FEEDLOT DISEASES CAN BE COSTLY

By Ned W. Rokey

Ravages of feedlot diseases will cost Arizona’s cattle feeding industry a whopping $41/4 million dollars in direct costs during the next calendar year. These costs will be represented by dead animals and cost of treating disease.

It is impossible to estimate the magnitude of indirect costs resulting from loss of weight during disease episodes, lowered feed consumption, poor feed conversion, condemnations at slaughter, etc. However, this cost is believed to be substantially greater than the direct costs.

Virus Diseases

Many of the parasitic, nutritional and, to some extent, infectious diseases of cattle have been known for years and are readily handled by proper use of antibiotics and addition of minerals and vitamins to the ration.

Recent studies indicate that 65 percent of the feedlots sampled in one state were infected with para influenza 3 virus (the virus involved in shipping fever). Another study indicated that almost 70 percent of the animals tested had been exposed to bovine virus diarrhea, a recently emerging feedlot disease. Moreover, there are increasing numbers of reports of salmonellosis in cattle.

In recent years a new and complex disease syndrome, characterized by high temperature, diarrhea, and respiratory distress, has appeared in feedlot cattle. High morbidity and mortality may be associated with the disease. Response to treatment is poor. The causative agents are not clearly defined but are believed to be due to a concurrent virus-bacteria infection. The disease has been named Bovine Enteric-Pneumonia Disease Syndrome (BEPDS).

Outbreaks Are Seasonal

Although serious outbreaks of disease may occur at any time during the year, the feedlot disease problem generally starts increasing during the late summer and early fall months, building to a peak in late November and December. There is an apparent decline during the late winter and spring months, with relative freedom from infectious diseases during late spring and summer months. During peak periods, morbidity in some shipments of cattle may be as high as 65 to 70 percent with a mortality from 10 to 20 percent in some lots of cattle.

The high rates of morbidity and mortality can be directly related to the nature of the infectious disease agents and to the rapid acceptance of sophisticated management techniques by the livestock feeding industry during the past decade. The feeding industry now deals with relatively young cattle in contrast to the 600 to 700 pound animals common a few years ago. These animals are transported en masse, are of a diverse origin, and are held in close confinement in large concentrations.

Susceptibility to diseases on the part of young cattle is similar to susceptibility of children to common childhood diseases. One case of chicken pox, mumps or measles in a highly concentrated population, such as found in public schools, will generally result in an epidemic that subsides only when all susceptible children have contracted the disease.

Stress and Concentration

Serious outbreaks of disease occur when young cattle of diverse origin, relatively susceptible and unexposed to disease, are assembled in large concentrations for shipment and subsequent high concentration in feedlots. Under these conditions, disease rarely occurs from a single causative agent, but more generally is complicated by two, three or more.

The resulting disease syndrome results in a high mortality, high morbidity, and extremely poor response to treatment. A serious consequence of intestinal diseases, although animals may appear clinically normal, is possible permanent damage to the digestive tract, in turn resulting in poor feed conversion and failure to gain economically.

Exposure to diseases may occur at the point of assembly or at the point of destination. The disease usually manifests itself after cattle have arrived, and is further complicated by change in ration and physical stress of long distance traveling, branding and handling procedures. Many feedlot operators have encountered serious outbreaks of infectious bovine rhinotracheitis (IBR) or bovine virus diarrhea (BVD) 7 to 10 days following injection of these vaccines.

Whether these are true vaccinations (Continued on Next Page)

IN A FEEDLOT animals of diverse origin are concentrated, increasing possibility for spread of disease.

This College of Agriculture maintains an Animal Pathology laboratory at our Mesa Branch Experiment Station, near Phoenix, as a portion of the Animal Pathology Department activity. Dr. Rokey, Animal Pathologist and Doctor of Veterinary Science, is in charge of that laboratory.
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breaks or complicated secondary infections is not clear. However, it is well known that injection of a live virus vaccine such as IBR, BVD, or para influenza 3, results in a transient and marked drop in white cell count. Animals so affected are believed to become quite susceptible to secondary bacterial infections that further complicate the response to treatment.

**Treatment Is Complicated**

Treatment of feedlot diseases is met with varying degrees of success and, in many instances, is quite unsatisfactory. There is a logical explanation for this apparently poor response. Many feedlot diseases, BEPDS for example, are believed to be the result of multiple viral-bacterial infections. It is known that viral agents are not affected by most antibiotics and, as a matter of fact, virologists use these same antibiotics to insure pure culture growth of viruses. In those diseases where the primary agent is a virus, the value of antibiotic therapy is limited to control of secondary bacterial infections. In treating a secondary infection of animals debilitated by a virus disease, response at best is poor, even though the drug of choice would prove entirely effective if the secondary infection existed separately.

It is important to obtain a diagnosis before an effective and economical medication program is undertaken. Medications are often administered in hope of a favorable response. If not successful, an attempt is then made to obtain an accurate diagnosis. In many instances, when diagnosis is finally obtained and proper medication administered, mortality and morbidity have already declined and the disease has run its course, leaving a percentage of unthrifty animals that fail to respond to any type of therapy.

**Is Costly Procedure**

These are expensive situations, not only from the standpoint of high mortality, but also from the standpoint of high-priced medications that are essentially useless in treating the disease that existed. Massive treatment of feedlot cattle—for that matter, all livestock and poultry—presents other important considerations quite aside from the use for which they were intended.

There are an increasing number of antibiotic-resistant bacteria emerging as a direct result of constant exposure of bacteria to antibiotics through the medium of medication of sick animals and low level feeding for economical gain. For example, research conducted at the University of Arizona Animal Pathology Laboratory at Mesa revealed approximately 50 percent of 117 Salmonella typhimurium isolations resistant to terramycin; 35 percent of 114 Salmonella newport isolations were resistant to the same drug. Tests revealed that streptomycin and dihydrostreptomycin, once drugs of choice, were almost completely ineffective. Results obtained on tests involving sulfonamides were even less effective. However, the above named drugs are administered to newly arrived cattle on a routine basis.

**Prevention Is Cheapest**

Prevention of disease is far more important and generally is less expensive than subsequent treatment. For example, blackleg and malignant edema are quite readily and economically controlled by proper administration of vaccines. Similarly, infectious bovine rhinotracheitis (red nose), leptospirosis and, to some extent, bovine virus diarrhea, are controlled in the same manner.

Excellent treatments are available for both external and internal parasites. Nutritional diseases, such as Vitamin A deficiency, can be controlled inexpensively.

At the University of Arizona, research work on feedlot diseases is being carried out by the Department of Animal Pathology. This research was initiated in 1965 at the Mesa Laboratory. Research is devoted to investigating the causative agents, incidence, reservoirs of infection, and methods of treatment of feedlot diseases, with special emphasis on BEPDS. This disease syndrome is held responsible for a substantial portion of the total loss suffered by the feeding industry. Studies designed to determine accurately the carrier status (latently infected) animals are also included.

**The BEPDS Syndrome**

Preliminary results indicate that salmonellae may be an important contributing factor in the disease syndrome. Approximately 33 percent of the feedlot animals tested have been positive for Salmonella. Research studies indicate that bovine virus diarrhea (BVD) and infectious bovine rhinotracheitis (red nose) (IBR) may also be involved in the BEPDS syndrome. The exact role of viral agents and salmonellae has not yet been determined and will be placed in proper perspective as research progresses.

Before the problem can be fully resolved it will be necessary to determine the health status of the cattle populations. Most researchers agree that many herds may have subclinical infections where disease is not manifested until physical stress occurs (weaning, abrupt change in rations, temperature variations, transporting, etc.). Inability to determine accurately the health status of animals under transport presents a serious problem to the regulatory officials and the feedlot operator.

For lack of technology to learn the carrier status, infected animals may be transported freely. For example, salmonellae-infected cattle, accompanied by valid health certificates verifying that they are free of contagious or infectious diseases, move freely in interstate commerce. In a shipment so involved, animals will be exhibiting clinical signs at the point of destination and it is not unusual that some death loss may occur in transit.

**Some Loss Not Insured**

Although insurance carried by the transport agency covers the burden of the immediate death loss, the subsequent cost of treatment of sick animals, additional death loss, and resulting poor performance of recovered animals occur at the expense of the purchaser. Perhaps more serious is the fact that these animals may serve as a source of exposure to other cattle in the lots, and also to any subsequent shipments of susceptible animals.

Research aimed toward development of technology for determining the health status, and accurate and reliable methods of treatment and control, is extremely time-consuming and expensive. Its continuance, and support for such continued study, would seem to be well justified.

An author, writing in the Journal of Animal Science about the relation of fatness to tenderness in beef, comes up with the classic sentence: "It is disconcerting that something which has appeared so obvious to so many for so long should be so extraordinarily difficult to prove in the laboratory.”

LOS EXPERTOS del Departamento de Agricultura estadunidense después de ocho años de investigaciones han comprobado que las ovejas de razas cruzadas producen hasta veintiséis corderos más por cada cien animales madres que las de raza pura. Los corderos de cruce tienen un peso medio de 4.5 kilos más por cabeza al ser destetados.