

The Role of Bovine Practitioners in the Modern Livestock Industry

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Change has been the order of the day since 1950 in the livestock sector of American agriculture. In fact, the whole industry has been affected, and these changes should be appreciated by bovine practitioners. They are of tremendous importance to his role of service to America's number one growth industry. The changes have come subtly in some areas, as in the shift to more beef cows and away from steer feeding in the cornbelt states. In other areas it has been dramatic, such as the fantastic rise in large feedlots on the plains. Whether gradual or abrupt however, the impact of a changing animal agriculture should be fully understood and appreciated by all who are a part of this vast industry.

What's happened in American animal agriculture since the end of World War II? Viewing the livestock industry as a whole, several items stand out. Nearly all areas of the country have been affected.

Livestock enterprises have been caught up in the trend toward bigness that is evident in all farming operations. There has been a rapid adoption of new techniques, propelled along by meager returns to producers in many instances. The concept of "economy of scale" has characterized U.S. agriculture for the past quarter-century. Gone are the days of the old diversified farm with numerous species of livestock. In their place, we see highly specialized and intensive livestock and crop production units—large dairies, confinement swine operations and monster feedlots. Thus, the animal health picture has become much more complex and the needs of a skilled veterinarian much greater if he is to provide real service in today's complex livestock farming.

Furthermore, we are advancing rapidly toward markets which demand specification products. Take beef, for example. Years ago, beef production was a rather leisurely process—from range to feedlot to the local butcher shop. Three- or four-year-old cattle were not uncommon, many

produced off grass and roughage. Today, it is a "hurry up" process—with only 18-21 months elapsing from birth to slaughter. Nearly 80% of the U.S. calf crop winds up in a feedlot before slaughter. This rapid turnover has had dramatic effect by increasing the health hazards and risk of the cow herd owner or feedlot operator.

Obviously, it has placed more emphasis on reproductive performance in the cow herd. Long shipments of young calves have increased the stress factor to which the newly-weaned calf is exposed as he undergoes exhaustion and disease encountered on his way to the feedlot. The tremendous overhead costs of doing business in beef herds today, the heavy cost of land, interest on investment, taxes, feed, labor—all put more pressure on the producer and cattle feeder. A disease outbreak in a feedlot today could affect 50,000 cattle or more at one location.

Also, the changing clientele with which today's bovine practitioner must work is important. A quarter-century ago, the average American farmer operated a relatively small, family-owned and controlled enterprise. Generally, he had little formal education and limited knowledge of animal physiology and behavior. Not so today. Today's young stockman is very well informed. Probably he is a graduate of a top land-grant institution, well-posted on the newest developments and probable disease and health problems. He may be able to outperform the young veterinary graduate in many of the routine services required, with an imposing array of new tools in terms of antibiotics and vaccines. He regularly attends livestock meetings and is forced by the bank and IRS to keep very accurate records of finances and profit or loss in his livestock operation. This is the man the bovine practitioner today must service.

However, this producer understands the word "service" as it applies to his operations. He is used to depending on the county extension agent, feed dealer, fertilizer salesman, banker, A.I. salesman,

local auction market manager and many others connected with the industry. Hence, it is only natural that he would ally himself with a competent veterinarian and obtain his knowledge and service in warding off disease problems. The preventative medicine approach in maintaining herd health is a logical approach to the modern stockman.

It is the above set of circumstances that the product of colleges of veterinary medicine face today. While there are many part-time farmers and older producers who “run a few head” of nearly any species, their numbers are being rapidly reduced. Over 80% of all agricultural products in the U.S. today are the result of the efforts of less than 25% of our producers. There is need, then, for a new look at the veterinary approach to the livestock business today.

Educational demands on today's veterinary student have increased enormously. Vast amounts of new information are available and required by all colleges attempting to produce an outstanding product. The background of the typical veterinary student is changing too—fewer have first-hand contact with livestock or experience with production practices. The adjustment and learning process that must continue after graduation can be traumatic indeed in the world of highly specialized livestock production.

Another factor, not often appreciated by U.S. stockmen, is that many factors which determine the growth and profitability of livestock operations are outside the producer's control. New laws and restrictions on pollution and waste disposal are but one example. Today, 13 different agencies have a hand in certifying or permitting construction and operation of a large commercial feedlot. Many chemicals, such as diethylstilbestrol and antibiotics, are under pressure and more severe regulations can be expected in the future. A new government agency can be created overnight, as in the case of the EPA or current energy controls. Many sincere, but often uninformed, environmentalists and ecologists receive massive amounts of public support on vital issues.

What are some of the big problems in the bovine industry today? With beef cattle, three areas are of major concern:

1. Infertility and low percentage calf crop weaned. Certainly this ranks first in importance to cow-calf operators. Recognized disease problems like brucellosis, leptospirosis, vibriosis and others plague the cow-calf operator and progress is slow toward conquering them. Producers are more receptive toward control measures of these and

other diseases affecting reproduction. New problems have emerged, such as IBR and others, previously not recognized in importance to the cow-calf industry.

Over and above this is the emerging recognition of the disastrous effects of poor nutrition at various stages of growth and reproduction in the beef female. The result: Slow sexual development, delayed appearance of puberty, thin and weak calves at birth, slow return to estrus, and larger number of services required for conception. Nothing can be more disastrous to profits from a beef cow herd to the extent that occurs with a poor calf crop.

2. Stress syndrome in newly-weaned and exhausted calves. A combination of disease, exhaustion and reduced nutritive intake coincide in calves during weaning and shipment. Resistance to the complex of disease organisms to which calves may be exposed in auctions and at the feedlot may be lowered drastically. The pressure to put calves on feed at a younger age and lighter weight has enormously increased the risk of death loss at the feedlot.

It is obvious from research that the prevention of disease and the “exhaustion syndrome” to which the calf is exposed are both vitally important in preventing death loss. What may be worse from the profit standpoint, “chronics” and poor performing cattle in the feedlot continue to cost money to the feeders throughout the feedlot period.

Cooperation of veterinarians, cow-calf operators and cattle feeders will be required to reduce death loss and sickness. Each must learn from, and cooperate with, the other to fashion a complete and successful program.

3. Feedlot disease problems. As more and more beef calves wind up in the feedlot and are pushed rapidly on “hot” rations and intensified programs to perform at a faster rate, feedlot disease control is becoming more and more critical. However, only a few veterinarians are involved and they are rapidly becoming specialists under contract to a few large lots. Many use technicians and assistants for routine work. A stronger cooperative effort between veterinarians, cattle feeders and other specialized service personnel such as nutritionists will be needed, with each respecting and relying on the expertise of the other.

With dairy cattle, the old problems of udder difficulties, reproduction, and calf rearing diseases still are paramount. The dairy business today has advanced to a much greater degree of sophistication than in the past. The trend is toward very

efficient, specialized production by well-skilled managers. While this may reduce some of the general practice experienced by bovine practitioners in the past, it opens a new door of opportunity for contractual arrangements to maintain herd health and avoid the disastrous effects of

As in every other phase of U.S. animal agriculture, "service" is the name of the game. To

prevent and control disease and other difficulties will demand close liason between veterinarian and cattle manager. Tomorrow's cow-calf, feedlot and dairy managers will be willing to pay for herd health service far beyond what is considered adequate today. The bright opportunity for the bovine practitioner in the late 1970's and beyond will be to move ahead with a rapidly advancing livestock industry.

A New Test for the Detection of the Bovine Leukemia Virus

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We have recently developed an accurate, rapid and relatively inexpensive test for the identification of animals infected with the Bovine Leukemia Virus (BLV). This test involves the detection of serum antibodies to BLV using the immunofluorescent antibody (IFA) technique on acetone fixed, infected cells. The specificity of the test was demonstrated by the fact that it was positive in 97% of adult cattle in which BLV was detected electron microscopically. On the other hand, the test was negative in all cases in which the virus was not found despite extensive electron microscopic examination. In order for the IFA test to be specific it is of utmost importance that the target cells used are infected *only* with BLV. Such cells (NBC cell lines) are maintained under continuous culture conditions in our laboratory.

The Agar precipitin (Ouchterlony) technique has also been applied to the detection of BLV antibodies. However, a significant proportion of

animals which are positive in the IFA test and are infected with BLV (as determined by electron microscopic examination) fail to show precipitin antibodies to the virus. Likewise, an extensive survey of multiple-case and single-case herds conducted in collaboration with Drs. D. D. Abt and R. R. Marshak has shown that BLV infection can be demonstrated by both the IFA test and electron microscopy in many animals with persistently normal levels of blood lymphocytes. Thus, neither the precipitin test nor the blood lymphocyte counts (Bendixen's key) can be used as reliable indicators of BLV infection.

Our studies with Drs. Abt and Marshak have also shown that not all animals infected with BLV develop leukemia. Thus, while a positive reaction in the IFA test is accurate in determining BLV infection and therefore leukemia risk, it does not necessarily establish a diagnosis of leukemia.