BEEF HEALTH MANAGEMENT PROSPECTS FOR THE 1990'S

D. Owen Rae, DVM
Department of Large Animal Clinical Services
University of Florida
Gainesville, Florida

INTRODUCTION

As the beef industry moves into the last decade of this century, producer optimism is good, as cattle prices have been up and steady the last several years. The challenges and problems of this coming decade also loom before us. Cattle numbers are tending down, a response to several years of poor cattle prices and probably more importantly, reduced consumer demand (confidence) in our product. Concerns over the healthfulness of red meat, drug residues, hormones and so forth have hurt the market. Further, issues of land ownership, water rights, environmental protection, animal well being (welfare/rights) have impacted the producer's ability to independently go about his way of life as he previously has.

The cow-calf producer's business continues to become more complex and more demanding. Greater expertise is required in more areas. The new decade will be more demanding. The producer will feel increased economic pressure to have a well managed business enterprise to compete in the market place and to stay economically viable. He or she will feel greater production pressure to increase the number of calves weaned, optimize the weight at which they wean, and minimize costs per cow maintained. The title presupposes some vision of the future. I may, more likely, express some arm-chair philosophy or evoke shades of Buck Roger's, but all in all, I hope you will feel optimistic about the prospects ahead.

DELIVERY OF HEALTH MANAGEMENT SERVICES AND INFORMATION

The veterinarian will continue to be the producer's front line resource for health management services and information. The veterinary profession, like the beef industry, faces many changes and adjustments in the coming decade. The veterinary education in the United States has endeavored to produce a practitioner with a broad general knowledge of medicine and surgery. The specialization and focusing of that knowledge and skill has been limited.

The profession, as a whole, is becoming more aware of the need to change the curriculum and training of veterinarians. Part of this process comes as those of us associated with the beef industry ask ourselves some hard questions and search for answers which will produce a better beef-production oriented veterinarian.

How can we best serve the beef producer? Traditional delivery of services has included: 1) care of the sick cow or calf, eg. the one that's off-feed, the downer, lame or has an abscess; 2) emergency intervention, eg. the bloat, ingestion of toxic agents, acute epidemic disease, abortions and calving difficulties; 3) elective procedures, eg. castration, dehorning, de-worming and vaccination; and 4) regulatory procedures, eg. health inspection, testing and vaccination. Fire-engine medicine and surgery!

Can the veterinarian offer a service which will help the producer better meet his needs, pressures and goals? Can we do it at a price that is bearable or preferably cost effective and income producing for the producer and veterinarian? Can we accomplish these things by offering the traditional veterinary services alone? I think not. What type of service are we going to see then?

> **Key:** One with a more purposeful involvement in health and production management, not just an occasional fix-up or patch-up.
> **Aim:** Help the beef producer optimize his profit!

This will require a change in philosophy and education. The beef practitioner will be better trained to meet the needs of the producer. This will include not only surgery and medicine, but also, health management, production, nutrition, environmental engineering, economics, marketing, statistics, computer literacy and epidemiology. Furthermore and more importantly, they will be challenged toward the development of sound problem solving skills, and client interaction skills.

Integrated production medicine, herd health management, preventive veterinary medicine, production medicine, integrated resource management are names for a concept which has been in the development stages for a number of years. The concept comes to life when a functional team is established. This may be as simple as the producer and veterinarian, or it may be more comprehensive, including animal scientists with a wide variety of backgrounds and expertise, eg. nutritionists, geneticists, carcass and meats specialists, agricultural scientists, agronomists, ag-economists, bankers, accountants, financial advisers, pharmaceutical suppliers, etc. Within the veterinary profession, the team might also include clinicians, epidemiologists, pathologists and laboratory diagnosticians.

As with any winning team, the members must be cohesive, cooperative and committed to the success of the endeavor. This requires regular interaction; goal setting, planning, assessing, reviewing, recommending, implementing, and communicating, both oral and written.

Implementation of knowledge into action and a cooperative commitment to the client is essential.

Delivery of veterinary services relies on greater planning, time and activity organization, and greater involvement in directing management practices. This entails 1) regularly scheduled and some unscheduled visits (most of the traditional veterinary services fit in this unscheduled visits category); 2) record keeping; 3) surveillance, baseline evaluation, problem identification; 4) emergency preparedness; 5) client education; and 6) special services and programs, eg. artificial insemination, estrous synchronization and embryo transfer.

The beef practice veterinarian must change as does the beef producer to meet the challenge of changing times!!! Many veterinarians and producers desire the fuller, broader, array of services and interactions. These will be increasingly available in the next decade. We can look to a progressive new relationship between the veterinary profession and the beef producer...an organized, systematic approach to our businesses rather than a fire-engine, meet the crisis-type of management previously utilized.

THE NEW TOOLS OF HEALTH MANAGEMENT

The tools available for herd health and production management are increasing as rapidly as needs are being identified. The technological advancements in other fields are significantly impacting the area of beef health management. Notably, the fields of electronics and bioengineering are and will continue to have an impact.

COMPUTER AND ELECTRONIC TECHNOLOGY

Computers, notably, have influenced the way in which herd records for production and health are maintained and utilized. The ability to evaluate herd progress, pin-point problems and assess trends in the herd is greatly expanded. The producer has the capability of performing the what-if game with production and disease models to assess the value of different management practices in his situation.

The electronic technology, including computer chip technology, permits rapid communications by electronic mail or fax machines. This permits the relaying of information to and from the producer, eg laboratory reports from diagnostic laboratories, records transfer to veterinarians, nutritionists, buyers, etc. This communication technology extends to satellite transmissions, video tapes, etc. These media present a potential for extension conferences and communication of audio-visual educational materials quickly, efficiently and relatively inexpensively.

One other sample of electronic technology being used more frequently is the ultra-sound machine. This tool represents a boon to cattle marketing eg. carcass fat and loin eye area evaluation, as well as early and accurate pregnancy diagnosis. Other diagnostic uses are being tested for this and other tools as we stretch to extend our own five senses to better understand the unknown.

BIOTECHNOLOGY

The ability of man to understand the mysteries which govern life itself is enlarging tremendously. This new understanding focuses on bioengineering. Bioengineering holds a huge economic market potential for pharmaceutical companies and related companies. For this reason, large amounts of research dollars are being applied in these areas. Of prime importance to this research is biogenetics, gene mapping and cloning of genes and proteins.

Vaccines

Recently, an Australian pharmaceutical company announced the development of a cattle tick vaccine. This vaccine is touted as having advantages over chemical control methods, in that there are no toxic residues, it is safe, it is easy to administer and it is given less frequently. The vaccine was made possible by identifying a specific tick protein, mapping it out genetically, producing a gene for the protein and placing it in a `commercial' bacteria strain which would produce large quantities of this antibody-stimulating-protein antigen.

As diseases are identified which impede the health and production of livestock, either by advanced techniques or proven older techniques, the challenges will be met and subdued. One example is the recent development of a vaccine against Trichomoniasis and improved vaccines against IBR, BRSV, etc.

Another innovative development has been the addition of genetic markers to vaccine strains of modified-live viruses. These genetic markers permit the recognition of a disease strain virus versus a vaccinal virus strain. A disease titer can be distinguished from a vaccine related titer.

Diagnostics

Diagnostic tests are being developed which are more sensitive and specific. That is to say, the tests are more able to identify animals which are truly affected by a disease, as well as those which truly are not affected. Much of this new technology relies on bioengineering use of monoclonal antibodies. With these, ELISA assay techniques are used to identify antigens and antibodies specific to certain disease conditions. Also being used are DNA probes that can identify the presence of a particular disease organism.

Treatment

New antibiotics and pharmaceuticals can be expected to find application in the beef industry. These products will have greater efficacy and be better targeted to accomplish their intended task. Hormonal growth promotants, implants and stimulants will continue to be developed and improved. With these new products, as with the products currently on

the market, concern will persist as to residue levels and health implications. This issue will be considered later.

REPRODUCTIVE AND GENETIC MANAGEMENT

The ability of geneticists and reproductive biologists to manipulate the biological development of the calf will affect, maybe even profoundly, the way in which breeding stock and genetic pools are handled. Estrous synchronization and the subsequent use of artificial insemination continues to offer a means of rapid genetic improvement in beef cattle. The technology associated with embryo transfer continues to expand, including the ability to `sex' embryos and to do culturing and cloning procedures.

These techniques, in combination with the bioengineering techniques described under the biotechnology heading, may well lead to methods of genetic improvement called genetic enhancement. Genetic enhancement permits the addition of specific genes which may provide production boosts or the deletion of those responsible for detrimental characteristics. This may provide for disease resistance, eg. tick and nematode resistance, or trait improvement, eg. meat quality and feed efficiency.

NUTRITION AND METABOLIC MANIPULATION

The influence of nutrition on good health and productivity is being increasingly realized. Nutritionists are better defining the nutritional requirements of cattle at different ages and conditions. The interactions of nutrients are being better mapped out and understood. With this comes improved understanding of the animal's biological utilization of feed stuffs. These combined understandings will produce a variety of new feed-additive products and methods of nutrient delivery, eg. rumen by-pass proteins.

New forages and forage handling procedures and equipment will provide new opportunities. Especially important will be the development of forages designed in Florida for the Florida environment and soil type. These forages and by-products will provide the energy, protein and nutrient supplementation needed by Florida cattle.

Low level antibiotics in feed will continue to be an issue. We may be compelled to conform with consumer demands and their perceived need for increased public safety.

HEALTH MANAGEMENT AND ANIMAL WELL BEING ISSUES

Product Quality:

The safety and wholesomeness of the product consumed by the public will be more and more an issue of focus. The public concern will be targeted at antibiotics and hormonal additives. The use of low and therapeutic levels of antibiotics poses several perceived threats 1) biological pressure on bacterial strains towards a resistance to antibiotics, 2) subsequent bacterial resistance to treatment given human patients, and 3) the adverse reaction of sensitive individuals exposed to antibiotic residues in meat products. The concern over hormonal implants and stimulants is primarily a fear of adverse human reactions to hormonal residues. Consumer education and ensuing product confidence are major challenges for the 90's.

ANIMAL WELFARE/RIGHTS

Animal welfare and animal rights have become all too often words which incite anger in us toward those who, without understanding for our industry, speak out against us and it. This is an arena in which we must become familiar and active. Each cattle producer should become proud to declare himself an animal welfarist. I say, animal welfarist, not animal rightist. That may cause some to grit their teeth and shake their heads because of the vision it invokes. When we, who are working with cattle, can relate to the definition of animal welfare, we will realize we were concerned about this before they made it an issue. **Animal welfare** refers to the sound husbandry practices directed towards the animals over which we have stewardship. The cattle provide for the needs of man and we in turn provide for their needs. Most cattlemen have lived ardently by this all their lives.

Animal rights, on the other hand, projects another dimension. That is, animals have rights on a par with humans. By this definition, man has no more right to use or exploit an animal than he does another human being. This would preclude even the keeping (or enslaving) of a seeing-eye dog. The ramifications of this philosophy does keenly impact our way of life and all other humans.

Animal husbandry, or sound animal welfare, demands, and will demand, increasing producer judgement and sensitivity. This will require less `macho' display while handling and performing management procedures. We will need to develop and/or discover new management techniques to reduce cattle discomfort and stress, and augment their quality of life. Cow-calf producers, as a whole, are good husbandmen, but their way of life must be understood by the consuming public.

Commodity groups and individuals will be more involved in educating the public, portraying a positive industry image and promoting their product. We will be speaking up louder in support of `wise' use of our animal

resources, our land and our environment. In summary, we will need to declare a united point of view and demonstrate a sound, concerned husbandry.

DISEASE CONTROL AND ERADICATION

Disease control and eradication will continue to be an issue and a concern. Brucellosis and tuberculosis will continue to be the diseases of focus, though with the continued, concerted effort of Florida cattlemen these should be under control by the early to mid 1990's. Florida's geographic proximity to the Caribbean leaves open the potential entry of other agents for which guard will be required, eg. foot and mouth disease, heart water, screw worms, etc.

CONCLUSION

The cattleman is a conservative and independent sort by nature. Cattlemen tend toward constancy amid all the change. Many of my comments may be considered outlandish and far fetched but we are likely to see these and many other changes in the health (and the husbandry) management of cattle. Change in this and most industries comes as a small but innovative group dive into uncharted waters while a large group of watchers wait to see. They learn from their mistakes, we make the needed adjustments. Over time positive change takes place. The 1990's hold in store a tremendous number of potential positive changes. They will come slowly, but hopefully fast enough to keep pace with the pressures from outside of the industry.

Above all we will need to realize that beef is a product for people. The consumer is now more concerned about our product. By our production methodology and by strong, positive public relations, we can provide a healthy, nutritious, well accepted product.