

Developments in the Beef Cattle Industry During the 1970's

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Most of us will discuss freely, on an informal basis, the general direction in which we believe the beef cattle industry is likely to be going during the next decade - but we are hesitant to formally present and publish our thoughts on this topic. The reason is that the variables that will effect change are so numerous and complex and we are not sufficiently satisfied with our understanding to present our thinking so that it can be evaluated, criticized and tested against what actually happens. Many presentations, such as this one, direct most of the attention to the past with little toward the future and the economic and technological developments that may determine the future. Past events and cycles do provide an indication of what we may expect in the future, but I believe the number of mistakes recycled in the future will be fewer than the mistakes that we have recycled in the past. In other words, we can expect managers of beef cattle production, marketing, processing and merchandising units to have a higher batting average with their decisions. The need for bold and imaginative thinking in planning to provide for the required services of a dynamic beef cattle industry will continue to increase and will be mandatory for those of us who plan to occupy a professional support role in the beef cattle industry of the future. **The time is now** for all interests identified with the beef cattle industry to realistically assess the present status of the industry and to determine, to the extent feasible, the nature of the beef cattle industry of the future. Such an evaluation or projection is probably more critical for the beef cattle industry than for the other meat animal industries because of the long generation interval for cattle and the relatively high investment per production unit.

In this presentation I have not attempted to document any of the projected developments that I think are likely to occur during the next few years. These projections are based on my subjective analyses of the present status of the beef cattle industry, the major changes in direction the industry has taken during the last several years,

especially during the past 20 years, available, or soon to be available production technology and the sociologic and economic changes that are occurring both in the U.S. and abroad. I recognize that these projections are limited and influenced by my present role and experiences in the beef cattle industry and the people that I have read about, heard, observed and those with whom I have been and am associated. Obviously, there are biases in my projections as there are likely to be in yours.

There are a few things about the future beef cattle industry that I think can be predicted with a fairly high degree of certainty. Most of the factors which will have a major impact on changes in the beef cattle industry during the next 10 years are already in the innovation stage or at least they are based on concepts which have already evolved and on planning which has been partially crystallized. Thus, it is not the specific factors or tools that are going to be developed that will cause major changes in the beef cattle industry during the next 10 years, but how those already developed are organized into specific systems and how they will be integrated into different segments of the industry.

All segments of the beef cattle industry are going to be more profit oriented and more sophisticated in their approaches to management than they have been in the past. We can presently see that a higher percentage of the beef cattle producers are taking a more businesslike approach to beef production than they did 10 years ago. The entrance of large commercial companies into the beef production industry has provided the independent beef producer with positive examples of how to more effectively utilize capital and specific business principles in the beef production industry. Also, they have provided some negative examples that will help to avoid some "pitfalls." The managers at all levels and in all segments will be better students of the beef cattle industry and they will not only implement new technology at a faster rate to increase production efficiency, but they will demand that this technology be provided

at a faster rate than ever before.

I think we will see an increase in the size of beef production units and I think we will see more emphasis toward intensive management systems. The regions with the greatest potential for more intensive types of production systems appear to be the Midwest, the Southeast, and certain areas in several states outside of these two regions that have the capability of high grain and forage production.

The goal of the future beef industry will continue to be the optimum conversion of the available resources into edible beef that is most appropriate for specific consumer demands. The major difference in this goal in the future, as compared to the past, will be that the managers in all segments of the industry will be more objective in their evaluation of how they can achieve this goal most effectively with the resources that they either have or over which they can acquire control. In other words, they will be committed at a higher level to analyze and act on their own unique resource situation and will be more reluctant to accept someone else's "cookbook" that may be based on a quite different "resource mix" than is available to them.

The more specific we try to get in our predictions of the future obviously the more complex the situation becomes. I have addressed myself to several questions related to factors affecting changes and the kinds of changes that I think are likely to occur or to continue at an accelerated rate. Some of the factors that I think can and will effect changes in the beef cattle industry during the next 10 years are: (1) results of research now in progress, (2) availability of new germ plasm, (3) integration of different segments of the industry into larger organizational units, (4) further changes in consumer preferences, and (5) the effects of these and other factors on the attitudes of the people who have their resources committed to, and make their living from, the beef cattle industry. These factors will result in further changes in research approaches, availability and kinds of technical and professional services required, production unit size, capital requirements, etc. These factors are related specifically to (1) breeding programs, (2) feeding programs, (3) marketing, processing and merchandising programs, and (4) the interaction between these areas and optimum slaughter weight, carcass quality grade standards, consumer demands, etc. The producer must combine breeding, feeding, management and marketing programs into a management system that will enable him to utilize all of his resources at the optimum level. Where is he going to get the information he must have to make the decisions necessary to do this effectively? A primary place will be research results from programs directed

toward putting all of these factors together into a management system that maximizes the returns to a given set of resources.

I believe that beef cattle research directed toward developing new technology for the producer will play a vital role in effecting changes in the future beef cattle industry and in helping the producer to utilize his resources most effectively. Most animal scientists have traditionally thought only in terms of their discipline or area of training and expertise. Thus, we have tended to think in terms of one area at a time and a high percentage of our production research has related only to a given discipline in a given problem area. In beef production we know that there is a high level of interaction among nutrition, reproduction, genetic potential, environment and disease because biological and physical systems are not organized on a discipline basis. Because of the interactions and the fact that the production manager may need to implement a series of practices simultaneously, a high percentage of our future livestock production research will be on a multidiscipline or team approach basis. This will give the producer the kind of information necessary to know what other practices he may need to adjust as he changes a given practice in his management system. For new technology to be useful for increasing efficiency, it must be related to optimum resource use. This means precise identification of such factors as optimum cow size, milk production level, and nutrient requirements for the different biological types of animals most appropriate for the different feed resource situations.

Computer simulated production models will be used by researchers, producers and professional consulting services to evaluate specific management alternatives and practices and to evaluate complete management systems. My definition of a management system is all factors that make up a given production unit including managerial ability, capital, breeding program, feeding program, health program, marketing program, etc. Specific questions such as, "Can I afford to use AI in a commercial cow-calf operation?" and "What is the best breeding program for my own operation?" can be answered more effectively in a simulated system where several variables can be considered simultaneously. This is the "how much does it cost - how much is it worth" approach.

Production modeling can and will be used on a broader basis by research organizations for research planning and identifying information gaps as well as the relevance or importance of gaining greater understanding in a specific problem area. The modeling approach will also be used to evaluate different management systems for different resource situations and in the identification of the available and required resources for a given

management system.

The introduction into this country of new breeds with high growth potential and large mature size has already had a major impact on the beef cattle industry. I think those who have questioned if these "exotics" would remain "exotics" or if they should be considered part of the cattle mainstream of the future can consider the question answered. It is obvious that some of these breeds have something favorable to offer the industry and the present question is not, "Will they be utilized?" but rather, "Which ones and how to utilize them most effectively?" I believe that the exotic breeds likely have stimulated some important policy and program changes by the more traditional beef breed organizations. This type of competition can be an important motivator for increasing the rate of genetic improvement in the major breeds that have traditionally provided this nation with the highest quality beef available anywhere in the world. The impact of the exotics on the beef cattle industry up to this point has been of this nature. I believe that this impact will continue and is generally healthy for the industry. These new breeds will not make up a large part of the national beef herd until bulls from the breeds are available in sufficient numbers for use in crossbreeding programs. This will take another five to six years, minimum, but this does not mean they will not have a major impact on seedstock production in our traditional breeds in the immediate future.

The exotics have increased the use of AI in the beef cattle industry. I think the use of AI in beef production programs will continue to increase and a high percentage of this increase will be in the seedstock segment of the industry as a tool to increase the rate of genetic improvement in seedstock herds.

The emphasis by the seedstock producers in the past has been directed only toward "all purpose" breeds. I think that we will see an increase in emphasis toward developing breeds that fit a specific "niche" in different types of crossbreeding systems for use in different feed resource situations. This will involve multipurpose breeds that will be used in continuous rotation crossbreeding systems as well as breeds that excel in maternal performance traits for use as female stocks and terminal sire breeds that excel in market animal characteristics. Development of breeding programs to produce "synthetic" or new breeds from cross foundation of existing breeds better adjusted for specific feed production situations will likely be initiated. It will be more than 10 years before some of these changes in breeding programs will have a major impact on the commercial beef cattle industry, but some of these types of changes are already in progress.

It has been well documented that cross-

breeding to utilize heterosis can be used to increase profits for all production segments of the beef cattle industry. This practice is being used more each year and I expect it to increase at a much greater rate within the next 10 years. It will be on a highly organized and systematic basis. Crossbreeding will not only be used more, but specific breed crosses that are most suitable for given feed resource situations will be incorporated into breeding programs. Cows with large mature size and high milk production potential may be favored in areas where supplemental feed can be economically provided during the critical nutritional periods. Conversely, smaller cows with a lower level of milk may have an advantage in areas where supplemental feed is relatively expensive.

I expect commercial cow-calf operations to undergo as much change during the next 10 years as any segment of the beef cattle industry. The average cow-calf producer will give more attention to increasing reproduction rate and to breeding programs that will result in heavier weaning weights. Producers will not only utilize specialized crossbreeding programs to increase weaning weights and improve reproductive efficiency but they will employ specialized management practices that will enable them to further increase their returns to their production resources. More intensive management practices, such as weaning calves at two months of age to optimize reproductive efficiency in young cows and to optimize feed utilization, will be used in areas where intensive production is feasible.

I believe that we already have enough information to answer some of the questions that seem most important to many in the beef cattle industry: "What slaughter weights are going to be optimum during the next few years?" or in other words, "Will cattle with a genetic potential for high growth rate and large mature size produce a high quality carcass that is too heavy to be acceptable to the processor, merchandiser, and to the consumer?" The trends are already being established in the meat processing industry to answer this question. Labor costs to process beef at retail markets are approximately 10 to 12 cents per pound and this same processing can be done centrally for four to five cents per pound. Several retail chain stores are presently processing their beef centrally. Centralized processing procedures will result in no penalties for larger carcasses and will probably favor heavier carcasses because of lower labor costs per pound of edible beef. The trend toward retail sales of boneless cuts with a minimum amount of fat is already making carcass size of much less importance than it has been in the past.

Several years ago the standard production practice was to put weanling calves on a stocker program before they went into the feedlot. This is

still being done, but each year there is an increase in the number of lighter cattle going into the feedlots and the number of heavier cattle coming out. I think the percentage of cattle managed in this way will increase and within the next few years a high percentage of our slaughter cattle will be 18 months of age, or less. One opportunity or way the cow-calf producer has to increase his profits is to produce calves with heavier weaning weights. This means cattle with higher growth potential. A relatively high percentage of the cattle will be capable of growing at a rate adequate to make it feasible to put six to seven month old cattle into the feedlot. Roughages used for stocker programs can and are being used for increasing cow herd size. An increase in the number of big feedlots that are incorporating cow-calf operations into their programs will result in further changes in this direction. The increases in the number of large intensive cow-calf operations is also a factor. This trend to put more cattle into the feedlot at a young age will further increase the demand for cattle with a genetic potential for fast growth rates from birth to slaughter weight.

We have said that we do not believe that the production of heavy carcasses are likely to be a constraint to breeding and finishing programs. What about meat quality as related to fat deposition in faster growing, later maturing animals? I have asked this question of several people who have studied meat quality as well as consumer acceptance and the answers are not on a black and white basis, but the amount of grey is not as great as many people seem to think. We know that in cattle over 20 months of age a certain level of marbling is necessary to provide adequate quality for wide consumer acceptance. Also, we know that the relationship between overall acceptability and marbling is low in high growth potential animals fed to reach slaughter weight by 15 to 16 months of age. One approach that some processors are initiating so that they can deal more on a lean yield basis is to establish "branded" or trade-name meat items. Future integration from cow-calf producer to packer will expedite this type of processing and marketing procedure. I believe it is quite clear that we are seeing and we will continue to see an increase toward integration of different segments of the beef cattle industry.

As the industry goes more toward finish feeding young cattle, this will shift more emphasis on forage utilization for the early part of the feeding period. Development of forages with higher nutrient availability and feed grains with higher protein levels will likely have a major impact on our conventional nutritional programs.

The types of changes that I think will occur in the beef cattle industry during the next 10 years will definitely affect the role that the veterinarian

and animal scientist researcher will play. During the next 10 years I don't think it is going to be the effect of artificial insemination, estrus synchronization, sexed semen, use of exogenous hormones to induce twinning, drugs developed for disease treatment and prevention, or a given exotic breed that will have the major impact on the cattle industry. Some of these things will have an influence on efficiency, but the major influence is going to be the effects of improved management systems developed and implemented by producers with all components synchronized that will result in increased return to resources. This means that there will *not* be a single type of breeding program as a component of a given type of management system that will be developed and accepted nationally. Instead, there will be a multitude of highly specialized breeding components of many different management systems used in different areas.

The role of the veterinarian is already changing and it will continue to change. For example, it seems unlikely that feed additives and antibiotics will play an increased role in the beef cattle industry during the next 10 years. With this in mind, the cattle producer and the veterinarian will be forced to think more in terms of herd health prevention and management practices that will result in minimum stress. We already have evidence that antibody production is higher and immunization more effective when animals are in a proper nutritional state. We know that cross-breeding is one of the most effective procedures for decreasing peri- and post-natal calf mortality.

Most cattle producers used to think, and some continue to think, that the only time they need a veterinarian is when they set up a vaccination program and when an animal dies or is ready to die from a pathological condition. Unfortunately, many veterinarians continue to see themselves in this kind of role. I see the veterinarian playing more of a role as a consultant who is involved in planning and aiding in the execution of management practices that will minimize stress and disease. This means that a large percentage of his practice may be on a retainer basis where he helps detect and diagnose subclinical problems with less emphasis directed toward the diagnosis and prognosis of clinical problems. To perform in this role he must be a real student of the beef cattle industry with general understanding of all components, their relationship to each other and of complex management systems. This means that they will likely rely on specialists in nutrition, animal breeding, pathology, parasitology and in other areas as needed. Large animal practices will consider adding a Ph.D. nutrition-management systems specialist rather than a third or fourth veterinarian. The reverse will be true for

professional management services, which will increase at a rapid rate in number and scope during the next 10 years.

I definitely think that all segments of the beef cattle industry will experience generally orderly and well organized changes during the next decade. Interests that are going to be a vital part of this changing industry must constantly analyze the entire industry and their future role in the

industry. They must constantly challenge, on an objective and knowledgeable basis, the changes before, during and after they occur. This means a researcher like me and a veterinarian like most of you *must* become better students of the total beef cattle industry. I want to leave you with two questions: "What do *you* think will be the nature of the beef cattle industry in 1980?" and "What role will *you* play?"