also exports beef to Asian markets where food safety is also an issue.

Alberta Perspective

Alberta is the largest beef Province in Canada and relies heavily on export markets. Cow-calf producers in Alberta, who represent over 40% of the Canadian beef cowherd, will pay the largest share of the cattle identification costs, the cost of ID tags and any processing overhead. Presently CFIA will bear the cost of policing the program.

A 1998 survey of cow-calf producers in Alberta indicated that of 1709 cow-calf producers that responded, 1475 were already engaged in some form of a tagging program for their herds (AAFRD, 1998). The cattle identification program will be an extension or possible replacement of their current tagging program. Additionally the same survey found that up to 875 of the surveyed producers would be interested in receiving carcass data on their animals. The potential exists in the future to extend the information gathering on the trace back to provide this information back to the cow-calf producer. However the initial intent and abilities of the program being implemented on January 1, 2001 does not include gathering carcass information for transmittal to the cow-calf producer.

Summary

Export markets are key to the growth of the Canadian beef cattle industry. Domestic and international consumer confidence in the safety of beef products is vital. Individual animal identification has been identified by the beef and dairy industry as an integral part of providing the means for timely and effective response to food safety issues and preserving Canada's current health status. Starting in 2001, the beef and dairy industry in Canada will be implementing their cattle identification program. The problems of implementing this program and industry compliance will become more evident as the program develops. The potential two-way information flow that may develop in the future may represents a significant opportunity for identifying and meeting consumer needs and sharing the value created.

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